Unit 1

Logic of Inquiry in Social Research

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Learning Objectives

It is expected that after reading Unit 1, you will be able to discuss the following themes pertaining to

- The debate over science
- The importance of scientific method
- The nature of sociology as a science of society.

1.1 Introduction

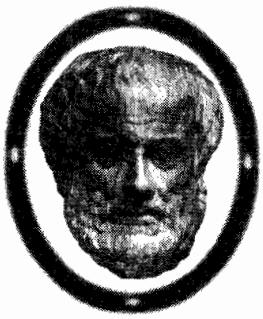
This is the first unit of Book 1 on *Research Methodologies*. In the style of a narrative, the unit begins with a discussion about the nature of sociology as a science of society and looks at science as a way to understand the world around us. The earliest mention of a scientific approach to understanding the nature of the social world along the lines of understanding the natural world is found in the works of Auguste Comte (1798-1857). From Comte's ideas, the discussion proceeds to observation in and methods of the social sciences. A scientific observation is capable of being turned into a higher-level generalisation or to build a theory (Unit 3 has a detailed discussion of theory building). Unit 2 will go into greater detail about how one goes about collecting empirical data in the social sciences and what constitutes "empirical approach" to understanding social reality. Let us now begin the debate over science in the social sciences.

1.2 A Science of Society

Social science research can be understood against the backdrop of a history of evolution of human thought. To begin with it is necessary to understand that the philosophical foundations of the science of sociology began in the West with its roots in Europe or in the early Greek philosophies. Aristotle was the first logician, who gave primacy to the faculty of reasoning of the human mind above what is handed down to us by tradition or custom (see Box 1.1 Aristotle). We are not trying to claim for our discipline lineage from Plato or Confucius, from the Mahabharata and the code of Hammurabi (see Becker and Barnes 1961). Rather we are looking into the logic of social inquiry and hence the reference to Aristotle.

Box 1.1 Aristotle

A student of Plato and the tutor of Alexander the Great, Aristotle lived around 300 BC. He put forward the most elementary form of a logical inquiry, namely a major premise, a minor premise and a conclusion. If the first two were correct or based on facts, the conclusion would be correct too. For example we have a major premise that all humans are mortal and a minor premise that Hari is a human, then the conclusion would be that Hari is mortal. This form of reasoning is known as Aristotle's theory of syllogism or deductive reasoning as opposed to inductive reasoning.



Aristotle
(384-322 B. C.)

In the history of Western thought, Aristotle's logic dominated until 1600 AD and was also passed on to the Arabic and Latin medieval traditions. After about two thousand years, Galileo Galilei (1564-1642) in Italy, Francis Bacon (1561-1626) in England and Tycho Brahe (1546-1601) in Denmark and others found that though without any logical errors, Aristotle's deductive method of reasoning did not correspond to scientific inquiry about nature. As a result the followers of the new scientific method, known as inductive method of reasoning, turned deductive method upside down.

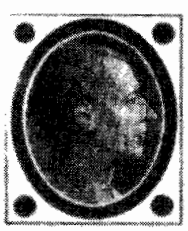
However for a long historical time, the advocates of logic had to fight with the domination of religion to establish the supremacy of human reason and mind over the supernatural domain or the will of God. Till almost the eighteenth century it proved to be a losing battle, at least in the West. It was with the Renaissance (a movement or period of vigorous artistic and intellectual activity beginning in fourteenth century Italy, lasting into the seventeenth century) that finally it was accepted that society is not a creation of God governed by a divine will but a creation of human beings and an entity that has an objective and changing existence that can be studied from the outside (see Box 1.2: Progressive Evolution of Societies).

Box 1.2 Progressive Evolution of Societies

The historians and philosophers of the late seventeenth and eighteenth century, such as Voltaire (1694-1778), Montesquieu (1689-1758), Hume (1711-1776) etc. projected certain basic premises regarding the truth of social existence. These were in the form of a universal history, holding a basic supposition that all societies are evolved and have gone through various transformations to be what they are today; an idea of progress that things are going towards better and the triumph of reason is the ultimate goal of human kind.



Voltaire (1694-1778)



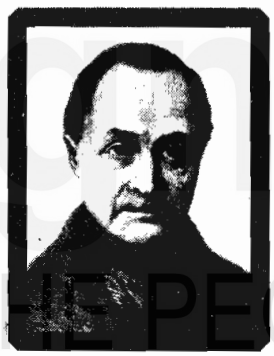
Montesquieu (1689-1758)



Hume (1711-1776)

A science of society became possible when it was clearly understood and accepted by most that society is a creation of humans and not of God. The extent to which we can view sociology as a scientific discipline, a guiding principle of science is that we can derive valid knowledge from strict rules of evidence which are reliable and valid. In this sense, science encompasses along with other disciplines the discipline of sociology. By examining the relationship between sociology and scientific methodology that is followed by the natural sciences, we can understand if sociology is scientific in the same way as a natural science is. It is also possible to find out if sociology can be scientific even when it does not follow the methodology and methods of the natural sciences. For this purpose, we need to examine various methodologies followed by sociologists in their work and then appreciate the claim of calling sociology a scientific discipline.

All of us attach a special status to the notion of scientific knowledge because it depicts the world as it is rather than as anyone of us may wish it to be. In this sense scientific knowledge provides us the possibility of gaining a true understanding of the nature of the social and natural world. This understanding is not based on opinion or unproven faith and superstition. You can find the earliest developments of such understanding of sociology in the work of Auguste Comte. It is no accident that Auguste Comte is known as the founder of sociology. If we look at developments in sociological methodology, the word "sociology" obtains from the work of Auguste Comte. In order to appreciate sociology as a Science of Society, it is a useful exercise to outline Comte's ideas on the nature of sociology. This will give us an insight into the kind of scientific approach early sociologists followed.This approach gave an impetus to sociology to gradually develop into a reflexive science.



Auguste Comte
(1798-1857)

1.3 Comte's Ideas on the Nature of Sociology

Written in the nineteenth century, Comte's works reflect his engagement with the methodology of scientific thought. He argued that, like scientists who studied the natural world and discovered the nature of laws determining the behavior of matter in the physical world, it was possible to discover the laws which determined the behavior of people in the social world. In his book, *Course of Positive Philosophy* (published in 1839-1842), Comte made the point that laws governing the behavior of people in the social world could be discovered through the development of a positive philosophy of human social development. In other words, Comte was saying that social scientists could use the methodology and insight of the natural sciences as the model for the development of social physics or sociology. He gave the idea of positivism as given in Box 1.3.

Box 1.3 Comte's Idea of Positivism

In the ...positive state, the mind has given over the vain search after the Absolute notions, the origin and destination of the universe, and the causes of phenomena, applies itself to the study of their laws...their invariable relations of succession and resemblance. Reasoning and observation, duly combined, are the means to this knowledge. What we now understand when we speak of an explanation of facts is simply establishment of a connection between single phenomena and some general facts, the number of which diminishes with the progress of science.

We can say that in Comte's eyes, the aim of science was not to explain why things came into existence or the cause of their being. He held that the aim of science was the explanation of how things related to one another in terms of invariable and universal laws. In this sense, observable phenomena are the main ingredients of positive science, which aims to establish law-like relations between phenomena through gathering factual knowledge. Gathering of factual knowledge is carried out through observation, experimentation, comparison and prediction. The idea is that after discovering a wide range of laws, it would be possible to explain the laws in terms of their relationship to each other.

Positivism of Comte espoused that science means the progressive discovery of laws and their interrelationships so that science could one day propound a general law from which all other laws emanate. Comte assumed that the social world was as regular and objective as was the natural world. For him, social laws governed the social world just as natural laws governed the natural world. Comte, thus, considered the methodology of the natural sciences the ideal way to discover laws governing the social world and he advocated the development of a new positive outlook, based on the methodology of the natural sciences.

According to Comte, the main task of sociology was to discover the general laws of social development and he divided the general laws into the following categories.

i) Laws of co-existence or social static: These laws governed the relationship between different parts of society and as such they determined the functions and interrelationship between the various parts.

ii) Laws of succession or social dynamics: These laws governed social change and required an exploration of the way the nature and function of social institutions changed over time.

We may describe the above as Comte's positivism. Since there are various types of positivism, it is essential to understand the basic argument of scientific enquiry or inherent methodology of Comte's positivism.

As you know Comte followed the methodology of the nineteenth century natural sciences for positing the principles of natural sciences to the study of human social development.

Auguste Comte made, in the process, some assumptions and observations about social development. His assumptions and observations were according to the science of the nineteenth century.

Comte's first assumption was that societies pass through a process of evolution and their stages of development are from the simple to the complex. In this sense, societies gradually become more complex and institutionally differentiated, performing specific functions.

Next, Comte questioned that if there are incremental differences in societies, what makes them not disintegrate. According to Comte, mechanisms leading to social integration need to involve one or the other form of mutual dependence.

From the above two assumptions, Comte derived that evolution is both a natural and demonstrable fact and it is governed by Laws of Development. Comte argued that the task of sociology was to discover the Laws of Development by i) systematic observation, ii) collection of data or facts and iii) development of theories to explain the facts.

The logic of Comte's ideas is called inductivism (see Box 1.4 Distinction between Inductive and Deductive Forms of Logic).

Box 1.4 Distinction between Inductive and Deductive Forms of Logic

The deductive method takes a few axioms or so-called true statements with the aim of proving other true statements or theorems, which logically emanate from them. The inductive method, on the other hand, makes many observations about nature, with the aim of discovering a few but strong statements about how nature works or about what are the laws and theories that are at the back of how nature appears to us.

In the deductive method, logic is the main operating tool. If a statement emanates logically from the axioms, it must be true. In the inductive method (often called the scientific method), observation of nature is the main operating tool. If an idea is in conflict with what occurs in nature, the idea has to be given up as useless.

Adherents of traditional logic, who were the descendants of Aristotlean Logic, became rivals of those following the new inductive method of natural sciences, with different notions of reasoning or logic.

You may be interested in knowing that although science is inductive by definition (in the sense that observations are the only valid evidence of truth), the process of science can be deductive! *Stanford Encyclopedia of Philosophy* (updated August 23, 2004) on Aristotle's Logic mentions that 'more recent scholarship has often applied the very techniques of mathematical logic to Aristotle's theories, revealing (in the opinion of many) a number of similarities of approach and interest between Aristotle and modern logicians'.

We can also call Comte's logic as Inductive Positivism. This is also referred to as the nineteenth century positivism. (Positivism as a methodology developed in the twentieth century was quite different from what we have just learnt. You would learn more about positivism in later units of this book.) Based on the reasoning of his inductive positivism, Comte

gave three stages of evolution of human society, namely,

i) the age of religion
ii) the age of metaphysics and
iii) the age of reason.

This was a position counter to the one professed by the Church that society in its most perfect form existed at the beginnings of creation and that human kind is going towards degeneration and more importantly the division of the world into Christians and non-Christians, to be equated with savages and non-humans. In the following Reflection and Action exercise, we are going to critically look at the methodological problems inherent in inductive positivism.

Reflection and Action 1.1

We will work out the basis of Comte's notion that it is possible to discover social laws in the same manner as scientists discover natural laws and then debate over the scientific approach of the nineteenth century sociology through the case of Comte's ideas. This exercise has four parts. Complete the first two parts (A and B) now and the last two parts (C and D) in Reflection and Action 1.2.

A

Answer the following questions and bring out Comte's assumptions about human development and write down the answers to the questions given below, on a separate sheet of paper.

Questions

- Does Comte answer the question of why do the laws of development governing the social world exist? Does he avoid answering this question? What is the implication of avoiding this question?
- Does Comte simply assume that social development is evolutionary or does he offer any evidence to prove this position?
- Is Comte assuming that the social world has a rational order, which is over and above the capacity of human consciousness to change it?
- Does he assume that the universe has some form of natural order that as sociologists we need to discover?

B

Based on your answers, work out if the nineteenth century sociology that relied heavily on data (facts) collection and theorising at the most abstract level, as evidenced in Comte's writings, was a victim of logical forms of methodological error, inherent in inductive positivism. For this exercise you would need to answer the following questions.

Questions

- Do you think that facts are self-evident things?
  Is it not the case that what I consider as a fact, you may interpret to be something else?
- Does or does not Comte's positivism tell us how to identify a fact in the first place?
- How are we to arrive at a common understanding of what is or is not a fact?
- Do the answers to the above questions imply that if facts have to be interpreted and not simply discovered to be facts, it is obvious that we tend to make a subjective judgment? Would you say that this is then not an objective method of scientific inquiry? Would you also say that it is not possible to theorise on the basis of such a non-scientific method of inquiry?

The issue coming out of the above exercise is as to how one identifies a social fact and how it is the same or different from a natural fact. The comparison of social science with natural science poses a clear problem, for while in the natural sciences the objects of study have a definite material existence, in the social sciences only human beings and their manifest behavior is the material but observation of behavior from the outside yields very little knowledge about the explanation of behavior. The existence of a rationally deductive objective reality is philosophically linked to what is known as the notion of duality exemplified in the philosophical notions of Descartes, best known as Cartesian duality (see Box 1.5 René Descartes (1596-1650).

Box 1.5 René Descartes (1596-1650).

Born on March 31, 1596 in Tourain, France, René Descartes was one of the most significant and influential thinkers in human history. He was also an outstanding mathematician.

Cartesian duality presupposes the division between the outer objective reality of the phenomenon and the inner subjectivity of the observer. The premise is that for a scientific observation the two must remain separate and that the objective world has a rational reality that is akin to mathematical truth. Together with Spinoza (1632-1677) and Leibniz (1646-1716), he formed a part of what is known as the 'rationalist' school.



Descartes (1596-1650)



Spinoza (1632-1677)



Leibniz (1646-1716)

Let us now complete the Reflection and Action 1.2, that contains the other two parts of the earlier exercise. You need not worry about the right or wrong answers to questions. The idea of completing the exercise is to reflect and develop the skill of arriving at an understanding of how we employ logic to understand and know and on what basis.

Reflection and Action 1.2

C

If facts are the bases of theories, that is, if we develop theories to explain the relationship between facts, then as scientists we do not have any reasonable basis to make a distinction between good and bad or true and false theories. This is so because our theories are based on a collection of facts and we identify facts according to our subjective judgments about what is a fact. The whole process then is not conducive to production of valid knowledge that has been derived on the basis of irrefutable facts.

You can illustrate this idea by considering the following statement.

It is a fact that men are socially superior to women.

Questions

- On what evidence would you base your judgment that this is, or is not, the case?
- Are you able to explain this fact in another manner, if yes, how?
- Suggest how it is possible to make a distinction between different interpretations of the facts.

D

On the basis of the exercise you have just carried out, answer the following questions:

Questions

- If a sociologist agrees with the fact stated above, what sort of theory would she or he develop to explain the relationship between superior social status and gender?
- If a sociologist does not agree with the fact stated above, what sort of theory would she or he develop to explain the relationship between superior social status and gender?
- How can we show that the theory developed in the first is more, or less, valid than the one developed in the second?

The art of observation itself became a central methodological issue for social scientists, especially for those who had as their objective the study of society, as against the study of individuals (as in Psychology). The school of philosophers, known as the "empiricists", gave primacy to empirical facts as against the logical knowledge of the rationalists. Some of the philosophers of the empiricist school are John Locke (1632-1704), George Berkeley (1685-1753) and David Hume (1711-1776). The tussle for primacy between empiricism and logic is resolved in the social sciences by the need for both to come to a conclusion regarding social reality. The two ways of understanding social reality are known as the inductive and the deductive methods (see Box 1.4). By now most social scientists agree that the processes of inductive and deductive reasoning run simultaneously as one attempts to make sense of what is observed empirically, one has to rely on logic for interpretations. And again logic cannot be applied in a vacuum, it needs some kind of a solid referendum; even the imagination has its limits and cannot go beyond the frontiers of human comprehension that is ultimately linked to what can be humanly observed. Let us discuss the craft of observation as practiced in the social sciences.

1.4 Observation in Social Sciences

It is clear that unlike the observations conducted in the natural sciences that depend only on the senses of the observer, the observations in social sciences need the participation of the observed. While one can rely on the senses to see what is happening, one needs to inquire from the actors as to what is the meaning of their acts for any explanation to take place. Let us take for example the utter bewilderment a complete outsider would face if taken to witness a cricket match. The meaningless actions (observably) of adult men hitting a round object and running

around for no practical purpose and, worse, thousand of spectators getting so emotionally charged at the sight of such meaningless acts, would not appear reasonable to any outside and objective observer. The observer may put forward the verdict of collective insanity if not made familiar with the meaning systems that prompt the actions as well as a large amount of conceptual data as to: What is a game? Why is it played? What is the relationship between a game and national pride, and so on and so forth.

So it is with every act of observation of society that we need to refer to more generalised concepts and also meaning systems of the actors. This is not to say that one relies only on explanations given by the actors but true explanation in the social sciences would then contextualise the observations, the meanings and the actor's frame of reference to a larger and more generalised system of concepts and relationships, to try to get at a true meaning, truth or explanation. Thus inductive data is contextualised by a logical process or deduction. Social scientists have devised ways to make observation more meaningful or, as it is put, more scientific.

To understand this a little better we must go into the history of what constitutes data for the sociologists and anthropologists who have society and culture as their objects of study. As is evident, the nature of the data is itself sufficiently different from the data of natural sciences, as whatever we observe is a construct (Did you not find the same to be the case when you carried out the Reflection and Action 1.1 and 1.2 exercises?). Like when we observe a cricket match, the term "game" is a construct and unless we use this construct to explain whatever we are seeing physically, the entire observation would become meaningless. Thus as Dan Sperber (1982) has argued, there is only one-way to describe cultural (and social) phenomena and that is by interpretation. But even before we go into the problem of interpretation, we must be clear about what it is that we are going to interpret, in other words what is the nature of observation on which we rely as our base data.

To begin with, social scientists interpreted data or basic observations made by anyone. In the eighteenth and nineteenth centuries, travellers, missionaries and administrators collected large parts of data used. It is true that some of it still forms the basis of much of social theory, especially those accounts that could never be duplicated, as the situations, societies and cultures depicted in them have since disappeared. In the nineteenth century, the vogue was on a pure scientific methodology or on nomothetic generalisations (see Box 1.6 Nomothetic and Ideographic Explanations).

Box 1.6 Nomothetic and Ideographic Explanations

As Windelband (1914) said, all explanations are of two types, nomothetic and ideographic. The former refers to generalised laws and the latter to individual facts. We may for example call the laws of evolution nomothetic and the specific event of history ideographic.

Since sociology is deemed to be a science of society, it aspires to be nomothetic rather than ideographic[◎]. The attempt of the classical sociologists was thus to find the laws that make society run and the assumption was that society too has an objective existence like all natural objects and like all natural objects it too follows same laws or principles. The assumption of society as a natural phenomenon following laws of nature was to dissociate it from its earlier conceptualisation as a divine entity following supernatural dictates. However, to make society an object capable of being subjected to scientific analysis another criterion of scientific analysis had to be fulfilled, namely of ethical neutrality. Society and its norms had for long been entrenched within religion and cosmology so that most rules of society were viewed as divinely sanctioned rather than as a creation of humans; like incest taboos, norms of femininity and masculinity, etc. A science of society has to proceed from the premise that all such rules and norms are variable and human-made and therefore a science of society has to follow some principles of causality rather than of divine sanction. In other words all aspects of society have a purposive existence that can be explained rationally.

At this point, let us here remind ourselves about what Turner (2000) pointed out– that study of society uses, on the one hand, formal theory, with assumptions, concepts, propositions and laws and in this sense is similar to natural science, and as such it explores empirical data, practices and institutions and tries to find causal and generalisable statements (for example see Rudner 1966: 59-67, Braybrooke 1987: 21-29, Hempel 1942, Kincaid 1990, McIntyre Lee 1991). On the other hand, many sociologists and anthropologists (for example, Geertz 1983, McIntyre Alsdair 1973, Turner 1974, Sahlins 1976) have argued that given the diversity and multiplicity of the social world, it is not possible to develop generalisable and causal explanations. They hold that sociology's focus on observation of local action and interaction helps it to develop analyses of various social contexts. Irrespective of which perspective one accepts, in Turner's (2000:12) words, "social theory thrives and survives best when it is engaged with empirical research and/ or public issues". As a matter of fact, even the nineteenth century sociology was linked to a critical agenda toward the then social reality, for example, August Comte was linked to "programmes of political action" (see Barnes 1977: 42).

1.5 Logical Understanding of Social Reality

The question arises, what, then, is the legacy we have for logically understanding social reality? One way is to carry on with a discussion of ideas of sociologists (like we have done in this unit regarding Auguste Comte). They constructed their theories around an explanation of what they considered was new and unique in social reality. This exercise will take us to unmanageable detail and the unit will be extraordinarily long. So ending here with one example (of Comte's ideas) only, we will refer you to be alive and attentive to such discussions as and when they

appear in subsequent units of Book 1 and also in the units of MSO 001 (the course on Sociological Theories and Concepts). At this point in our discussion, it may suffice to say that important characteristics of scientific inquiry into social reality would include emphasis on relevant empirical sources of data, the general line of demarcation between observation and theory, the focus on logical consistency and deductive coverage. For understanding social reality, as Elster (1989) and Little (1991) say, social science research needs to discover regularities, derived from underlying causal properties of social phenomena. It is not necessary for us to draw an analogy between social sciences and natural sciences in order to stress the explanatory significance of discovering regularities in the social world. It is by now clearly understood that the social sciences cannot emulate the way natural scientists derive laws from the properties of physical phenomena. You may say that the social sciences do not require scientific explanation in terms of law-like regularities, all the same causal hypotheses, confirmed by empirical data are parts of the nuts and bolts of social science research. Methodologically, sociology, like any other social science, offers weak generalisations, which have only tentative predictability.

What kind of generalisations or regularities are we talking about? A law of nature refers to a governing regularity, that is, as per a particular law of nature, there will always be generation of a particular kind of behavior. For example it is a governing regularity that forces of electrodynamics affect protons and electrons. Phenomenal (or phenomenological as labeled by Cartwright 1983) regularities refer, on the other hand, to common features of social entities and their effects on individual agency. For clarification on this point see Box 1.7 Example of Phenomenal Regularity from Little (1992: 6).

Box 1.7 Example of Phenomenal Regularity from Little (1992: 6)

It has been observed, for example, that land-tenure systems with a particular structure create common incentives for individuals wherever they are implemented; it is then a regularity of these systems that they have common features (e.g. under investment in capital improvements). But these regularities are strictly derivative from features of individual agency, and they do not represent governing regularities of a certain kind of social institution.

1.6 Conclusion

Since social reality is highly diverse, and constantly experiencing cross cutting varieties of causation, it is possible only to produce scientifically valid knowledge in terms of "exception-laden phenomenal regularities" and "the highly qualified regularities that derive from institutional-logic analyses" (Little 1992: 20). In methodological terms, in the social sciences (that include sociology) we need to be aware of the scope and limits of generalisations possible in the light of the nature of our subject matter. Concluding this unit with the above note, we end at this point our debate

over science in the context of methodologies of social science research. We shall continue the debate in Unit 2 by discussing the theme of empirical approach, which social scientists use extensively in their researches and on that basis claim their endeavour to be scientific.

Further Reading

Worsley, Peter et al (ed) 1970. *Introducing Sociology*. Penguin Books: Harmondsworth(Unit 1 on 'Sociology as a Discipline', especially pp. 19-38 for sociology's main concern with 'learnt' behavior/ culture, interface between biology and culture, divisions of social sciences, relationships between sociology and other social sciences, scope of sociology and what sociologists do.

Giddens, Anthrony 1987. *Social Theory and Modern Sociology*. Polity Press: Cambridge (Unit 1 on What do Sociologists Do?, especially pp. 1-21 about sociology and lay knowledge and current issues

Aaron, Raymond 1965. *Main Currents in Sociological Thought*. 2 vols. Harmondsworth: Penguin

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Unit 2

Empirical Approach

Contents

2.1 Introduction
2.2 Empirical Approach
2.3 Rules of Data Collection
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2.10 Managing Diversities in Social Research
2.11 Problematising the Object of Study
2.12 Conclusion: Return to Good Old Empirical Approach

Learning Objectives

It is expected that after reading Unit 2, you will be able to answer the following questions.

- What is empirical research?
- How to collect data with rules in mind?
- How to explain the concept of cultural relativism?
- What are the problems encountered while collecting data?
- What are the issues of ethical and normal viewpoints in social research?
- How does one understand the facts collected?
- How does one problematise the object of study?
- How is one to manage diversities in social research?

2.1 Introduction

In Unit 1 we discussed the tension between giving primacy to ideas and logical understanding of society and to empiricism that relies on observable facts. As already mentioned in Unit 1, to the extent sociological theories need to be based on observations of the social world, you can regard empiricism to be at the center of the modern scientific method. In Units 5 and 6 you will read more about such proponents of empirical research as Francis Bacon (1561-1626), John Locke (1632-1704), George Berkeley (1685-1753) and David Hume (1711-1776).



Francis Bacon
(1561-1626)

Empiricism© refers to the view that experience, particularly of the senses, is the only source of knowledge. This view of

empiricism has been contrasted with rationalism, which holds that all knowledge is based on introspection and a priori (as far as one knows), deductive reasoning. Such a contrast, and the ensuing debate, held for quite some time the interest of many philosophers and classical sociologists. Whether supporting total adherence to empiricism or not, social scientists never gave up their abiding interest in the empirical approach to social research.

In Unit 2 we will discuss what is meant by empirical© approach and how the data for social research is to be collected with certain rules in mind. Further, we will discuss the various problems encountered in the application of the empirical approach and conclude with the observation that while it is necessary to look at the social reality, it is also important to find out how it came to be so.

When it comes to determining the object of one's study, social scientists have come to recognise that we need to investigate power relationships and their formations, including the subject position of the scholar engaged in the research. Reading through the various sections of this unit, you would be able to appreciate the inevitable empirical orientation of social science research and at the same time the requirement of handling diverse points of view in it.

2.2 Empirical Approach

Let us also clarify at the outset that you will find many supporters of empiricism while there are enough social scientists who follow the empirical approach without subscribing to empiricism. This means that they do not accept the theoretical premises of empiricism and do not like to support it as a doctrine. All the same they find it acceptable to follow the empirical approach as a methodology. This is why you find here our discussion of the empirical approach.

Empirical approach refers to the methodology of collecting facts through observation and other first hand methods of data collection. There is a difference of opinion and method in whether one relies on the data collected only by a particular method designated as "scientific" or on the data collected by any lay person. In the initial period of the growth of the social sciences, scholars, such as Herbert Spencer (1820-1903), Auguste Comte (1798-1857) and even Edward Burnett Tylor (1832-1917) and Lewis Henry Morgan (1818-1881), depended largely on the data collected by travellers, missionaries and administrators passing through various territories. The emphasis at this time was on the logical process of analysis, the data served only to illustrate the ideas and fill in the schema, whose origin lay in the brains of the "armchair" scholars. The scholars relied on their own intuitive judgment to select data and to compare them. Against such practices came up the insistence on scientific collection of data, with some rules to be strictly followed if one was to claim authenticity of the facts gathered.

2.3 Rules of Data Collection

Durkheim (1858-1917) in his *Rules of the Sociological Method* (1964, first published in 1895) recognised that the data must be collected not just anyhow, but keeping certain rules in mind. As Durkheim perceived it, social phenomena must have an external existence and must be treated separate from the representations of them in the mind. Descartes (1596-1650), in his book, *Meditations on First Philosophy* (first published in 1641; English translation published in 1991), laid the basis of the scientific method by the simple rule of doubt and advocated the strategy of beginning by doubting the truth of everything. You can say that in the same spirit, a truly scientific approach does not accept anything without proof and this discounts much of the second hand data relied upon by the "armchair" scholars. Also, scientists rely on data collected explicitly for the goals of the scientific endeavor. Collecting data is a part of the overall methodology of science and cannot be dissociated from the process of understanding. This step takes us further to considering the issue of collecting data without pre-existing biases that we may have in our minds.



Emile Durkheim (1858-1917)

2.4 Cultural Relativism

From the notion that the collection of data must be done without any subjective understanding, preconceived notions or prejudices came up the dictum that the scientist must remain ethically and emotionally neutral. The rule of cultural relativism is the outcome of such a mind set. For, one must accept that whatever does not belong to one's own culture is not "wrong" or "strange". The principle of getting over "ethnocentrism©", or regarding only one's own conceptions and values as proper, is something that is taught to all students of the social sciences but is the most difficult to overcome. I give one instance from my own field experience. While on a fieldwork tour to an interior village of Rajasthan with a batch of students, we realised that in most marriages that took place in this region the bride was older in age to the groom. While talking to one man, whose wife was eight years older to him and whom he seemed to love very much, I asked a rather foolish but to me at that time obvious question, "Why are the women older to their husbands?" The man looked at me in surprise and asked a counter question, "Are they not in your community?" and seemed surprised when I told him that they were almost invariably younger. His surprise made me realise the ingrained nature of our values and how difficult it is to overcome them, as we tend to take many things that are common in our own culture as "natural" rather than social. Similarly, Margaret Mead (1901-1978) in her work, *Sex and Temperament in Three Primitive Societies* (1935), had undermined all notions of femininity and

masculinity held as "natural" in western societies. My own class went into squeals of laughter when I described the men in their curls and make-up flirting with the plain-looking women of the Tchambuli, New Guinea (for details see Box 2.1). Whether or not Mead's descriptions were correct, they certainly dispelled the myth of "what is natural".

Box 2.1 Margaret Mead's Study of Tchambuli Culture

In December, 1931, Margaret travelled to New Guinea to study the Arapesh and later the Mudugumor and Tchambuli cultures. Here, her fieldwork consisted of studying sex roles in culture. Mead found that in Arapesh culture, both men and women were expected to be equal. This culture was found to be very simple as both genders actively raised the children. On the other hand, Mudugmor culture was very fierce. Both men and women were mean and aggressive. Often the children were left to fend for themselves and infants of the wrong sex were commonly cast into the river to die. This, in itself, was a very alarming experience for Margaret.



Margaret Mead
(1685-1753)

In Tchambuli culture, Margaret found that the sex roles were reversed. The women were brisk and hearty and the men were in charge of the household. These cultural differences were then published in another book, *Sex and Temperament in Three Primitive Societies.*

Source: The above excerpt is from www.mnsu.edu/emuseum/information

The objectivity© that Durkheim had aspired to introduce into the social sciences presumed that things could be identified according to their external observable characters and that it was also possible to classify similar phenomena. A very important dimension of classifying was how one defined a certain trait or institution. Many a time a feature may remain invisible or unrecognised if one looks for superficial resemblances only. In this sense, the definition of "external visibility" is to be exercised with caution. For example, the early anthropologists could not locate anything resembling a political institution among the so-called primitive societies. But later with their seminal work, *African Political Systems*, Fortes and Evans-Pritchard (1940: 6-7) recognised the political as embedded in other social institutions, such as kinship, and they identified it not by its overt form but by its function.

Durkheim undertook the analytical task of apprehending a mode of classification. In their essay, *Primitive Classification*, Durkheim and Mauss (1963; first published in 1903) distinguished symbolic classification of a moral or religious nature from practical schemes of technological distinctions (see Needham 1963: xi). At the end of his Introduction to Durkheim and Mauss's essay (English translation), Needham says, "It is the cardinal achievement of Durkheim and Mauss's essay, with all its imperfections, to have conceived the analytical notion of "classification" in sociological inquiry".

2.5 Problems Encountered in Data Collection

You may say that the scientific approach or even the social scientists' approach is to accept something only by way of its inherent properties, and not by any ideas regarding it. However, as has been realised with respect to social data, such an observation without interpretations, or the quest for inherent properties, is an illusion. Everything about society follows a system of meaning bestowed on it by culture or by humans. For example concepts like femininity, masculinity, etc., are all parts of meaning systems. There may be many societies where such terms hold one meaning and in others they may mean quite different things.

There is also the question of subjectivity as to what extent we can remain objective as observers when something that we see evokes intense emotions in us as human beings. In the social sciences the question has still not been resolved completely but certainly many social scientists have abandoned the stand of neutrality and you will find many scholar activists who consider it ethically wrong to remain neutral and emotionless when dealing with human situations. There is a recognition among such scholars that we can set up some universal criteria such as universal concept of human rights to intervene in situations that we enter as observers. Sometimes the entry may be for the specific purpose of intervention as in development studies or when social scientists are called in as advisors and consultants. But the debate whether to intervene or not to intervene is never-ending.

2.6 Difference between Common Sense and Science

If in the ultimate analysis what we need to rely upon is our sense perception of the social, the major question is how to exercise the use of the sensory with the caution that no ideas should be formed independent of the sensory perceptions. This is the fundamental difference between common sense and science, the common sense views rely on perceptions formed not necessarily with reference to scientific methods of causality. The natural sciences and the social sciences give more attention to the underlying causality rather than to superficial resemblances or lack of resemblances. It is for the scientist to look beyond individual manifestations to identify and classify phenomena.

We need to consider the significant contribution of social science research to highlighting false notions dearly held by people about the social world. Such ideas often manifest themselves as prejudices and become a source of unnecessary social conflict. Social science research findings, on the other hand, often tally with commonly held views and in those cases social scientists appear to be talking rather common sense things about social reality because their findings become an integral part of the everyday stock of knowledge. We have already considered the example of the

political. It can be shown that as far as the function of the political is the exercise of power or to negotiate such power differentials, it can be achieved through institutions and mechanisms that normally are identified as the family, kin relationships or religious rituals. All the same a social scientist has to go beyond dispelling false notions about social reality. There are rather complex issues facing social scientists who have to invariably deal with not only what are obvious, well known, routine matters, but also with digressive activities, which you may call not normal and sometimes also not ethical. It is not easy to define what is ethical and normal. Let us first discuss the issue of ethics (relating to morals) and then take up the issue of "normal".

2.7 What is Ethical?

Everything in society does not follow the same pattern. Whenever a social scientist observes actual human behavior and activities, there are always some differences of opinion about what is right and what is wrong. We have already discussed that the scientist is the one without any moral bias, such that what is right or wrong cannot be determined according to any particularistic principles, such as one's own value systems, but must have a universal referent. There has to be some universal criteria of well being, such as health, life and so on, by which we may judge an action to be right or wrong. But this is a question that has continued to plague the social sciences. By what criteria do we construct a universal code of morality or ethics? How do we reconcile the idea of cultural relativity with transcendence of ethnocentrism? For example, anthropologists have been accused of trying to find a justification for every custom found in any society including human sacrifice and infanticide. It is still a very big question mark as to how we judge the concept of right and wrong when they do not apply to us. As Barnes (1977: 2) has put it,

> The intellectual task of the natural scientist is greatly simplified because his data are, comparatively speaking, hard and reliable, and because the separation between him and the natural phenomena he studies is clear-cut. The social scientist, however, deals with data that usually are unreliable and fuzzy and, more importantly, his relation to the phenomena he studies is two-sided. The people he studies not only talk, they also talk back to him. Consequently it is his kind of science, rather than that followed by the physicist or chemist, that should be called hard if we wish to indicate the difficulty of the task he faces. Certainly the small amount of success achieved so far in social science, as compared to natural science, suggests that social science is indeed a hard undertaking. Ethical problems constitute a major component of its intrinsic difficulty.

Ethical questions come up also for the natural sciences. For example, we are all aware of ethical questions regarding weapons of mass destruction and genetic engineering. But, as Laszlo and Wilbur (1970) pointed out, it is only after scientific discoveries affect the humankind that we raise ethical questions about natural sciences. Otherwise, humans as such do not figure

into the theories of physics. In contrast to this situation, in the social sciences, we are dealing with human beings all the time and that is why we in social sciences have to continuously face ethical questions and it is just not possible to ignore them.

At this juncture, it seems a good idea to complete Reflection and Action 2.1 exercise for appreciating the ethical problems in studying the social reality around us.

Reflection and Action 2.1

Read the excerpt, given below, from Thapan (2004: 253) about her fieldwork in Rishi Valley School in 1981. Identify the nature of the problem in her fieldwork. Discuss both its ethical and moral aspects in terms of 'not to betray participants and lose their goodwill and credibility in the field' and 'the trust and confidence which has been placed in the ethnographer and which, in human terms, is not usually possible to betray'. In the light of your discussion, answer the following questions on a separate sheet of paper.

The Excerpt from Thapan (2004: 253)

It is the ethnographer who seeks to elicit the participants' cooperation and has thus to take the initiative to negotiate, cajole, and use alternative strategies to tease out, as it were, information which is secret and therefore restricted. This may include presenting different fronts to different kinds of participants, as I did, to make oneself acceptable to the entire community and thereby eligible for receiving secret information. Success with participants depends on the ethnographer's ability to handle interaction in a manner that engenders confidence and trust. Some participants may of course decline to enter into interaction and the ethnographer has no power to make them do so. Once the ethnographer has obtained information from others, who become friends and informants, the balance of power shifts from the participants to the ethnographer inasmuch as the latter may choose to use the information in any desired manner.

Questions

- Is it fair to drop some significant findings of the research because of the feeling of betraying 'my informants in the field'?
- Does the researcher really possess the kind of power she has after obtaining the sensitive and significant pieces of information?
- Is it necessary that practical, moral and human considerations need to determine the ethnographer's use of the material obtained during the course of research?

*** The academic counsellor is to please organise the debate on ethical and moral issues of social research and encourage the learners to articulate and express their views in this matter. Efforts may be made to record the discussion for broadcasting by Gyanvani.**

2.8 What is Normal?

The other dimension to studying the social world relates to what is normative that conforms to standard/ regular/ usual/ typical pattern. The task is to decide what is normative and what is pathological. To Durkheim (1964: 47-75), the decision of what constitutes the normal is the moot point on which social science rests. In the earlier phase of social science research, a kind of society was taken for granted that was

homogenous or everyone had the same values and norms. But increasingly it was realised that such a society was only the dream of ethnographers. There exists practically no human society without any differentiation and this means that for different sections of society, there may be varying values and points of view. An increasing criticism arose with the rise of the feminists and the also the subaltern and the Third-World perspectives. It was increasingly brought to the notice of the readers that what had been portrayed as normal and regular was such only for a section of society and even in the simplest society, this was only the world of men (See Box 2.2 Restudy by Weiner 1976 and 1977).

Box 2.2 Restudy by Weiner (1976 and 1977)

The path breaking restudy of Malinowski's field, the Trobriand Islands, by a woman anthropologist, Weiner (1976 and 1977), showed that what Malinowski had depicted as true for the entire Trobriand society was true only for the world of men. The world of women had been left out as if it did not exist, but it did and was an important dimension of life on the Torbriand Islands.

Such considerations led to revision of theoretical stances including that of "multiculturalism" that has now become an important dimension of social research in the context of the global movement of people from one country to settle down in another country.

Here we return to the scientific study of society and the assumptions and clarifications it entailed. Earlier, the evolutionary social scientists had assumed that it was possible to have a universal referent to judge the normal and more importantly there was something that was normal as compared to the pathological. The method to go about doing so could be statistical but ultimately, as even Durkheim (1964: 53-54) realised, one had to fall back on use of deductive logic.

One way to look for a normal social phenomenon was to look for its distribution in various societies of the human species, and if one kind of phenomenon is found in most communities, in spite of having variable manifestations, it may be taken as normal. For example, almost all human societies have some kind of grouping we can call a family, thus a family, of no matter what form, is usually supposed to be a normal condition of human societies and the breakdown or absence of this institution may be taken as pathological. This again indicates that there cannot be any truly objective and external conditions of normality, if normality is to be contextualised to its occurrence in different societies. Moreover while considering distribution or occurrence in space one cannot overlook temporal distribution of a phenomenon, again raising the question that what is normal at one point of time may not be so in other historical periods. For example, in the modern world, the term family may also denote a single parent family or a family with parents of the same sex; certainly such families would have been considered abnormal only a couple of decades back. In Durkheim's time, variability in time and space were

both explained by the concept of evolution, but today history has replaced evolution, making an important difference, progress is no longer seen as an inbuilt mechanism of transformation. In fact just as we had the concept of cultural relativity across space, the same can now be applied across time. We can truly be neutral about things that have happened and also about those that are going to happen. But as we have seen time and again such neutrality is not humanly possible about something that is occurring in the present. The acceptance of human subjectivity in the social sciences has ultimately given impetus to the emergence of the post-modern theory, about which you will read in later units of this book.

The "logical" normality of which Durkheim (1964: 54) spoke came under criticism as the logic of a particular observer. But Durkheim had been careful to point to the existence of "cultural relativism", to counter the "universal" laws of evolution posited by his predecessors such as Comte. He was also astute enough to separate the cause of existence of a phenomenon from its function, a teleology to which later generations of functionalists often fell.

This takes us to the question about how to make sense of the facts collected during a research.

2.9 Understanding the Data Collected

For a beginner in the social sciences, the use of the empirical approach means the collection of data that can be subjected to a theoretical analysis. Some kind of data had been rejected for scientific purposes when the emphasis was on a homology between the natural sciences and the social sciences. For example, the data collected by travellers and missionaries was rejected; as also the reasoning rejected historical data. One could not take the reliability of such data for granted. There was a presumption that we could view society as a functioning body that could be explained in terms of timeless laws like the functioning of a natural organism. The idea of "social order®" was one such concept that sought to explain many things, so were the concepts of "system®" and "equilibrium®". The only reliable data was the one collected by trained social scientists in the field by themselves. Even for purposes of comparison, one could legitimately refer only to the work of other social scientists and not to that of the "lay person" including the historian. In addition, as more and more "observers" entered the field it became apparent that the role of the "impersonal" observer was almost a myth. The raging debate between Margaret Mead and Derek Freeman over the data of the Samoans is a case in point (see Kloos 2004: 140).

The entry of the Conflict theorists challenged the build-up of theory around the concepts of equilibrium and social order. Increasingly it was felt that the observer tends to observe according to an unconscious and simultaneous process of 'internal' analysis.

The ignoring of history became an issue as it became apparent that no society is without a history. Historical documents, life histories, narratives and the verbatim statements of the observed became more and more a part of the observed data in order to overcome the subjectivity of the observer. Instead of "logic", the role of intuition became more recognised in the process of scientific observation (See Box 2.3 Dan Sperber's Comment on Intuitive Understanding).

Box 2.3 Dan Sperber's Comment on Intuitive Understanding

Sperber (1982) said that the knowledge that is acquired in the field is brought home as loads of data, in the form of field diaries, films, recorded interviews, filled schedules, maps, historical documents, life histories, pictures and genealogies. But along with it is the intuitive understanding that a scholar acquires into this field area by his/ her long exposure to a culture.

It has been recognised that to get an intuitive understanding a researcher has to spend a long time with the people or situation to be studied. By the time the work is complete, along with the factual or material data, the scholar acquires an empathetic understanding by which he/she starts to understand the world through the eyes of the people she/ he has spent time with. Things that appear strange in the beginning start to fall in place. While presenting the data the social scientists then recast it in the mould of a general level of conceptual understanding shared across the discipline and tread an intermediate path between the intuitive understanding that is purely personal and the interpretation of data that presents this understanding in the form of a general conceptual framework.

What remains important is that just the collection of data or mere observation does not serve the purpose of understanding. What makes the crucial difference between a good work and a mediocre one is the level of intuitive understanding that a scholar can bring to the data.

One important dimension of collection of material for analysis is that in spite of one's best efforts it is not possible to see and observe each and every thing in the field situation. Scholars who believed in the scientific and objective nature of their work, abstracted from the particular to the general, and concluded that there existed a homogenous society. In this sense, what was being said was meant for the entire society as a whole. To a large extent such a method is followed even today but attempts are made to identify the diversities within groups and cultures. Therefore, everything that does follow a set pattern is not assumed to be deviant but diverse. A method often used that of statistical frequency does not always yield results that are true representations of the situation. A statistical frequency often yields only a result the causes of which have to be deciphered by more qualitative and intuitive-deductive analysis.

Let us take for example the statistical data regarding sex ratio. A mere statement that there are many missing women in Indian populations

does not tell even the beginnings of a story of woman's marginalisation and trivialisation in a male dominated society. Moreover even an attempt to go into causality does not lead to uniform causes of the same phenomenon, thus the neglect and even willful killings of female children and even adult women has many deep seated and immediate causes and not all stem from tradition. In fact the alarming fall in the sex ratio as India is getting more and more modern and global has led many scholars to look for causes not in the past but in the present itself.

In most societies, no matter how small and confined, many voices exist. In day-to-day life people do not act according to already laid-down scripts. The normative is often expressed in words but not followed in deed. Even the normative is being constantly manipulated and modified as Barth (1987) has shown in his book, *Cosmologies in the Making*. The person who has the repository of oral knowledge has also the means to modify it. Thus oral traditions transform themselves as they pass from mouth to mouth and from generations to generations and travel across space and time. Another kind of activity of digression may be simple individual convenience or exigency. Most of us are familiar with such 'adjustments' in rituals and performances of daily life and even life cycle activities like marriage. A third kind of digression may be deliberate, an act of rebellion or defiance. Such acts have been studied under the label of contra-culture and often refer to the acts of resistance of marginal groups in society like women and the underprivileged.

2.10 Managing Diversities in Social Research

While collecting data for sociological research, we need to recognise that diversities have to be both accepted and also explained in terms of the meanings they express. Social science observations are time consuming and require painstaking sincerity in recording data. There is no short cut if one wants to get a real understanding of social phenomena, for all such phenomena are complex and have multiple causations and effects. As Holmswood and Stewart (1991) explain it, when explanations in the social sciences become problematic, one has to accept rather than ignore or reject them. Moreover the search for a perfect explanation is also illusory and one has to accept that human beings are creative and have freedom of expression. This is again not to say that no regularities can be observed or no generalisations can be made, for if this were so, there would be no social science possible. The social scientists often tread a delicate balance between regularities that are real and those that one would wish to impress upon one's data. This is the classic duality between structure and action that has to be faced in the social sciences. You can argue that the wider the applicability of our generalisations, the more we lose out on ground level explanations of particular events. The general often remains an essential condition for explanation of the specific.

There is still another problem that empirical observations and

interpretations have to deal with. What do we do when certain things that seem to lie beyond our own sensory perceptions appear to be well within the sensory perceptions of others, or at least that is what they claim? How do we interpret it when we are told in the field by our informants that they see spirits on a regular basis or they converse with the dead as they converse with the living or that they have spouses and children in the other world with whom they communicate all the time (See Box 2.4 The Saora Example)?

Box 2.4 The Saora Example

The Saoras, a tribe of Orissa, do not observe a division between the dead and the living. According to them, the dead have simply gone to live in another place, quite near to their own place of residence. They meet on a regular basis and converse. To the Saoras this poses no problem and they often talk about a person they had met while gone to the field or to the market, but the only problem for the social scientist would be that the person is long dead. They also have their spouses and children in the spirit world with whom they keep in constant touch.

How does one explain the Saora example given in Box 2.4? If one should follow the 'scientific' rationality of relying only on one's senses then the only way to explain this would be to either say that everyone in that culture is suffering from hallucinations or is speaking lies.

Another way to explain this could be that people of different cultures have different cognitive abilities and can actually see things that we cannot. This would be something like the work of Castaneda (1971) that went beyond the credulity of many but was also accepted by many others.

A third way to explain it would be that there are culturally learnt mechanisms of deriving meanings from some optical and other sensory perceptions that elude us. For example, while working with a mountain community I was told that when a person was about to die, a *lama* was called in to observe the passage of escape of the soul from the body. I asked the obvious question as to how did a *lama* observe such a phenomenon and was answered by equal incredulity as to why should he not! Thus what is incredulous to us may be very obvious and commonplace to another, but if it stretches the limits of our credibility then what is to be done?

Evans-Pritchard (1937), on the other hand, explained the phenomenon of witchcraft among the Azande by reducing the entire experience to a positivist one, and subjected it to a rational positivist, functional analysis. Here he ignored the apparent subjective experience of the actors and concentrated on the overt or even covert functions that were performed by the experiences. He took them as given conditions without comments. To the analyst it does not matter



E E Evans-Pritchard
1902-1973

what the Azande felt emotionally or experientially about witchcraft. The analyst focused on the role that witchcraft played in maintaining the social order.

In yet some other cases the analyst may concentrate on the meanings that these experiences have for the actors and then integrate the individual experiences into webs of significance. This is the approach taken by Geertz (1975). But most scientists have skirted the issue of truth of the experiences and of the "seeing" and "experiencing" of the actors.

Some more recent scholars have not shirked the issue of sharing in the experience of the actors in the field situation. For example, in one instance, Sax (2002), who participated in the performance of the Pandava Lila in Garhwal, recounts being transported into an other-than-ordinary experience while participating in the dance. One more dimension about the study of culture is the relative importance of the verbalised behavior and the non-verbal one. Scholars of culture have often equated culture with language, prioritising the verbal over the non-verbal by the logic that human beings are more into verbal communication and that non-verbal behavior, being more "natural", is in the realm of "animal" rather than human behavior.

Yet another category of scholars, such as Ingold (1986) and Gell (1992), has looked upon culture as a way of engaging with the world and the manner of this engagement is a dialectic relationship with the environment. Human beings engage with their environment forming their own interpretations as a result of this interaction and not the other way round. In other words, we do not always interact with a culturally created environment of meanings but that our physical interactions that are natural to begin with imbue the environment with meaning that then becomes transcribed into it. Such meanings , in the absence of written records, may be only partly passed down and partly recreated each time an individual engages with his/her environment. Thus a child born into a hunter-gatherer group learns about the environment by walking in the forests, by trying to satisfy hunger by plucking fruits and catching animals and trying to survive and find its way around. An illustration of such a work is *Nisa: the Life and Words of a !Kung Woman*, which deals with the real life of a hunter-gatherer woman who lived in the bush and that was recorded by Shostak (1981).

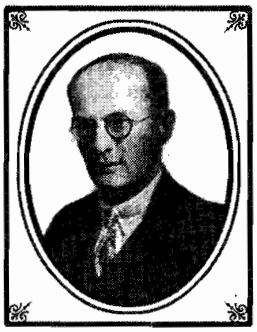
The lengthy section on managing diversities in social research takes us to the subject of understanding the basic goal of one's research. Let us discuss this issue in the next section.

2.11 Problematising the Object of Study

We need to be prepared to problematise the object of our study. How do we understand the basic goal of our study, how do we conceptualise society and culture? Unlike the natural sciences we do not have anything concrete in front of us that we *see* as society or culture. What we do

actually is to *infer* it from our observations and our assumptions.

The process by which we can infer can become quite fuzzy and debatable.



E B Malinowski (1884-1942)

For example one way in which one can refer to society as one's object of study is by its geographical definition. For example, Malinowski (1884-1942) studied in 1922 the Trobriand Islanders as a unit of study, Mead (1901-1978) studied in 1928 Samoa, Radcliffe-Brown (1881-1955) carried out his major research in 1922 among the Andaman Islanders and so on. One would presume that each of these exotic locations also contains a unique culture. The society can also be defined in terms of some other boundary, say of marriage. Thus a caste or *jati* can be defined by the boundaries of endogamy. There can be other criteria of membership as well. But not all units have such boundaries; say if one wants to study a religion like Hinduism, the field would appear vast and unbounded. Sometimes what one wants to study may not be defined in one location; say a *diaspora* or an immigrant group that cannot be studied with reference to one location only. Even when one is bound to a location, the social phenomenon need not be bounded, thus one cannot study a village in rural India without understanding the effects of mass media and national politics on it. Increasingly the availability of a bounded society is being questioned and we have techniques such as multi-sited ethnographies and networks to replace the earlier concept of a system.

Often the term society is reduced to a subjective rather than an objective unit. A society or community is one because the actors or participants define it as such. Thus the simple way to study Hinduism would be to study those who call themselves Hindus rather than trying to devise an external definition for it. A culture could thus be the maximum amount of shared representations about the world that exist across a unit we call a human group. Often such a group by the very fact of sharing of representations is defined as a society. Such sharing of representations or culture is not rigid, it transforms and diffuses and transplants itself. While studying a unit of society in India, say among the youth, we cannot overlook the influence of various cultures, including that of the USA and Japan and so on. Here the task would be to separate the imposed from the original, but even such a task may become very complex, as one must take into account the historical development of ideas and interpretations of the world.



A R Radcliffe-Brown (1881-1955)

In a more conventional sense, Anthony Giddens (1984: 163), in *The Constitution of Society*, mentions the following two primary senses of the concept of society.

i) The generalised connotation of social association or interaction, (the standard definition that is given in the classrooms of a network or pattern of interaction between social actors)

ii) A relatively bounded unit of social relationships forming a system of interdependency that distinguishes it from other such systems.

(This was the manner in which societies were distinguished in classical times. But today such bounded units are hard to locate and define and increasingly it is being realised that such units may have always been an anthropologist's wishful thinking.)

What does a social scientist look for while trying to find a unit of study to be defined as a society? In some cases one may look for the boundaries of linguistic understanding, so that it becomes synonymous with a culture, or it may be a self-defined tribe, or caste or a geographical unit like a village.

However what problematises society is its original dissociation from the individual by Durkheim (1964: 4). The social scientist in the field has to interact with and observe individuals and not society. If the individual is seen analytically opposed to society, then to make sense of one's findings a social scientist would ignore the actors altogether and create one's own version of the structure through a process of abstraction. But if society is the product of a process of theorising then like all theories it is contextualised in time and space. What is society then becomes itself a social activity subject to rules of power. Take for example the manner in which Indian society was defined in the colonial era by the colonial administrators with the help of social elites of India, like the Brahmins and rulers. The version of Indian society and history that was thus constructed prioritised both Brahmanism and patriarchy. Paradoxically the constructions are not mere abstractions but if created by a source of power they translate themselves into reality and thus as social historians have been able to demonstrate, colonial rule did reconstruct Indian society into the form into which the colonials had imagined it. But in spite of this reconstruction there was a reality about society that never made it to the official version. Much later subaltern historians made attempts to salvage this history.

2.12 Conclusion: Return to Good Old Empirical Approach

Considering the various problems encountered in trying to make sense of the data collected, we keep coming back to the sanctity of the term empirical reality, while dealing with the terms of society and culture. The greatest tension lies in the relationship between individual and society. The theoretical disparity remains for us to resolve regarding whether we accept the positive school, which admitted an existence of society over and above that of the individual or we merge the two in a subjective post-

modernist interpretation. The status of the text as a document of reality or as a script for the subjective interaction of the observer and the observed is still a subject of debate.

Even if we take the latter stand that all reality is interpretative and a form of reflexivity then also the guide for successful presentation of data would rest in the truthfulness of the representation. In fact those advocating for the latter approach accuse the positivists of imposing their own rules while systematising the data. In other words things have been distorted to fit into neat compartments whereas the reality is never so neat. Those who had talked about regularities and systemic patterns overlooked the validity of the irregular. In fact the definitions of the regular and irregular were tailor made to fit into the preconceived notions of the observer. What ultimately emerge are the perceptions of the observer neatly and systematically validated by selectively presented data. Foster (1965), restudying the village of Yucatan, accused Robert Redfield of seeing harmony and social order where the reality was fraught with suspicion, disharmony and covert conflict.



Robert Redfield (1897-1958)

The only way is to keep as close to the observed reality as possible, to act as a mediator rather than as an interpreter of data. The present genre of social scientists especially those dealing with field realities prefer to stick as close to the narrative mode as possible, thus acting more as translators on behalf of the actors in the field. The best mode is to assume that the knowledge lies with the actors and not with the interpreters that society is what it is as a result of the interactions and activities of the actors as they engage with the world. The Durkheimian dialectic of the actor and the society is seen as more or less not valid just because society is no longer viewed as the systemic, bounded reality of shared representations as positivist scholars held it earlier.

There is also an attempt to view things not only as they are but also how they came to be. Thus history has become an integral part of social science interpretations as well as power relationships and their formation.

A part of power relationships is also the vantage position of the scholar, the position from which he/she speaks and represents the world. It was increasingly felt that the subject position of the scholar has been assumed to be "white' and "male" thus "othering" all those who belonged to the Third World, the Black and the Female. The word "I" used in many ethnographic narratives always invoked the male, white scholar with his western scientific rationality. For example, while almost all male white scholars looked at the world as patriarchal and male dominated, women scholars often found contra cultures where women had their own modes and ways of countering male domination and their own strengths and

voices. Contrarily men often missed out on forms and manners of oppression that were visible to women. This is only one example, others can be of studies of the caste system from the bottom up, studies of feminism from the perspective of black women, studies of indigenous people by indigenous scholars and so on.

Let us end our discussion in this unit by completing Reflection and Action 2.2 exercise for working out the ways of dealing with differences between the researcher and the researched.

Reflection and Action 2.2

The following excerpt from Karlekar (2004: 378-379) shows the theme of her search for women's voices. Read the excerpt and if possible read Karlekar's article itself and consider the possibility of yourself carrying out a research among the people of a socially marginalised group of society in India. In that case how would you face the dilemma of facing the differences between your gender/ class/ caste/ social status and the consequent sense of unease at a personal level and methodological assumptions of social sciences at the professional level? Write your answer to the question on a separate sheet of paper and discuss the issues raised in the following excerpt with fellow-learners at your Study center.

Excerpt from Karlekar (2004: 378-379)

When at the end of fieldwork I told my respondents that they had been of considerable help to me, Shanta, who had become quite a friend, said, "Bibiji, aap to apni kitab likhengey, par hamara kya hoga?" (Bibiji, you will write your book, but what will happen to us?) I had no honest answer to give her, just as I had not really been able to deal with the persistent question of many women: "Bibiji, hamey issay kya milega?" (Bibiji, what will we get out of this?)... ...I rarely allowed myself to think too much about these uncomfortable questions during my visits to the colony. When I sat down to write my report, however, many images continued to flit through my mind. .... I was not always sure of how I should write about the lives of the women I had spent days with. While I knew any act of telling to be interpretive in nature, I was nonetheless anxious to be as "true" to my respondents' reality as was possible. I also knew that when those under study are physically and mentally subjugated by society and by men, the moral overtones of a fieldworker's intervention and probing have implications of a different order. Inadvertently, one may be initiating a process of self-analysis, of consciousness-raising, among a group, which has little hope of escaping from the bondage of daily life. The resultant frustration and anger are in this case the direct responsibility of the fieldworker, who becomes an agent of exploitation.

Further Reading

Glaser, Barney and L. Anselm 1968. *The Discovery of Grounded Theory*. Weidenfeld & Nicolson: London (For its focus on developing theory in the process of doing research)

Winch, Peter 1958. *The Idea of Social Science*. Routledge: London (For its argument regarding subjectivist version of what social science should be about)

Unit 3

Diverse Logic of Theory Building

Contents

3.1 Introduction
3.2 Concern with Theory in Sociology
3.3 Concepts: Basic Elements of Theories
3.4 Why Do We Need Theory?
3.5 Hypothesis, Description and Experimentation
3.6 Controlled Experiment
3.7 Designing an Experiment
3.8 How to Test a Hypothesis
3.9 Common Methods of Testing a Hypothesis
3.10 Sensitivity to Alternative Explanations
3.11 Rival Hypothesis Construction
3.12 The Use and Scope of Social Science Theory
3.13 Theory Building and Researcher's Values
3.14 Conclusion

Learning Objectives 

It is expected that after reading Unit 3 you will be able to answer the following questions.

- What do we mean by theory?
- What are the constituents of theory?
- Why do we need theory?
- How do we build theory?
- What is the use and scope of social theory?
- How do values held by researchers affect theory building?

3.1 Introduction

After discussing in Unit 2 the basic logic of understanding social reality around us in terms of empirical investigation, we will discuss in Unit 3 why and how sociologists arrange in fairly compact theories their propositions about the social world.

Before reading Unit 3, it would be well to appreciate that emphasis on theoretical formulations and methodological rigor in empirical research go hand in hand and do not in any way pose any problem of ascendance of one over the other. Your logic of theory building is your asset to carry out a useful empirical investigation and vice versa, a methodologically sound social research leads to growth of verifiable and valid outcomes in terms of their theoretical significance.

In the light of the above clarification, it makes more sense to read Unit

3, which elaborates the process of theory building, that is, deals with hypothesis, description and experimentation. In addition, it discusses the use and scope of social theory and the issue of social scientists' values affecting theory building. As in Units 1 and 2, discussions in Unit 3 also follow the pattern of informal and narrative style with examples from sociological writings.

3.2 Concern with Theory in Sociology

Theory refers to knowledge arranged so that the facts are subsumed under general principles. The difference between commonsensical knowledge and scientific knowledge is that the latter is systematised and classified. But only classification does not make any knowledge scientific, what really makes it scientific is that while commonsensical knowledge is satisfied most often with the desired effects, science looks into the causes of a phenomenon. It is the task of theory to organise such causal relationships into observable repetitive or classifiable regularities so that one can make general observations that encompass diverse but related phenomena and explain them by not individual and specific relationships only but by a higher and abstracted general relationship.

To look for causes underlying any observable phenomenon is the first task of science for otherwise as often happens with respect to commonsense, people expect or demand contradictory goals without realising that they are doing so. Establishing the correct causal relationship between facts is followed by bringing together diverse facts within a single frame of causality; the process by which this is done is called theory building for the resulting relationship is often called a theory.

In other words, you can say that there are three constituents or properties of theory, namely, i) explanation, ii) prediction and iii) verification. The systematically interrelated sociological propositions, which hold in different contexts, comprise theories. You can put to test each of these propositions as to how well it conforms to data and how well in relation to each other the propositions account for the outcomes in a given setting. If such a prediction is possible, you can say that the result has been explained in terms of known propositions. While verifying the sociological propositions, one needs to look for a logical relationship as well as empirical relationship. As you can make out, explanation, predictability and verification in sociological theory building are closely interrelated elements. We shall now discuss them in detail.

Before we go on to the discussion, it may be a good idea to carry out one Reflection and Action exercise right in the beginning of the unit in order to fully appreciate what is meant when we suggest that to look for causes underlying any observable phenomenon is the first task of a social scientist.

Reflection and Action 3.1

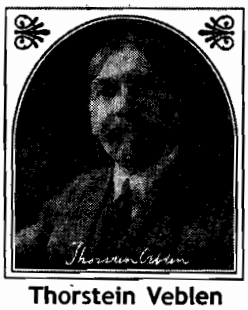
We have given below an example of the underlying cause of overcrowding in cities in relation to a commonly held perception of city dwellers. You need to write on a seperate sheet of paper another similar example based on your own experience.

The Example

One example is that of city dwellers, living in cities and often complaining of overflowing slums containing migrants from rural areas. They also complain of inadequate electricity but do not realise that it is largely to fulfill the exorbitant requirements for power of big cities that mega hydroelectric projects are built and these projects often displace large volumes of populations that have no recourse but to throng the slums in the cities, thereby increasing the burden further on the resources of the cities.

As said earlier, we look at theory as 'an account of the world which goes beyond what we can see and measure. It embraces a set of interrelated definitions and relationships that organises our concepts of and understanding of the empirical world in a systematic way' (Oxford Dictionary of Sociology 1998: 666). In this sense, we can agree with Waters (1994: 3), who says that social theory needs to be abstract and separable from the social practices that the theory has addressed. Such a theory needs to also focus on a specific thematic argument that runs through the set of propositions providing them coherence and force. Next, the theory has to be logically consistent and explanatory, that is, it needs to have a thesis about social phenomena to account for their form or existence. Further the theory is to be general enough to account for all instances of the phenomena it proposes to explain. Also the theory cannot be reduced to the explanations informants or participants themselves provide to explain their behavior. Finally, the theory needs to be substantively valid, that is, it is to be consistent with what is already known about the social world by its participants and by the social scientists, including other sociologists. This means that it should be possible to link the theory to other bodies of knowledge.

The best way to test the validity or truth of a theory is to test its predictability. For example, Thorstein Veblen (1857-1929) had collected together some properties of the elite in society, designated by him as the theory of the leisure class (see Veblen 1899). The validity of this theory lies in how often and how predictably will the persons belonging to the elite class exhibit the properties so designated.



Thorstein Veblen
(1857-1929)

The sciences by definition need to be predictive on the basis of their theories. In the natural or so-called 'pure' sciences, there is a set limit on the probable range of failure of predictability of a theory before it is rejected. In the social sciences, theories rarely have that capacity for predictability yet some degree of ascertaining the truth of a situation has to be assigned to any

statement for it to take on the mantle of a theory.

It is now time to complete Reflection and Action 3.2 for looking into the predictability capacity of theories in sociology.

Reflection and Action 3.2

We are giving below an example of theory that owing to other variables has the limited capacity for predictability. Identify similar examples from the theories you have learnt in MSO 001. Compare your examples with those of other students of M A Sociology at your Study Center and select five best examples of such theories and discuss them in terms of their capacity for predictability and presence of other variables that inhibit large-scale prediction. Select a panel of four to five learners to present and discuss their examples to show the difference between commonly held views and scientifically analysed reasons behind a phenomenon.

The Example

One example is that of exchange theory, which states that the principle of exchange or equivalence of transaction of 'give and take' underlies much of human behavior, including marriage and nurturance of children. However other variables such as power and altruism intervene to explain situations that recurrently digress from the principle of equivalence. Moreover it is also recognised that human relationships operate on the basis of non-material considerations such as prestige and honor in determining dimensions of exchange; like the flow of goods from persons of lower to higher status. In the social sciences we find that because of the complexity of human life and behavior, the situations of predictability are intervened by a large number of factors. A one-to-one causality is rare in the social sciences though it is possible in mathematical sciences and natural sciences.

***The Academic Counselor of MA Sociology programme is requested to organise a recording of the panel discussion among the learners, in collaboration with the IGNOU Regional Center in your region.**

After completing the section on concern of theory in sociology, let us look at building blocks or basic elements of theories.

3.3 Concepts: Basic Elements of Theories

Whenever we are talking in terms of theory there is a necessity to use a kind of vocabulary that is often specific to a particular discipline and contains terms that we call concepts. These concepts are nothing but short hand versions of a large range of phenomena that may be brought under one heading to describe something. Concepts are basic elements of theories and we develop them through a process of definition. Theories basically connect concepts to one another in a logical manner. Let us take for example the concept of culture. When a social scientist uses the term 'culture' in any written or oral discourse, the meaning of the term is roughly comprehensible to anyone who has knowledge of the discipline. Each concept is usually accompanied by a standardised description called its definition.

In the natural sciences such definitions are very precise but in the social sciences they may not be so. Anyone who has struggled with the definition of culture in the first year of joining sociology will know how difficult it is to find a one-line definition of culture. Even today, most persons may not agree on any definition whatsoever. Yet most social scientists would have a fairly good idea of what is meant when the term culture is used. Thus all scientific disciplines have their own terminology of concepts popularly known as the scientific jargon.

The concepts are abstractions that are not made randomly but by a recording of structural properties rigorously selected from the visible traits exhibited by the phenomenon under study. Although such selection can be made on the basis of statistics, the ultimate construct is made intuitively or deductively. As far as possible it is ensured that the properties selected are of universal occurrence.

Let us once again take the example of the concept of culture. It is universally recognised that although the capacity for culture building may be a genetic mechanism, culture by itself is a learnt behavior as proven by the example of children who have been deprived of being nurtured by human adults. This learnt behavior is transmitted over generations but is also capable of being transferred to other groups and transformed over a period of time. The traits, which often go into the definition of the concept of culture, have been abstracted from actual observations and recording of human groups and their behavior. Also, it is quite likely that certain properties considered to be true at one point of time may be given up or modified when fresh evidence comes up. For example, the proposition that only humans are capable of culture is being modified by fresh research on non-human species.

Propositions in all sciences are always open to scrutiny and continued research in a scientific manner means that we keep testing earlier statements for their validity. This is why science is recognised as a never-ending process and that is why in the social sciences few concepts achieve the status of universal and timeless truths as in mathematics. Statement of absolute validity, like two plus two is equal to four, is rarely possible in the social sciences. There is always recognised a difference between "theories" based on constructs and "experimental laws" based on facts. In this sense, the social sciences are by and large theoretical and not experimental. All the same we build theories in the social sciences. The question arises, why do we need theories? Let us try to answer the question.

3.4 Why Do We Need Theory?

The need for theory lies first of all in that theories help us to put order in a bewildering range of phenomena that might seem unrelated. But with the help of theory, we may summarise in terms of a few principles the

nature of the relationship between them. The more abstract a theory, meaning the more generalised a theory, the wider is its application but the further away it is from actual situations. You may say there are two types of theory, namely i) formal, and ii) substantive.

Formal theory is most inclusive and basic in the sense that it aims to isolate a single set of principles, which are the foundation for social life. Through these principles you can explain every social phenomenon. Its paradigms give birth to grand theories. Evolutionary theory is an example of a grand theory, which makes some broad generalisations regarding the nature of society and the nature of transformations that one expects to see, but it would not be very predictive when applied to everyday realities of life except in a very broad sense. The last significant attempt to write grand theory was made by Sorokin (1962). His theory on social and cultural change attempts to establish two basic law-like generalisations (for details of Sorokin's grand theory see Zetterberg 1965: 15-16).



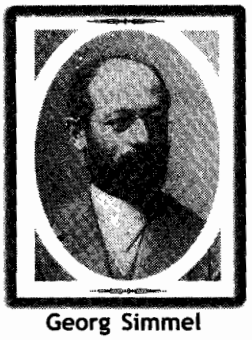
Pitrim Sorokin
(1910-2003)

As a reaction to writing grand theory, Pitrim Sorokin's student, Robert K. Merton (1957: 5-10), formulated theories of middle range. You can say that these are miniature theories or partial theories. Such theories endeavor to explain specific but generally branching out events or specified types of the social process. When we designate a theory partial or middle range or miniature, we mean that this theory does not contradict other accepted theories. Examples of such middle range theories are Pareto's theory of elites (see Finer 1966), Murdock's (1975) theory of kinship structures, Homan's (1950) theory of elementary social behavior.



Robert K. Merton
(1910-2003)

But whether grand or middle range, a theory is a necessity for it simplifies the tak of dealing with reality. A theory provides a means for dealing with reality in terms of providing neat and compact explanations that can be set into a known explanatory framework. In this context you may like to quote Simmel (1898: 829-836)), who said that "...we shall discover the laws of social forms only by collecting such societary phenomena of the most diverse contents, and by ascertaining what is common to them in spite of their diversity". Simmel's (1858-1918) assumption is that sociology can discover a small number of propositions, which would be verifiable in diverse contexts. In this sense, you may say that the task of the sociological theorist is to discover general propositions. Such an effort generates



Georg Simmel
(1858-1918)

systematically interrelated propositions. Only after generating such propositions can we test a theory. To test a theory, we need to check how well each proposition of the theory conforms to data (see below the discussion on hypothesis, description and experimentation). Interestingly, often the situation is the other way round and most of those engaged in social research collect data and look for theories to make sense of their data.

In fact the task of collecting empirical data often culminates in the scholar trying to make sense of the data in terms of available theories. If such a task is successfully accomplished,then the data stand explained. However, if the data refute or contradict the theory then they provide a basis for reformulation of the existing theory or a new theory altogether. For example neo-evolutionary theories such as that of Leslie White (1945, 1947 and 1959) were modifications on the evolutionary theory. The replacement of the evolutionary theory by the functional theory was a refutation of the earlier theory and its replacement by another.



Leslie White
(1900-1975)

The second task of theory, apart from the first one of explaining reality, is to generate a hypothesis that can be tested. We shall now discuss this process in detail as this helps all young researchers to initiate their research projects.

3.5 Hypothesis, Description and Experimentation

A theory by itself is an abstract proposition that cannot be tested. It is also true that a process of deduction can only construct a theory, even when it is based on inductive empirical data. What a theory does is to generate a hypothesis that can be tested. The reliability of a theory lies in the testability of its hypotheses. Skepticism regarding the evolutionary theory began when it was realised that the hypothesis generated by it, such as for example whether or not patriarchy precedes matriarchy, could not be proved empirically. Moreover the methodology used for proving these hypotheses were suspect. The closer the hypothesis generated by a theory comes to the reality, the better is the theory.

Not all research is directed towards hypothesis testing, as in the social sciences in particular there can be a descriptive research that seeks to explore hitherto unknown territories.

A hypothesis only posits a logical relationship between phenomena to be understood and is in itself not a description of reality, and may not correspond to every actual case on hand. For example, the hypothesis that urbanisation leads to disintegration of the joint family is only a logical relationship between a particular form of family and urbanisation

that seeks to state that whatever urbanisation stands for in terms of its very definition is antithetical to what the joint family stands for, so it is logical to presume that with greater urbanisation the joint families are likely to break up. But this is not a deterministic statement about all joint families actually breaking up. It merely wishes to state the reality that whatever values or states of mind that urbanisation fosters like individualism and competitiveness are at variance with the sentiments that bind families together.

The hypothesis is, in this sense, a deductive statement that needs to be proved inductively.

The various ways in which theories can be constructed depends on the type of questions asked and the basic assumptions or premises that are accepted as given truths in any situation. There are also no fixed rules or methods by which one enters into a scientific investigation and often methods have to be devised according to one's requirements. For example, the scholars who developed the Culture and Personality approach had to develop their own techniques such as collection of children's drawings, recording of dreams, administration of Rorschach ink-blot tests[◎] and so on, methods that had not before been used in any sociological or anthropological fieldwork.

The two broad divisions of the logic of theory building in the social sciences is between those who consider the natural sciences as a model for building theory in the social sciences as well, that is to look for universal laws and invariant truths regarding society and human behavior. The other point of view denies the possibility of ever establishing such "truth" because of the creative and diverse nature of human beings. The latter point of view supports the idea that all observations regarding society and human behavior are contextualised in historically situated human groups and can never be universalised. However a modification of the first point of view is that the social sciences are as precise or non-precise as the natural sciences because even the propositions made by the latter often have limited application and are subject to modifications from time to time. In other words there is an attempt to review the definition of science itself.

A number of problems may be listed to provide an answer as to why the social sciences are not capable of furnishing universal laws of the experimental type. One of them is the difficulty faced by sociologists in carrying out a controlled experiment. Let us discuss this problem.

3.6 Controlled Experiment

The first of this is the lack of the possibility of setting up of controlled experiments to test a hypothesis. A real controlled situation is one in which the scholar can manipulate the variables at will. For the social scientists ethical and moral constraints put a restriction on such

manipulations, but sometimes an attempt has been made to take ready-made situations that exhibit properties of controlled comparisons (see Reflection and Action 3.3).

Reflection and Action 3.3

An example of a controlled comparison is the study by Epstein (1979) of two villages in South India. The following paragraph describes how Epstein used the methodology of comparing identical situations in every respect except for one variable.

Description of the Controlled Comparison

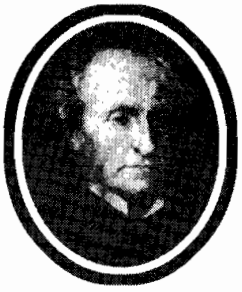
These two villages Wangala and Dalena were identical in terms of culture, social norms and structure of social relationships. Epstein's hypothesis was based upon the then popular structural-functional model that assumed interdependence between the various parts of the social structure. It was hypothesised that the introduction of outside technology would affect the economic dimension and thus upset the earlier harmonic interdependence between the various parts of the society. The two villages selected had different technological bases, one was a dry village depending solely upon rainfall for irrigation and the other had permanent sources of water from tanks and wells. With the introduction of water from the Krishnaraj Sagar Dam built in 1931, both villages underwent changes. The wet village, Wangala, strengthened its earlier forms of social structure, by the increased cash input from better irrigation facilities and the switch over to cash cropping. The increased economic input led to a continuation of earlier structural elements like caste, performance of elaborate rituals and reinforcing of the role of caste and village panchayats. But nothing new, not even electricity, was introduced into the village. The dry village, Dalena, underwent more radical transformations in its economic roles and relationships. While it could not switch to cash cropping, people underwent transformations to non- agricultural activities. People started going to the nearby town for jobs and education and the village became structurally different from what it was before. What Epstein is able to show in her research is that the same economic change, namely irrigation from a dam, can bring about drastically different results in two villages otherwise identical but having different resource bases. The two villages are comparable because they belong to the same region, same culture and had the same type of social structure to begin with. The outside source of change is also identical, the only variable that differed was technology.

What are you expected to do?

Read the example carefully and identify one more such controlled comparison in the social sciences. Write, on a separate sheet of paper, its description, similar to the above example, in order to highlight the hypothesis and the theoretical context employed to provide explanation(s) of the social phenomena under study. Try to look for a possible example(s) from the articles in the special issues of *Economic and Political Weekly* (15 June 1996) and *The Eastern Anthropologist* 53 (1-2) 2000.

This kind of methodology with ready-made situations of comparability, where two field-situations could be identified that were identical in every respect except for one variable was popular for a while. They followed what John Stuart Mill (1806-1873) had called the Method of Agreement or the Method of Differences, in which two situations were either unlike in all respects except one or were alike in all respects

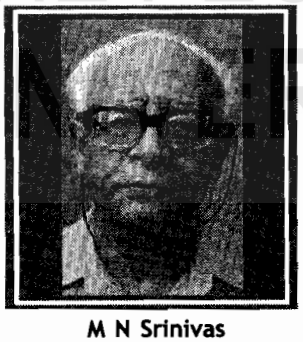
except one. According to Mill (1930) such situations could never occur naturally or under unmonitored conditions and since they were a necessary condition for the stipulation of general laws, the social sciences could never aspire to do so. The criticism of Mill is that even under the most stringent experimental conditions such ideal conditions may not be achieved or cannot be achieved as some variables may be related in such a manner that one will automatically change if the other is varied.



John Stuart Mill
(1806-1873)

3.7 Designing an Experiment

The other kind of theory building process was the use of actual experimentation in the laboratory. Such methods are often commonly used in the fields of Psychology and even culture personality and socialisation and child rearing studies. Experiments entail comparision of what happens in the situation of the control group with what happens in the experimenal group. "Control" in this context means holding one factor constant while others vary. However the obvious drawback is that not very many social situations can be reproduced under laboratory conditions. Sometimes the changes that occur in natural conditions are of far greater magnitude than those which can be produced artificially or the emotional content is far more intense in real life than under experimental conditions. The element of play-acting may also creep into such situations. In addition, it is possible to set up field laboratories where in real-life situations one can examine the variables, like in a classroom or factory.



M N Srinivas
(1916-2000)

But more often theory in the social sciences is directed towards viewing the effects of a certain phenomenon upon another or on society in general. Like a particular variable may be chosen, like dowry or building of a factory or the introduction of television into an area. Then the effects of the introduction of this variable upon the rest of society are studied. Other kind of studies may be directed towards the cause of a certain phenomenon rather than its effects. Like trying to ascertain the causes of female infanticide. The help of a hypothesis can set up such studies in two ways, either, where a certain relationship between the phenomenon to be studied and some other variable deemed to be causative is put forward. Or otherwise it may be a purely exploratory study where the field is being approached for the first time. The latter are often in the nature of pilot studies done prior to the setting up of a hypothesis. But they can also be full-length research of the exploratory descriptive type, for example, the *Remembered Village* by M.N. Srinivas (1976).

3.8 How to Test a Hypothesis

For setting up hypothesis testing research we must first have a theory, because the nature of the proposed relationships is ultimately derived from theory. A theory provides the basic logic of the relationship between different phenomena. The hypotheses are generated to test the truth of these relationships and therefore the correctness of the logical process, namely, the theory that has generated them.

Every hypothesis contains a statement about the relationship between at least two phenomena; one of them is the phenomenon such as female infanticide that the researcher is trying to account for. The other is one that is thought to affect or bring about the phenomenon that one is trying to account for. The first one is called the dependent variable and the second one is called an independent variable.

For example if we put forward the hypothesis that illiteracy of mothers leads to female infanticide, then female infanticide is the dependent variable and the literacy level of mothers is the independent variable. To test the hypothesis one has to expose it to a situation that can show it to be false. If the hypothesis survives the effort to falsify, it then it is proved true. In the above example we can study the rate of female infanticide among a population of well-educated women. If the sample shows a significant rate of female infanticide that compares favorably with a corresponding sample of illiterate women, then the hypothesis is false. In other words the literacy of women is not a significant variable as far as female infanticide is concerned. If, on the other hand, the sample of educated women shows a significant drop in the incidence of female infanticide, then the hypothesis is tentatively proven.

In the above example one could rely on statistics to provide most of the base data. But not all social science variables are measured statistically, for that one has to measure by deductive processes and set up some criteria oneself or rely upon criteria provided by other studies.

Let us now do the exercise of Reflection and Action 3.4 to work out the links between the variables and theories. After the exercise, we will discuss the common methods of testing a hypothesis.

Reflection and Action 3.4

Take the example of the variable of Status of Women. There is a numerical measure for such a variable but one can measure by relying on the theoretical statements made by others and the observations one makes in the field or by eliciting responses to a set of questions, or more realistically by combining a number of techniques. For example, what determines the status of women would depend on what theory we are subscribing to.

What are you expected to do?

Work on the match in the following exercise to find out who (the follower of which theory) would emphasise which variables to determine the status of women.

Theory	Emphasis on
I) Marxist Feminist Theory	A) Sexuality, personal liberties, rights of choice, freedom of expression etc.
II) Radical Feminist Theory	B) The symbolic and ritual expressions.
III) Interpretative Theory	C) The economic variables such as income, inheritance of property, ownership patterns, etc.

3.9 Common Methods of Testing a Hypothesis

Here we discuss the following three common methods of testing the hypothesis.

i) Pre-testing of the post-testing paradigm

One common method of testing a hypothesis is by pre-testing of the post testing paradigm[@]. You may ask, what is a paradigm? For answer of the question, see Box 3.1.

Box 3.1 What is a Paradigm?

The dictionary meaning of paradigm is 'example', or 'pattern'. In social sciences we use the word, as explained by Ritzer (1983: 432), who said, "A paradigm is a fundamental image of the subject matter within a science. It serves to define what should be studied, what questions should be asked, how they should be asked, and what rules should be followed in interpreting the answers obtained. The paradigm is the broadest unit of consensus within a science and serves to differentiate one scientific community from another. It subsumes, defines and interrelates the exemplars, theories, and methods and instruments that exist within it."

To continue with our discussion of pre-testing, one simply studies the field prior to the introduction of a variable and after its introduction, let us say the study of a village after the building of a road or after an event like an election or epidemic. However the dangers of such a paradigm is that one is not sure about the variable under consideration being responsible for the transformations and there is always the problem of extraneous factors. For examples of this kind of 'before-and-after' studies, see Box 3.2.

Box 3.2 Examples Of 'Before-And-After' Studies as given in Srivastava (2004: 10-11)

The so-called 'before-and-after' studies are regarded as an alternative to the classical experimental design. In them, a phenomenon is studied before and after the introduction of the independent variable. A comparison of the two states will tell us about the change. F. Stuart Chapin's study (1963) of public housing in Minnepolis coined the term 'ex-post facto research' for such studies. ... ... .In the Indian context, many researchers working on communities that have been displaced because of development projects (such as the construction of a dar , m ning, industry) have adopted this approach (see The Eastern Anthropologist 53 (1-2) 2000).

ii) Static group comparison paradigm

In the static group comparison paradigm, instead of studying the same field situation before and after, one compares two similar field situations, one with and the other without the introduction of the independent variable. For example one may have two identical neighboring villages, but one gets access to television and the other does not. So one may study the effects of television viewing by comparing the villages. Does this example remind you of Scarlett Epstein's work cited earlier?

iii) Nonequivalent control group paradigm

In the nonequivalent control group paradigm, one compares one field situation before and after the introduction of an independent variable but also compares it with a field in which the variable has not been introduced but which iş similar in all other respects. This would be the case say for example when one had two identical villages that were both studied and then one of them received a significant input, like a school. Then both schools were again studied to see what effect the school had, but now we can compare it by measuring against the village that did not receive the school.

The most common source of error here would be that some sort of selection process has already taken place for the introduction of the external variable. For example a particular population size or caste composition may be responsible for the fact that one village received a school and the other did not. To remove the possibility of such an error a fourth paradigm may be taken recourse to and this is called the Nonequivalent Control Group Paradigm.

Here everything is like the third paradigm situation except that the field situations are chosen at random and not selectively. However this also depends on the possibility of having such random selection that is if there are enough field situations of the similar type and whether the researcher has access to selection of any such field situation. One can have such a paradigm when the number of situations is many and equally available, say if one were to study the effects of introduction of computers in secondary schools in Delhi. The most obvious disadvantage of random sampling[◎] is that one may not get the desired result. In fact such methods are more useful for quantitative research, like the school example cited.

3.10 Sensitivity to Alternative Explanations

One fact that must be kept in mind while doing research and using the various paradigms discussed is that as social scientists one must be sensitive to the existence of alternative explanations even if one has proven the hypothesis. Rigidity is not a virtue because social science research of real life situations is complex and multifaceted.

3.11 Rival Hypothesis Construction

The process of rival hypothesis construction is a standard procedure to test the efficacy of research. The four factors that form the basis of the four major rival hypotheses are

i) The effects of selection

ii) Reactive measurement effects

iii) The effects of uncontrolled extraneous variables

iv) Interaction effects involving selection.

Let us discuss each of the four factors.

i) The effects of selection

A selection effect occurs whenever the treatment group or the group we are studying for the introduction of the variable is different from the comparison group because of the way in which they were selected or rejected for introduction of the particular variable, like for example school. The advantages that may be perceived as emanating from the school may be because the number of persons of a dominant caste/class is more in the particular village and the school may have been introduced because of the greater clout of the dominant caste members. So it is class advantage that may have already been there and not merely the introduction of the school that may be perceived in the study as better hygiene consciousness or better use of medical facilities, etc.

ii) Reactive measurement effects

The second rival hypothesis situation may occur when the measurement process itself may introduce transformations in the field. Like for example as it often happens when students from Delhi go to carry out field-based social research in villages, the perception of the villagers of the urban elite/ middle class to which the students may belong often affects the responses and sometimes even the behavior pattern. The villagers might for example wear more urban clothes while the researchers are around or profess greater faith in modern medicine.

iii) The effects of uncontrolled extraneous variables

The third type of error is due to the introduction of uncontrolled extraneous variables, that is, those variables that were overlooked or that entered while the research was in progress.

iv) Interaction effects involving selection

The fourth type of error occurs when the selection process and extraneous variables both occur in conjunction.

Our discussion of hypothesis testing is a process that takes the researcher a step forward in the investigation. It is an example of the organised skepticism of science. In other words, you may say that this reflects the rejection of any statement without empirical verification. A number of works have been based on the processes of hypothesis testing and several

middle range theories have emerged as a result of such inductive analysis; one good example is the work of Robert. K Merton (1950) on the *American Soldier*, in which he had developed the theory of latent and manifest functions.

The efforts to produce a rigorous theoretical analysis in the social sciences is however always met with skepticism as the results rarely are able to attain the status of laws but middle range theories like that of Merton, cited above, can be quite effective in explaining if not predicting social behavior.

3.12 The Use and Scope of Social Science Theory

A very significant aspect of social science research is that this research itself is often instrumental in changing human behavior. If human beings are made aware of destructive or potentially disruptive behavior then they can and do make conscious efforts to change it (Refer to the rationale and purpose of MSO 002 as discussed in the Course Introduction). In this way, the subjects and objects of study in the social sciences have a dynamic interactive relationship. For example, if certain kinds of child rearing practices are shown to be harmful for the normal development of the child, then they may be arguably modified or abandoned. Any predictions made by the study on the ill effects of a particular practice may be reversed during the course of research itself.

Moreover a lot of research in sociology and anthropology has been directed towards revealing what has been variously called latent functions or unintended consequences of human actions. However, once made public these do not remain latent or unintended and may in fact replace the earlier ways of thinking by the actors themselves. For example, in urban India marriage is by and large not considered a religious or sacred ceremony to the extent that it was believed to be a generation back. More people would point to it as an occasion to bring the family together or to cement social relationships or to increase social solidarity, a function of marriage that in the earlier times was perhaps more visible to the social analysts than to the actors themselves.

Many scholars now consider it possible that subjective dimension of human behavior, like moods, dispositions, emotions and values are open to sensory perception and therefore form part of externally observable data. The conclusions that we reach regarding such subjects are based either on the information given to us by the actors or by a process of empathetic understanding where the scholar tries to get into the place of the actor. Rosaldo (1984), in his article "The Rage of the Head Hunter" puts himself in the place of the headhunter to analyse the anguish that is felt at the death of a loved one, at the loss of his wife Michelle Rosaldo. Thus the social scientist interprets the actions in terms of the subjective experiences as a human being and being subject to the same emotions

and motivations as any other.

On the other hand it is also realised that one need not step mentally into the shoes of the actors to understand a phenomenon. For example one need not be suicidal at any point of time to do a sociological analysis of suicide. But there is certainly a qualitative difference between the kind of analysis that looks at the phenomenon from the outside and the more reflexive kind of descriptive work.

Not all types of human behavior are subjective and there are many concrete and visible outcomes of behaviour that can be measured and studied. An alternate manner of constructing theory came from the 'behaviourists', who rejected the vagueness implied in 'subjective' understanding. An extreme behaviorist position may deny all subjective and internal mental conditions but most prefer a modified version. Here the introspective data from subjects is treated as data and then subjected to analysis. This is similar to the approach where contradictory inputs by various actors in the field are analysed as data that represent the conditions of the field, like different power positions occupied by the actors or conflicting identities.

At this point in our discussion, we need to also look at the question, how do values held by researchers affect theory building?

3.13 Theory Building and Researcher's Values

The last point on which we will concentrate in this unit would be the extent to which the values held by a social scientist enter into the process of theory formation or in other words what is known as the value oriented bias of social science inquiry. The four points at which values can enter is at the level of

i) Selection of problems
ii) The determination of the contents of conclusions
iii) The identification of facts
iv) The assessment of evidence.

We shall now discuss each of the entry points for values of researchers to creep into the social research.

i) Selection of problems

A social scientist is guided by several considerations in the choice of subject matter of which her/his value orientation is one, that is a feminist would be interested to research women's problems, or a Marxist to work on subjects like agrarian relations or the exploitation of labor in factories. Moreover the manner in which a concept is constructed such as say the concept of culture or what goes into determining the status of women, is also conditioned by the subjective orientation of the researcher.

ii) The determination of the contents of conclusions

The determination of contents of conclusion is something on which the

criticism of almost all theories is based. It is felt that most social scientists have a fairly well formed idea of what is the nature of the reality that they are trying to prove and most research is aimed at proving or disproving what is already intuitively known to the scholar. Moreover larger interests about the society at large or moral and ethical viewpoints often creep into whatever a theory is trying to prove or disprove. During the colonial regimes most anthropologists took equilibrium as the natural state of societies and their theories were directed towards demonstrating how such equilibrium states are maintained. Any disruption of the equilibrium was seen as abnormal or pathological (or a condition of anomie). The value orientation of the sociologists and anthropologists colluded with that of the administrators and often both were one and the same person. Or otherwise the anthropologist was on the pay-roll of the administrator. The goal of the administrators was to establish equilibrium in their colonies therefore equilibrium was also the desired state and viewed as such by the scholars too.

iii) The identification of facts

It is not impossible to distinguish between facts and values and contributions to theoretical understanding may be achieved even if the values of the social scientist are at variance. For example the contribution made by avowed ideologically oriented social scientists such as Marxists is still considered of considerable theoretical significance especially if they had been able to contain their value orientations within the limits of reason.

Another remedy often resorted to in contemporary theory is to make the value orientation of any work quite clear so that the reader is not misled and is able to contextualise the theory to its orientation. This could also take care, for example, of the difficulties faced in the social sciences because of the evaluative character of the terms and concepts used. It is not always very clear as to what exactly is the distinction between facts and values. For example in the nineteen seventies a certain kind of ecological approach concentrated quite a bit on the study of resource utilisation as a way of looking at a community's relationship with its habitat, often looking towards the goal of maximising such utilisation. But another school of environmentalists would vehemently be opposed to the term "resource" being used for the habitat as this term in itself is reflective of an exploitative attitude towards the environment. Such persons may not think of the environment as a resource for use by human communities but as something that has a right to existence by itself. The second point of view may look upon maximisation of resource utilisation as a negative rather than a positive goal. Moreover while writing ethnography one may be tempted to use words like kind or cruel, both of which cannot be understood without reference to a value framework. Contemporary ethnographies normally tend to consciously avoid using such terms preferring instead to give a detailed description of the actions leaving it to the readers to form their own judgments or

using such terms by which the actors themselves designate the acts.

iv) The assessment of evidence

There is always the apprehension that only conclusions but even the process of evaluation of data is often value loaded. Some kind of data may be totally overlooked or ignored by a social scientist simply because of innate value orientations. For example, the feminist scholars had alleged that male scholars ignored women's activities and role in society simply because of their patriarchal bias. Does this discussion remind you of the example of Weiner's (1976 and 1977) study of Trobriand Islanders, mentioned earlier in Unit 2? Similarly Dalit scholars have often made allegations that upper caste scholars have often presented a biased Brahmanical view of society in India, selectively using data to do so.

Even in statistical analyses, value commitments are not ruled out. But value commitments are also of two kinds, covert and overt. For example Malinowski's oversight may have been unintentional but sometimes researchers allegedly manipulate data towards a particular end.

One kind of bias that is almost inevitable is the one connected with the historical and situational impact upon a student of society of the place and time to which she/he belongs. As we shall discuss in greater detail in the next unit, the evolution of scientific thought is also a product of the history of human society. World events and transformations of intellectual climate are determining factors that can rarely be avoided in the manner in which theory is formed.

3.14 Conclusion

Human history and human knowledge are inextricably interlinked. This is how we come to have a sociology of knowledge and that is why the history of a discipline is always an integral part of its curriculum.

However if we accept the subjective nature of sociological knowledge, is it that only the followers of the school of thought that produced it can understand a theory? The problem has been partially solved by the concept of relational objectivity or relationalism. In this the social scientist makes clear at the outset, the perspective that is being followed in the analysis so that readers can subsequently put in the context the findings and draw their own conclusions. The point is to make clear the basic assumptions on which the theory is formulated and it is for other scholars to accept or reject the theory on the basis of whether the basic premises are acceptable or not. For example the entire debate on whether matriarchy or patriarchy was the initial stage of human society is meaningful only when one accepts the basic premise of the stage-by-stage evolution of human societies. If one does not accept the basic premise itself, then the entire debate becomes meaningless.

If we do not accept the above path, the only generalisations that can

have universal validity in the social sciences are the statistical generalisations, like say for example the fact that female infanticide rates have increased from 1950 to 2004. But such generalisations are not theory. They only form the basis for theory and when a theory is formulated out of statistical generalisations there is still plenty of scope for varied interpretations.

In Unit 4, we shall look into a broad overview of the way in which theoretical analysis has proceeded in sociology and how the major premises have transformed themselves historically.

Further Reading

Kaplan, Abraham 1964. *The Conduct of Inquiry*. Chandler: London (For a detailed study of the logic of inquiry into social phenomena)

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Unit 4

Theoretical Analysis

Contents

4.1 Introduction
4.2 Premises of Evolutionary and Functional Theories
4.3 Critique of Evolutionary and Functional Theories
4.4 Turning away from Functionalism
4.5 What after Functionalism
4.6 Post-modernism
4.7 Trends other than Post-modernism
4.8 Conclusion

Learning Objectives 

It is expected that after reading Unit 4 you will be able to learn and discuss the following themes.

- Theoretical analysis of data collected in terms of evolutionary and functionalist premises and their critiques
- In the nineteen eighties and nineties abandoning of the empirical approach in favour of subjectivity and reflexivity
- Emergence of post-modernism and yet, in most regions including India, adherence to older methodology of fact-finding.

4.1 Introduction

In Unit 3 we discussed that theories differ according to the basic or major premises on which they are based. The premises are the given conditions or universal truths that we take for granted when we formulate a research problem or look for some explanations of a social phenomenon. Continuing with our general discussion of the approaches to understanding social reality, in Unit 4 we are going to wind up our narrative by talking about the growth of theoretical analysis in the social sciences in general and in sociology in particular.

We will begin the story with the evolutionary theory and move on to functional and structure-functional approaches. After a short critique of evolutionary and functional theories, we will discuss the phase of post-modernism with regard to the 'crisis of representation' in the disciplines of sociology and anthropology. During the nervous eighties and nineties of the twentieth century, American and continental social sciences included intensive reflection on the link between authorship and authority and focused on subjectivity and reflexivity while abandoning the empirical approach.

Almost in a racing style, the narrative in Unit 4 gives you an opportunity to become fleetingly familiar with the names of post-modern scholars

and their ideas. At the end, we will briefly note the current status of methodological engagements of sociology in India.

4.2 Premises of Evolutionary and Functional Theories

In the nineteenth century, with the acceptance of the fact that the human is a unified species, the problem of variation of human social institutions and cultures was explained by converting a spatial difference into a temporal one. In other words, different societies were different because they were seen to be in different stages in the ladder of evolution. This was the evolutionary theory based upon the basic assumption of progress and a stage-by-stage evolution of human society, where society was seen as one unified reality of human existence. Culture was spelt with a capital C and was common to all humanity and not cultures that vary across time and space. From this point of view all societies are the same, the difference that we observe is only a chance factor of some societies being arrested in development and others more progressive. Some societies are past of the others and some are the future of all. Because of this in-built idea of progress, the term 'primitive society' came into being. Those termed primitive were literally considered to be the past of those termed modern. The study of other cultures was thus the study of looking into one's past.

The evolutionary theory was built upon the premise that we can explain the occurrence of some social phenomenon by reference to the past of human societies. The assumption was that this past can be discovered in societies physically in the present but culturally arrested at some previous time period; the term 'our primitive contemporaries' was used for the purpose of describing culturally arrested types.

This trend was followed by the functional theory that was derived from the eighteenth century positivism and organic analogy©. The basic premises of this theory were not in the transformation and understanding of human society and culture as unified but were rooted in relativism and interdependence. It was believed that cultures are multiple and each is unique unto itself. The questions that were asked were not about origin and progress but about the contribution and function of each trait to the functioning of the whole. The whole here was a living society and culture to be studied only in the present with no allusion to the past or future.

In the functional approach, to understand social reality we have a static theory. A static explanation is one where a social variable is explained only in terms of variables belonging to the same time period. This kind of theory is not based on a premise that the phenomenon in question is actually ahistorical but on the assumption that a sufficient understanding of it is possible by recourse to data that are situational. The type of questions that the functional theory would address would be different

from those addressed by evolutionists, who professed a theory of human society progressing from stage A to stage B in a scale of evolution. Usually functionalists have explained what function is being performed by a particular trait in a particular culture at a particular period of time. In the evolutionary theory, on the other hand, at least some of the variables used in the explanation belonged to a time period prior to the time than the variables to be explained. In this sense the evolutionary theory was used to explain origins and development, or transformations and social change.

From Durkheim to Talcott Parsons, functionalism with its roots in early French philosophers like Comte had a long grip over sociological theory. It served the needs of the hour and was compatible with the organic analogy that was often drawn for society and culture by social philosophers, sociologists and anthropologists.

4.3 Critique of Evolutionary and Functional Theories

Quite often as an adjunct of historical conditions, the accepted premises of a discipline have been challenged time and again with changes in the philosophies of the times. For instance, the concept of the 'primitive' was challenged and replaced by the concept of 'cultural relativism'. Admirable as the concept of cultural relativism was in according validity and status to all cultures, many scholars attacked the implicit assumption, underlying this concept, that one should maintain *the status quo* in the name of relativism. If every culture is demonstrated to be a functioning whole then the implication is that all cultures should be left alone. Many scholars criticised this point of view on the grounds that such a policy would perpetuate inequalities and differential power equations that exist in the world. Every group of people has a right to change and improve its living conditions and harbour aspirations for a better life. This is especially true in situations of traditional inequalities and marginalisation. For example would one make a case to preserve the institution of untouchability on the ground that it leads to a stable and functioning system? The entire concept of functionality and harmony were questioned on methodological grounds of teleology (for the meaning of this term see Box 4.1) and on ethical ground of social injustice. You can also clearly make out that functionality does not guarantee justice. For example, even slavery may have been a functional system in that it was productive and it worked, but to call it just would be stretching things too far.

Box 4.1 Teleology

Teleology refers to justifying the existence of a phenomenon by the function it performs. Teleology implies that one is trying to explain the effect as the cause of a phenomenon. This is precisely what functionalists did by way of offering explanations of social phenomena.

It became quite obvious that to assume a static view of society, like the functional theorists did, had far-reaching implications in terms of social policy. The debate ensued as to what approach the administration should take with respect to the so-called marginal people under its jurisdiction. Many were opposed to the 'preservation' approach and many others to the 'assimilation' approach. The question was also raised as to whether the concept of cultural relativism was a descriptive hypothesis or a value theory. As a hypothesis it states that no value judgments are objectively justifiable independent of specific cultures but this does not rule out the possibility that some values may be common to all cultures. In this sense, it makes social scientists to state facts and not to make value judgments about cultures. Most sociologists and anthropologists are careful in stating their data in terms of facts, 'what is' and not in terms of 'what ought to be'. This practice often raises the moral question whether a scholar remains just a scholar when she/he comes across practices that are heinous, like female infanticide? Some may advocate a separation of roles as scientist and as scholar and others may incorporate the role of activism within that of the scientist. Such questions continue to always haunt the scholar in the field.

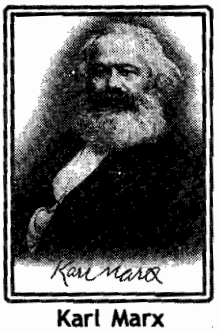
As human beings study human societies, the gap between theory and practice is quite often fraught with tension. In the late twentieth century critical theory largely replaced value neutral theories as more and more scholars engaged in issues like human rights and social justice. This is not to say that such were not also the concerns of earlier social thinkers. For example, the social bases of theory in the thoughts of Marx and others included concerns of social justice (you will read more on this in Unit 6).

Theory in the social sciences has continuously reflected changing social conditions. In the early twentieth century the concept of change became a major theoretical and ethical issue as it was realised that change was an essential dimension of our lives. The two World Wars, the independence of the colonies, rapid industrialisation and capitalist expansion, all had immense effects on sociological theory. Not only change but also conflict became a central concept in the social sciences and it became increasingly debated as to what was a more natural human condition, harmony or conflict? Critics like David Lockwood (1992) complained that it gave a fictionalised view of the world.

Another kind of criticism emerging was about the nature of science and reality itself. It claimed that any claim to scientific objectivity is itself a constructed phenomenon and such constructs invariably serve the power interests of some. The works of Foucault (1926-1984) and Gramsci (1891-1937) were much influential in these lines. Both Foucault and Gramsci elaborated on themes of one's own domination by more powerful others.

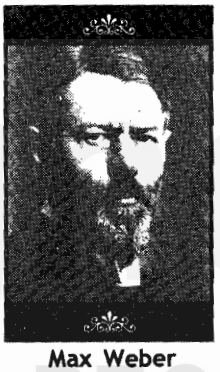
4.4 Turning away from Functionalism

It was Karl Marx (1818-1883) whose influence led to the initial turn away from the functional theory. His basic assumptions regarding the nature of society itself as a product of historical materialism was in contradiction to the view of society as a harmonic system that could be subjected to static analysis. Methodologically history and a dynamic perspective were now seen as essential to a sociological analysis. The works of Marx (1844, 1857-8, 1859, 1861-79) were the prime stimulant to the development of a critical approach to social reality.



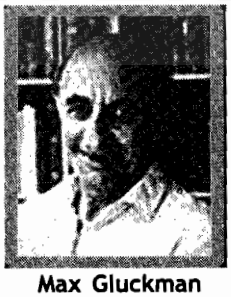
Karl Marx
(1818-1883)

Those forming social science theory in the mid-twentieth century drew inspiration from the ideas of George Simmel (1858-1918) and Max Weber (1864-1920). You will find that Weber also provided a counter to the essential positivism of the Marxian theory that was to have been a true scientific study of history.


Max Weber
(1864-1920)

The contribution of Marx was to take away the mechanistic character attributed to the actions of human beings, showing them to be active agents in shaping their destinies but only as products of their own histories. He firmly emphasised the human existence in the material world as contributory to social action rather than mere ideas shaping history.

Marx's assumptions regarding society were criticised on the basis of their overt generalisations regarding the importance of economic organisations and property relations in shaping society and the bipolarisation of social conflict. It was also recognised that property is not the only basis of power in society. For example, take the thesis of Dumont who held that in the context of the caste system in India the sacred power of the priest was considered superior to the temporal power of the king. Moreover it was also debatable whether conflict always causes social change. You can give the example of Gluckman (1965), who had found that conflict could also function as the basis of the maintenance of the social order. Notwithstanding these arguments against Marx's ideas, his key propositions regarding the nature of society had a lasting influence on social thought (see also Unit 7).

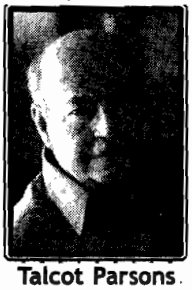

Max Gluckman
(1911-1975)

You can say that sociology as a discipline remained until the ninety-sixties largely in the realm of functionalism and developed two types of theories, namely grand theories and middle range theories. Grand theories make sweeping generalisations about the nature of society and history and middle-range theories are more inductive in nature and are built up

around a limited set of observed facts. Marx's theory was an example of the first kind, one that made predictions about the state of the world. Another grand theory that dominated sociological thinking in the mid-twentieth century was functionalism of Talcott Parsons (1902-1979). His work, *The Structure of Social Action* (1937) is one of the most influential theoretical works of the twentieth century (see Box 4.2 and 4.3).

Box 4.2 Talcott Parsons' Main Argument

Talcott Parsons (1937) held that theory in sociology must be built up around a limited number of important concepts that are adequate to grasp the objective and external social reality. These concepts are analytical constructs abstracted from empirical reality. Thus Parsons tried to develop a naturalistic/ positivistic conceptual schema. Underlying Parsons' method of building theoretical analysis was the assumption that the social reality does have systematic regularities that can be analytically grasped. At the same time Parsons advocated the existence of the complex symbolic functioning of the human mind.



Talcot Parsons (1902-1979)

Parsons' action theory (see Box 4.3 and also Block 7 of ESO 13 of IGNOU's B A Programme) is integrative in nature and his concepts of functional prerequisites are independent of time or place. They are general and ahistorical, that is, they are found in all societies at any point of time.

Box 4.3 Talcott Parsons' Theory of Action

At the core of his voluntaristic theory of action is the thinking and individual actor, who is goal seeking. This goal seeking behavior is faced with alternative means and situated in varying life conditions that act as constraints on the goal seeking behavior. The actors are also governed by values, norms and ideas that influence choice of goals as well as the appropriate means to achieve them. Finally action involves actors making subjective decisions to choose the means to achieve the goals under the given conditions of constraint. Applications of this theory were many like in health seeking behavior.

Critiquing Parsons' approach, Giddens (1979: 112) has commented, "In both Althusserian Marxism and Parsonian sociology the reproduction of society occurs 'behind the backs' of the agents whose conduct constitutes that society. The involvement of actors' own purposive conduct with the rationalisation of action is lacking in each case: in Parson's sociology as a result of the value-consensus-norm-internalised need-disposition theorem, and in Althusser's writings as a consequence of his deterministic account of agency; hence the teleology of the system either governs (in the first) or supplants (in the second) that of actors themselves".

The functional theories (see Blocks 6 and 7 of ESO 13 of IGNOU's B A Programme) of Radcliffe-Brown (1952) and Malinowski (1944) were

criticised as not really reflecting social reality. Increasingly by the nineteen sixties a criticism of functional approach was emerging that considered the homeostatic (the state of remaining at a constant level) system forming the basis of the functional theory as utopian. Some criticisms like those of Merton and Firth and Leach came out from within the limits of functionality. These critical views reinterpreted the concepts to introduce more flexibility. For example, Merton (1968) introduced the concepts of functional alternative, and functional substitutability. Similarly, Raymond Firth (1901-2002) gave the concept of social organisation and Edmund Leach(1910-1989) discussed the concept of dynamic equilibrium (see Leach 1961). The emphasis in all these was on a middle range of generalisation. The next phase in theory was the return to evolution or to a dynamic conceptualisation of society. The static was seen as totally inadequate to explain social reality that was visibly transforming. This view became entrenched in the era of rapid global change.



Raymond Firth (1901-2002)



Edmund Leach (1910-1989)

In the social sciences there was a revival of evolution in the form of neo-evolutionary theories and in sociology the work of Niklas Luhmann (1927-1998) emphasised the role of the environment in the study of social systems. In all such theories we see an attempt to get away from too much generalisation to come back to more concrete and material conditions but at the same time not to forget the symbolic dimensions of human society. Both cultural ecology and Luhmann's (1998) general system's approach included environment as a variable for understanding social reality. Adaptation to environment became a key concept and mal-adaptation was introduced into analysis.

Another major transformation in theoretical analysis was in thinking that the social sciences could never be truly positivistic. One of the prominent followers of this mode of reasoning was Max Weber (see also Unit 7). In spite of his efforts to rise above positivism, Weber included generalisations in his analysis that indicate his belief in the regularities of social life. Such regularities are clearly present in his discussions of leadership and the evolution of leadership from the traditional to the rational-legal. One major contribution of Weber was his critical insights into the process of evolution towards modern society. His view of evolution was not a utopian one of unilateral progress. He did not see the destruction of tradition as uniformly



Niklas Luhmann (1927-1998)

beneficial to human life. There is a useful comparison between the approaches of Weber on the one hand and of Durkheim and Radcliffe-Brown on the other in Beteille (2004). Weber (1978: 15) said, " We can accomplish something which is never attainable in the natural sciences, namely the subjective understanding of the component individuals". Beteille (2004: 121-122) has commented,

> But his approach to the comparative study of society was different from the approach of Durkheim and Radcliffe-Brown because he had a different conception of society and a different assessment of the limits and possibilities of sociological inquiry. Sociological inquiry in his view was concerned with causes and functions, but it was also concerned with meaning, and there the organic analogy was more a hindrance than a help.

We may now turn to what replaced the functionalist approach.

4.5 What after Functionalism

As already mentioned, a major turn away from functionalism was towards recognising conflict as a central dimension of society. Increasingly we find that the concept of society becomes defined in terms of conflict and competition rather than harmony and function. Power and individual and group interests overshadow co-operation and altruism as leading forces of society.

The oppressive events of the twentieth century, the World Wars, the holocaust, the marginalisation and genocide of colonial rule, Vietnam and Korea, all combined to produce a critical approach to society where utopia was nowhere to be seen. Such theories like that of George Lukacs (1923) and Jugen Habermas (1985) were highly contemplative and emphasised processes such as intersubjectivity. They were deeply concerned with the dehumanising processes taking place in the world and also the role of theory in obliterating the human dimension. Oppression and human struggles in various parts of the world often became central themes of analysis (see Box 4.5 for the quotation from Giddens (1987) about Lukacs ideas).

Box 4.5 Lukacs' Ideas as mentioned in Giddens (1987: 235)

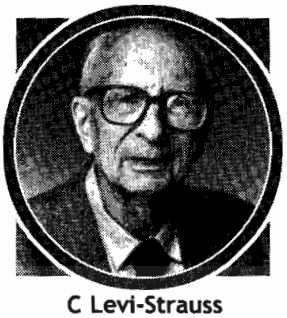
In between Weber and Parsons come Lukacs (1885-1971) and the Frankfurt school; and Habermas approaches his analysis of Parsonian thought via a 'critique of functionalist reason'. The connections between Weber's interpretation of rationalisation, Lukacs's discussion of reification, and the critique of instrumental reason formulated by Horkheimer and Adorno, are clear. They all agree that an expanding rationalisation underlies the overall trend of development of western society. In spite of placing different emphases upon the character of rationalisation, these writers hold, like Weber, that the primacy accorded to purposive-rational action in modern culture produces both a loss of moral meaning in day-to-day life, and a diminution of freedom.



George Lukacs (1885-1971)

Habermas' (1975) contribution can be summed up in his denial of science being the only form of knowledge available to humans. According to him there are three types of knowledge, namely, i) empirical analytic knowledge, ii) hermeneutic historical knowledge and iii) critical knowledge. The first is the type posited in the natural sciences and in traditional sociology. The second is the kind where we try to interpret the meaning systems through the analysis of historical texts and the third, that is, critical knowledge emerges out of our attempts to understand conditions of oppression.

Positivism persisted in theory in the period of what can be designated as 'high modernism' and is evident in the French structuralism. Of the French structuralism, the works of Levi-Strauss (1908-) had a lasting impact on the social sciences. Levi-Strauss (1949) extended the connection between structures of thought and the internal structure of the human brain borrowing from the theoretical principles of structural linguistics. The French version of structural Marxism became popular through the scholarly efforts of Meillasoux (1981), Terray (1972), Godelier (1977 and 1986) and others.



C Levi-Strauss
(1908-)

In fact structuralism emerged as an intellectual tradition in social theory. Like functionalism, it also derived its inspiration from Durkheim. While functionalism accepted the premises of biology, structuralism used linguistic models to explain social and cultural phenomena.

In the writings of Levi-Strauss, we find a kind of mixture of structuralism and functionalism. He wrote extensively on kinship systems, totemism and myth. His analysis of the logic of myth had a profound impact on the social sciences. In particular, his understanding of the notion of structure, conception of the unconscious and approach to history were taken as leading a new way of perceiving social reality. But Levi-Strauss (1969: 98) described his work as 'an initial statement' only.

In America the high tide of modernism was marked by a conceptualisation of culture as a publicly shared symbolic system, valid and internally coherent. Geertz's (1975) conceptualisation of cultural systems dominated the field of anthropology supported by his methodology of 'thick description'. His interpretative approach to the concept of culture, going into detailed observation and narrative descriptions, took anthropology deeper into the realm of the actors. Geertz clearly advocated a 'to and fro' journey between objectivism and reflexivity or a reflexive mode of understanding objective. The ethnographic experience of going deep into other people's experiences gave richness to his analysis that had a great impact.



C Geertz
(1926-)

.ren: s a mentioned above gave an impetus to further shifts in theoretical analyses of social reality. This time you can notice qualitative differences

in the ways of perceiving the social world by post-modernists. In the next section, we will briefly look at the main currents in post-modernism.

Before going on to the next section, let us complete the Reflection and Action 4.1.

Reflection and Action 4.1

Once again go through the three types of knowledge as given by Habermas (1985) and mentioned in Section 4.5 (What after Functionalism?) and provide at least two examples of each type from works of sociologists mentioned in the units already read by you. For titles of the various writings of these sociologists, you will need to look carefully at the list of references, given at the end of the book. Compare your examples with those of fellow learners at your Study Center and discuss them with your academic counselor for checking the accuracy of your selection of examples.

4.6 Post-modernism

A major change took place in theory across the world and across social science theory with the deconstruction of the scientist as "white and male" (already mentioned in the last section of Unit 2). In fact a total changeover in perspective occurred in the form of post modernism that subjected the textual matter to a reflexive critique that goes into the politics of the construction of a text. All that has been written down is now viewed, not as descriptions of the "truth" per se but as constructions based upon the history, politics and strategy of authorship. Every concept taken for granted in the modernist era is now subjected to scrutiny. Culture, for example, is no longer to be viewed as a fixed entity, the symbolic representation of the mind of an identifiable group of people, but a shifting and contested process by which new identities are constructed.

The recognition of the process of "construction" was contingent upon the process of deconstruction. In the post-nineteen-seventies era, the notions of deconstruction and destructuralisation spread across all fields of humanities, literature and art. The fixed faith in the definition of knowledge as that generated by western science was challenged, so was the so- called "progress" embodied in western civilisation. The entire notion that knowledge exists as "facts" that can be established with the help of western scientific methods, and even that there is a fixed "reality" out there, was criticised. The reason for this radical departure from modernism was the failure of western science and systems of knowledge to deliver the goods in a world threatened with environmental disasters, diseases such as AIDS, failure of civil society and deepening inequalities and injustice across the world. Another reason was the emergence of scholars from various race, class, ethnic, and gender categories. The central figure of the white and male scholar was displaced and taken over by a variety of others, who challenged the truth status of the findings. In the forefront were what are known as the colonial critique and the feminist critique.

A new generation of scholars confronted the political and economic realities of the 'colonial knowledge' by following the historical roots of the motivations and power equations involved in the production of such knowledge (See Box 4.6 for an example from India).

Box 4.6 Subaltern History

The chief product of radical departure in theoretical approach was a rewriting of history, of which the best examples in India are the series of books in *The New Cambridge History of India* and the series of books on subaltern history under the editorial leadership of Ranajit Guha (1982). Examples of what is known as the colonial critique and also a subaltern approach to history is reflected in the works of Partha Chattterjee (1993), Bernard Cohn (1996), Nicholas Dirks (1992) and others of the genre. The writings of Edward Said (1977) inspired many of the above-mentioned works.

The strongly critical point of view of feminism is reflected in Stanley and Wise's (1983) definition of feminism as directly confronting the idea that one person or set of people have the right to impose definitions of reality on others. This also makes it compatible with the post-modern concept of reality as situational.

Another stand taken by post-modernism was to resituate the researcher *vis-a vis* the researched more equally. The researched was no longer reduced to the status of a passive 'object of research' but became an equal partner in the production of knowledge. The sisterhood proclaimed by feminists was also related to an understanding of equality that could be achieved only if the producers of knowledge were from hitherto 'silenced' groups. The prominent feminist writer of color, Audre Lorde (1934-1992) is of the opinion that any discussion of feminist theory that ignores the perspectives of women of color, poor women and lesbians is suffering from academic arrogance (see Lorde 1989).

Post modernists, especially feminists, questioned the status of knowledge as value neutral, vertically arranged privileging the researcher and divorced from action. The activist scholar became an integral part of the late twentieth century academic world. Theory was finally liberated from its ivory tower and came down to the streets.

4.7 Trends other than Post-modernism

But post-modernism itself by its extreme reflexivity was unable to expose the real basis of human inequality. The problems of diversity and providing a critique of human situations of real inequality, human suffering and exploitation are still valid theoretically well into the twenty-first century. The nineteen-nineties witnessed a growing interest in the philosophies just before the emergence of post-modernism, namely phenomenology (see Unit 5), existentialism and hermeneutics (see Unit 8). Baudrillard (1968) turned Marxist theory over by according infrastructural status to

signifiers©. According to him, in the period of late capitalism there has been a fetishism of signifiers that is leading to creation of increased needs of consumption that in turn leads to increased production. The signs that earlier in Marxist perspective were seen as part of superstructure trigger the economic process. In the modern world advertisements are more important than class relations and consumption is related to abstract needs rather than real ones; the image assumes a higher grading than the material dimension of the article.

A concept that has gained prominence in this era is that of hegemony put forward by Gramsci (1891-1937). In his political writings (1921-1926), Gramsci situated dominance in the cultural process rather than brute power; showing how people act away from their own collective interests, once they accept the ideological point of view of the dominant groups of society.



Antonio Gramsci
(1891-1937)

The later part of the twentieth century saw scholars going into the finer dimensions of domination and the works of Foucault (1961, 1973 and 1979) have been accepted widely as a critique of established knowledge, showing the link between knowledge and power and the persuasive force of hegemony. The power of the written word and the arts and that of public culture has been theoretically established as the field of Cultural Studies. Culture is now not viewed as a given condition, having an objective existence worthy of systematic description but a site for contested identities, a vehicle for domination and also resistance, it becomes an instrument rather than an end product or given condition and it manifests itself in people's aspirations (for articulation of the concept of culture as people's aspirations see Nathan 2005).

A trend in the social sciences is towards a more material view of the world, looking into the conditions of existence, following a more Marxist view than a rarified post-modern view. The criticism of deconstruction has been that extreme deconstruction would take away the meaning of existence to the extent that even the rationale for a social science would cease to exist. Such a divergence of views had existed earlier in the twentieth century between the Structuralists and the Marxists; while the former were in favor of semiotic structures or structures of the mind, the latter saw reality in terms of material structures and economic exploitation.

Pierre Bourdieu (1930-2004), perhaps one the best known thinkers of contemporary times, tried to resolve the intellectual debates of the clash of points of view of Levi Strauss' structuralism and Marxism. Bourdieu observed the divergence between the synchronic, static and invariant nature of reality conditioned by deep underlying and unconscious mental structures that were by their very nature not subject to the dynamism of human volition as put forward by Levi-Strauss, and the conscious human subject, a product of history as put forward by Marxism. In fact,

Bourdieu (1977) attempted to demonstrate the effect over action produced by ideological structures. Bourdieu's theory of practice (see Box 4.7) demonstrated how abstract norms are manifested in real practices and real time to create real inequalities among real people.

Box 4.7 Bourdieu's Theory of Practice

Bourdieu designated the unconscious dimension of naturalised ideologies as *doxa*. All that we take for granted and what never enters into any discourse, *doxa*[◎] include deep-rooted habits as also conceptualisations regarding the world. The *habitus*[◎] for Bourdieu is a kind of grounding for the individual actors, the unthinking playing out of internalised dispositions that are taken in as subjective states but externalised as objective actions that reproduce the conditions of their own existence. To him, all inequalities are cultural arbitrary in that they are produced and reproduced through internalised subjective states but have no objective rationality for their existence. However his theory is peculiarly lacking in accounting for human creativity and agency.



Pierre Bourdieu
(1930-2004)

In the present day context of globalisation, culture and society are becoming more and more amorphous as concepts. Identities are no longer seen as closed and definitive but contested, discordant and constitutive of disparate elements picked up both locally and globally. Traditions are no longer viewed as given but as reinvented every time.

Foucault's (1973) denunciation of western forms of knowledge as an instrument of domination rather than an instrument of truth has dealt a blow to all that was sanctified in the name of science. Now science is no longer an objective system of truth but a regional form of knowledge that had sought to supersede all other forms of knowledge by acts of force rather than reason. For social scientists it has meant that one takes a fresh look at the creation of the research subject, noting the positions of inequality between observer and observed, for the psychologists it meant that one reviews one's notion of normal and abnormal and think of them as cultural rather than absolute conditions. But this process of destructuring of truth has its biggest triumph in that subjects have the option of refashioning themselves and resist the imposition of anything in the name of normal or given. The acceptance of diversity and the rejection of inequality have been a major effort of contemporary theory, reflecting and striving for a better world. This is the point when the call for active participation in the process of understanding and subsequently fashioning the social reality all around us is gaining recognition at the beginning of the twenty-first century.



Michel Foucault
(1926-1984)

4.8 Conclusion

Coming to the end of our long journey into theoretical perspectives in the social sciences, let us look at the current state-of-the-art in the practice of sociology in India. Methodologically speaking, in the light of a plethora of emerging perspectives in European and American sociology, practitioners of sociology and anthropology in India have not been blown off their feet and the mainstream scholarship in the social sciences in India has continued to combine reflexivity with a sense of commitment to healthy fact-finding methodology that is the legacy of positivism. It is not out of place here to mention what Mahatma Gandhi once said about keeping all windows open to receive influences from all sides but remaining careful to keep one's feet firmly on the ground. Way back in 1938 Sarat Chandra Roy wrote in *Man*,

> The objective methods of investigation of cultural data have to be helped out, not only by historical imagination and a background of historical and geographical facts, but also by a subjective process of self-forgetting absorption or meditation (*dhyana*), and intuition born of sympathetic immersion in, and self-confidence with, the society under investigation.

Almost following Roy's approach, Madan (2004: 200-202) has made a case for "the middle position", which means describing and interpreting the "concrete" and the "particular" and providing "causal explanations when doing so seems appropriate and possible", with the help of "abstract" and "general" concepts.

There has been a concern with tradition asserting itself as a cognitive style in the methodology of social research in India and Singh (1979: 291) has observed, "Whether sociology is a science with an accompanying universalistic package of categories and techniques of research or whether it is a cognitive style marked by a mode of apperception or reflexivity in observation and comparison of structures, social relationships and ideas, are questions which have been debated right from the inception of sociology in India".

It is not that social science researchers in India have been cut off from the global currents of thought and not from time to time expressed their explicit choices. Partho Nath Mukherji (2000: 53-58) has provided a long account of polemical debates in India between i) those, like Radhakamal Mukerjee (1889-1968), who worked out a synthesis between the physical sciences (see Mukerjee 1960), philosophy and the social sciences and those, like Dhurjati Prasad Mukerji (1894-1962), who stressed holisim and contextualisation as the main principles of sociological method (see Mukerji 1958) and those, like A. K. Saran (1962), who rejected sociology/ social science that is based on western sociology and values and therefore not in line with the Indian ethos, ii) those recommending fieldwork method and those opting for survey research. Trend reports in sociology and social anthropology, published by the Indian Council of Social Science Research, provide detailed accounts of leanings

and preferences of scholars (see Madan, 1972, Damle 1986, Jain 1986, Bose 1995). Mukherji observed (1998:27-28), "At the level of research, rigorous painstaking, academically committed research is on the decline....sociology and the social sciences are lagging far behind in generating social 'scientific' knowledge about the processes of conflict, structure and change in South Asian societies. Half-baked knowledge, tempered with mismatched borrowed Eurocentric concepts is far from helping appraise our overly complex social realities."

While recommending "disciplined eclecticism" of Merton (1976: 51), Mukherji (2000: 59) prefers the approach that 'requires an openness of mind regarding the efficiency of parallel paradigms, none of which need be rejected a priori nor espoused as though in it lay the essence of wisdom from which all social science puzzles could be solved'. So be it Mahatma Gandhi's approach of holding on to one's own ground or Madan's middle position or Mukherji's acceptance of Merton's disciplined eclecticism, knowledge production by social scientists in India is awaiting deeper preoccupations with the questions of logic of inquiry.

It would be a relevant exercise for learners of MSO 002 to look at the special issues of the Delhi-based international journal, *Contributions to Indian Sociology*, on such themes as labor, migration, caste and class, tradition and modernity, etc, and examine the methodological approaches taken by the authors of the various articles in these issues. Similarly, one can scan articles published in the *Economic and Political Weekly* and *Sociological Bulletin* to identify the theoretical orientations of the authors. Recent studies in the areas of gender studies and Dalit movement may provide you examples of reflexive sociology, currently in use in India (see also unit 7). For Reflection and Action 4.2 you need to identify the methodology followed in only two articles, mentioned below.

Reflection and Action 4.2

Read the following two articles and identify the theoretical orientation of the author of each article.

- ***Fazalbhoy***, Nasreen 2000. Rituals of Protection in a Muslim Community. *Eastern Anthropologist* 53(4): 443-455
- ***Rege***, Sharmila 2000. Understanding Popular Culture: The Satyashodhak and Ganesh Mela in Maharashtra. *Sociological Bulletin* 49(2): 193-210

Further Reading

Bose, Pradip Kumar 1995. *Research Methodology*. Indian Council of Social Science Research: New Delhi (for an extensive survey of works on research methods and methodologies by sociologists in India)

Unit 5

Issues of Epistemology

Contents

5.1 Introduction
5.2 Some Major Concerns of Epistemology
5.3 Rationalism
5.4 Empiricism
5.5 Idealism
5.6 Phenomenology: Bracketing Experience
5.7 Conclusion

Learning Objectives



It is expected that after reading Unit 5, you will be able to carry out the following tasks.

- Gain familiarity with the issues of epistemology or theory of knowledge
- Link the different currents in philosophy, namely, rationalism, empiricism, idealism and phenomenology with understanding the social reality around us

5.1 Introduction

Epistemology[◎] is a branch of philosophy that tries to understand the nature, source and limits of knowledge. You may ask, why are we talking about a branch of philosophy in a sociology course? While reading Unit 5, you would find that the philosophical issues discussed here form the foundations of explanations in theories about the social world. Units 6 and 7 clearly show the influence of philosophical ideas on the writings of sociologists. In order to better understand the contents of these units, it is a good idea to gain familiarity with the issues of epistemology.

Human beings have a tendency to want to explain and understand the world around them, leading to a variety of explanations. It is very common these days for a large section of humanity to look for explanations that are scientific. But at one time such explanations brought the wrath of the authorities, usually religious authority. As science made increasing strides revealing in turn the secrets of nature over which humankind tried to rule, the methodologies employed by the natural and physical sciences came to rule as to what should be the best methods of acquiring knowledge. Behind this quest for seeking knowledge were many issues that were grappled by not only scientists and knowledge seekers, but also people who ask philosophical questions.

As the Greek philosopher Aristotle rightly said, all philosophy originates from the basic sense of wonder human beings experience and that this

sense of wonder that leads to different explanations or theories. It is therefore not surprising that on the question of knowledge there are several contesting viewpoints. The question of what is true or adequate knowledge in a way translates into an issue of scientific methodology. In Unit 5 we will look at some broad issues concerning our understanding of the social reality around us, with reference to particular philosophers in the context of different schools of thought.

After introducing some major concerns of epistemology in Section 5.2, we will discuss the theories of rationalism, empiricism and idealism in Sections 5.3, 5.4 and 5.5 respectively. These theories reflect the positivist outlook to understand the social phenomena. Not everyone agreed with the assumptions discussed in the three schools of thought namely rationalism, empiricism and idealism. Many scholars looked for meaning in observations they made. They focused on phenomenology which is a school of thought taking us in new directions to understand the social reality. The new developments have been discussed in Section 5.6.

5.2 Some Major Concerns of Epistemology

We are going to talk about some of the central concerns of epistemology, which deal with issues such as what is the source of knowledge, what is knowledge, how do we know which is truth and how is it different from justification. In other words, epistemology is mainly concerned with the nature, source, scope and limits of knowledge. The perspective adopted in different schools of thought is tied up with an overall metaphysical slant of that particular school.

You may ask what is metaphysics. Metaphysics refers to the branch of philosophy that attempts to understand the fundamental nature of all reality, whether visible or invisible. It seeks a description so basic, so essentially simple and inclusive that it applies to everything, whether divine or human or anything. It attempts to tell what anything must be like. So a metaphysician is trying to discover what underlies everything. Though in sociology metaphysical questions do not concern us, while discussing epistemology or issues related with knowledge, it is good to keep in mind that many philosophical ideas about knowledge have a metaphysical edge to them. For example, you will find that Kant's notion of 'the existence of one's consciousness proves the existence of objects outside one' has a metaphysical slant to it (see Section 5 on Idealism).

When we look at the history of epistemology, we can discern a clear trend, in spite of the confusion of many seemingly contradictory positions. The trend indicates that theories of knowledge stress its absolute, permanent character. For some philosophers the things we perceive are more than sense perceptions; they are an interactive outcome of the mind or soul.

Following the Renaissance (revival of art and literature in Europe, under

the influence of classical models in the fourteenth to sixteenth centuries), two main epistemological positions or theories of knowledge dominated philosophical inquiry into the theory of knowledge, namely, empiricism and rationalism. Empiricism views knowledge as the product of sensory perception. This theory holds that the origin of all knowledge is sense experience. The term also refers to the method of observation and experiment used in the natural sciences.

Often, rationalism is contrasted with empiricism. Rationalism is a theory which holds that the mind may apprehend some truths directly, without requiring the medium of the senses. Let us first discuss the theory of rationalism.

5.3 Rationalism

Greeks philosophers, mainly Pythagoras, Plato and Aristotle, laid the foundations of logical thinking. The principal tenet of rationalism or logical thinking is that truth can be best discovered through reason and rational thought. Rationalists assume that the world is deterministic, and that cause and effect hold for all events. They also assume that these can be understood through sufficient understanding and thought. *A priori* (from cause to effect) or rational insight is a source of much knowledge. Sense experience, on the other hand, is seen as being too confusing and tentative.

Logic and mathematics are classic rational disciplines, as is philosophy. Rational argument is particularly attractive as it implies a superior intellect, and we all use it regularly, although the truth of our assertions is often open to question.

Prominent rationalists include Descartes, Spinoza and Liebniz (see Unit 1). We will be discussing the ideas of Descartes, who was the most prominent of them all.

Descartes: I think, therefore I am

Descartes is regarded as the first "modern" thinker who has provided a philosophical framework for the natural sciences. Descartes attempts to arrive at a fundamental set of principles that one can know as true without any doubt. To achieve this, he employs a method called methodological skepticism. He doubts any idea that can be doubted. He gives the example of dreaming. In a dream, one's senses perceive things that seem real but do not actually exist. He argues that in a similar manner one cannot rely on the data of the senses as necessarily true. Or, he says, perhaps an "evil genius" exists who is a supremely powerful and cunning being and sets out to try to deceive Descartes from knowing the true nature of reality. Given these possibilities, Descartes asks, what can one know for certain?

Before coming to Descartes' answer to the question, let us know a little more about him (see Box 5.1).

Box 5.1 René Descartes (1596-1650)

Descartes (also see B1.4) was born in a village in France in the year 1596. He studied in a Jesuit school a wide range of subjects and excelled in mathematics. Descartes made a number of important contributions to mathematics and physics. Most enduring of his contributions was the foundation (with Galileo Galilei) of what is now known as analytic geometry. In 1649 Descartes moved to Stockholm at the request of Queen Christina of Sweden, who employed him as a philosophy tutor. Christina scheduled the lectures at 5 A.M. The early hours and harsh climate took their toll on Descartes' already weak health. He died shortly after in 1650. During his life, Descartes' fame rose to such an extent that many Catholics believed he would be a candidate for sainthood. As his body was transported from Sweden back to France, anxious relic collectors along the path removed pieces of his body. By the time his body reached France, it was considerably reduced in size. Descartes' philosophy developed in the context of Renaissance and early modern philosophy. Like the humanists, he rejected religious authority in the quest for scientific and philosophical knowledge.



René Descartes (1596-1650)

Mathematicians consider Descartes of the utmost importance for his discovery of analytic geometry. Up to Descartes' time, geometry dealing with lines and shapes, and algebra with numbers, appeared as completely different subsets of mathematics. Descartes showed how to translate (almost) all problems in geometry into problems in algebra, by regarding them as questions asking for the length of a line segment, and using a coordinate system to describe the problem.

Descartes' theory provided the basis for the calculus of Newton and Leibniz, and in this manner for much of modern mathematics. This appears even more astounding when one keeps in mind that the work was just meant as an example to Discours de la Méthode.

Descartes methodology of pure reason and separation of mind and body was a problem which continued to haunt methodologies of the social sciences. In fact, Kant questioned this basic dualism in his book, Critique of Pure Reason. Though Kant attempted to remove the dualism he could not fully escape it. We will discuss this issue in Section 5 on Idealism. Here, we proceed with another aspect of Descartes' contributions. It deals with his quest for ways of obtaining scientific and philosophical knowledge.

To come back to the question 'What can one know for certain?', let us now look at what Descartes has to say. Initially, Descartes arrives at only a single principle; that is, if I am being deceived, then surely "I" must exist. Most famously, this is known as *Cogito, ergo sum*, ("I think, therefore I am"). In this manner, Descartes concludes that he can be certain that he exists. But in what form? You perceive your body through

the use of the senses; however, in Descartes logic, these have previously proven unreliable. So Descartes proposes that at this point, he would only say that he is a thinking thing. Thinking is his essence as it is the only thing about him that cannot be doubted.

To further demonstrate the limitations of the senses, Descartes proceeds with what is known as the Wax Argument. He considers a piece of wax and his senses inform him that it has certain characteristics, such as shape, texture, size, color, smell, and so forth. However, when he brings the wax towards a flame, these characteristics change completely. However, it seems that it is still the same thing; it is still a piece of wax, even though the data of the senses inform him that all of its characteristics are now different. Therefore, in order properly to grasp the nature of the wax, he cannot use the senses and he must use his mind. Descartes concludes, "Thus what I thought I had seen with my eyes, I actually grasped solely with the faculty of judgment, which is in my mind."

In this manner Descartes proceeds to construct a system of knowledge, discarding perception as unreliable and instead admitting only deduction as a method. Halfway through the *Method* (published in 1637, entitled in French as *Discours de la Méthode*) he also claims to prove the existence of a benevolent God, who, being benevolent, has provided him with a working mind and sensory system, and who cannot desire to deceive him, and thus, finally, he establishes the possibility of acquiring knowledge about the world based on deduction and perception. So it would appear that for Descartes the ultimate certainty emanates from God. This proposition of Descartes did not go too well with the empiricists in England. They were against the pure metaphysical facts. They brought into focus the body and experience as being the source of knowledge. Let us discuss about these ideas in detail in Section 5.4 on empiricism.

5.4 Empiricism

Empiricism surfaced as a reaction to rationalist arguments and the events that were transforming the British society influenced the way it took roots in the way Anglo-Saxons perceived social reality. The first of these events was the English civil war in which monarchy and feudalism were challenged. The second was the increasing demand for individual rights and equality among all human beings. The third was unprecedented growth of commerce and science that was fuelled by inventions and discoveries such as Boyle's experiments to understand the basics of gases, Leeuwenhoek's use of the microscope to discover the world of bacteria, and William Harvey's discovery of the circulation of blood. The laws of motion established by Newton (who used Descartes' theory in his calculus) influenced the way the empiricists developed the arguments, which went beyond Descartes' rationalism. You may say that in a way, such empiricists as John Locke combined the forces of experience and reflection. David Hume's skepticism and questioning on the other hand paved the way

for establishing the empiricist tradition in social inquiry. Hume concluded what began with Locke, in laying the foundations for many methodological questions that came up in the philosophy of the sciences. This is why we will discuss their ideas in detail in this section. Before proceeding to the details, let us have a few words to introduce empiricism.

The central principle of empiricism is that truth comes only from direct experience. Words can only be understood if they are connected by their recipient to actual experiences. The word 'empirical' comes from the Greek word *empeiria*, meaning 'experience', and its history goes back to Plato and the Sophists (which has the same root as 'sophisticated'). British empiricism refers to the eighteenth century philosophical movement in Great Britain, which maintained that all knowledge comes from experience. As mentioned before, in contrast to the empiricists, the rationalists maintained that knowledge comes from foundational concepts known intuitively through reason, such as innate ideas. Other concepts are then deductively drawn from these.

British empiricists staunchly rejected the theory of innate ideas and argued that knowledge is based on both sense experience and internal mental experiences, such as emotions and self-reflection. Let us see what they have to say by examining some of the fundamental ideas of John Locke and David Hume as the foremost representatives of British empiricism.

John Locke: from sensation to reflection

Locke (for a biographical note on him see Box 5.2) was concerned with materials out of which our knowledge is made. He wanted to examine the character and limitations of human knowledge. In his book, *An Essay Concerning Human Understanding* (1690), Locke stated his central ideas.

Box 5.2 John Locke (1632-1704)

John Locke was one of the most respected British philosophers, Oxford academic and researcher of medicine. He served as a physician to Lord Ashley Cooper, the Earl of Shaftsbury and supervised an operation to remove a cyst from Lord Ashley's liver. The operation was successful. He served as a government official in-charge of collecting information about trade and colonies. He was an economic writer, political activist, and a revolutionary, whose cause ultimately triumphed in the Glorious Revolution of 1688. Much of Locke's work is characterized by opposition to authoritarianism. This opposition is both at the level of the individual person and at the level of institutions such as the government and the church. He believed that there were no divine rights for monarchs to rule, and that human beings are free and in this condition all human beings are equal.



John Locke (1632-1704)

For Locke the mind of a child is like a blank sheet of paper and all ideas

come from actual experience. The mind has no innate ideas, but it has innate faculties; it perceives, remembers, and combines the ideas that come to it. The mind desires, deliberates, and wills; and these mental activities are themselves the source of a new class of ideas. Experience is therefore twofold. On the one hand, there are ideas of sensations of seeing, hearing, touching, etc., and on the other there are ideas of reflection, which are thinking, believing, etc. The first ideas are simple where the mind is passive and the second ones of reflection are more complex and active. Such ideas reflect our awareness of our own mental experiences (introspection).

As for the relation between the idea and the object one experiences, Locke makes a further distinction. He argues that objects have qualities, which produce an idea in the mind.

Locke said there were primary and secondary qualities. Primary qualities are qualities which are produced by the senses such as smell, color, taste and sound. The secondary qualities are those which refer to bulk, hardness, volume, etc.

According to Locke, the mechanical operations of nature remain hidden to us. Careful observation and experimentation may support a reliable set of generalisations about the appearances of the kinds of things we commonly encounter, but we cannot even conceive of their true natures. What we know essentially, according to Locke, is the nominal essence of an idea or thing. Thus, common names for substances are general terms by means of which we classify as we observe them to be. We can agree upon the meaning of such terms even though we remain ignorant of the real essences of the things themselves. Locke held that the extent of our knowledge is quite limited; the most we can hope for is probable knowledge.

He extends this argument to the general nature of knowledge and comes up with a deceptively simple notion of knowledge as the perception of agreement or disagreement of ideas. The result of all this is that our knowledge is limited. As per Locke's definition, we can achieve genuine knowledge only when we have clear ideas and can trace the connection between them enough to perceive their agreement or disagreement. That doesn't happen very often, especially where substances are at issue.

Locke's efforts have therefore led to the sobering conclusion that certainty is rarely within our reach; and therefore we must often be content with probable knowledge or mere opinion. Locke ultimately recommends that we adopt significantly reduced epistemological expectations.

Hume takes another step and reduces one's expectations of certainty of knowledge by being skeptic to begin with.

John Locke influenced the way his contemporaries viewed the process of human understanding. Many of them disagreed with his ideas. His main

critique came from George Berkeley (1685-1753), who wrote two books (*Treatises Concerning the Principles of Human knowledge (1710)* and *Three Dialogues between Hylas and Philonous (1734)*), in his reply to the views of John Locke. Quite contrary to Locke's theories that the fundamental essence of the world was matter, and mind was only a passive instrument, George Berkeley placed mind first and asserted that things exist only when they are perceived by a mind.

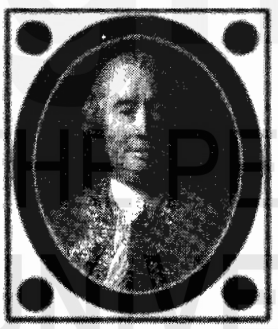
As pointed out earlier, John Locke had his supporters too. One of them was the Scottish philosopher, David Hume, who applied Locke's ideas in a logical manner and argued that all thought is built up from simple and separate impressions. Let us examine his ideas a little further.

David Hume: belief as a habit

David Hume (for a note on his contributions see Box 5.3) argued that as human beings do in fact live and function in the physical world, we should try to observe how they do so. According to Hume, the proper goal of philosophy is simply to explain why we believe what we do.

Box 5.3 David Hume (1711-1776)

David Hume is generally regarded as the most important philosopher ever to write in English. Hume's major philosophical works, A Treatise of Human Nature (1739-1740), the *Enquiries Concerning Human Understanding* (1748) and *Concerning the Principles of Morals* (1751), as well as the posthumously published *Dialogues Concerning Natural Religion* (1779), remain widely and deeply influential, despite their being denounced by many of his contemporaries as works of skepticism and atheism. While Hume's influence is evident in the moral philosophy and economic writings of his close friend Adam Smith, he also awakened Immanuel Kant from his "dogmatic slumbers" and "caused the scales to fall" from Jeremy Bentham's eyes. Charles Darwin counted Hume as a central influence.



David Hume (1711-1776)

Hume's analysis of human belief begins with a careful distinction among our mental contents of impressions, which are the direct, vivid, and forceful products of immediate experience. Ideas are mere copies of these original impressions. For example, the color of the tree at which I am now looking is an impression, while my memory of the color of my mother's hair is merely an idea. Since each idea must be derived from an antecedent impression, Hume supposed, it always makes sense to inquire into the origins of the idea by asking from which impressions it is derived.

The apparent connection of one idea to another is invariably the result of an association that we manufacture ourselves. We use our mental operations to link ideas to each other in one of three ways: resemblance, contiguity, or cause and effect. (You can give such examples as this

animal looks like that animal; this book is on that table; moving this switch turns off the light, etc.) Experience provides us with both the ideas themselves and our awareness of their associations. All human beliefs result from repeated applications of these simple associations.

Such beliefs can reach beyond the content of present sense-impressions and memory, by appealing to presumed connections of cause and effect. But since each idea is distinct and separable from every other, there is no self-evident relation. These connections can only be derived from our experience of similar cases. Hume argues that causal reasoning can never be justified rationally. In order to learn, we must suppose that our past experiences bear some relevance to present and future cases. Although we do indeed believe that the future will be like the past, the truth of that belief is not self-evident. In fact, it is always possible for nature to change, so inferences from past to future are never rationally certain. Thus, in Hume's view, all beliefs as a matter of fact are fundamentally non-rational.

You may consider Hume's favorite example about our belief that the sun will rise tomorrow. Clearly, this is a matter of fact; it rests on our conviction that each sunrise is an effect caused by the rotation of the earth. But our belief in that causal relation is based on past observations, and our confidence that it will continue tomorrow cannot be justified by reference to the past. So we have no rational basis for believing that the sun will rise tomorrow. Yet we do believe it.

Skepticism quite properly forbids us to speculate beyond the content of our present experience and memory, yet we find it entirely natural to believe much more than that. Hume held that these unjustifiable beliefs can be explained by reference to custom or habit. That is how we learn from experience. When I observe the constant conjunction of events in my experience, I grow accustomed to associating them with each other. Although many past cases of sunrise do not guarantee the future of nature, my experience of them does get me used to the idea and produces in me an expectation that the sun will rise again tomorrow. I cannot prove that it will, but I feel that it must.

Remember that the association of ideas is a powerful natural process in which separate ideas come to be joined together in the mind. Of course they can be associated with each other by rational means, as they are in the relations of ideas that constitute mathematical knowledge. But even where this is possible, Hume argued, reason is a slow and inefficient guide, while the habits acquired by much repetition can produce a powerful conviction that is independent of reason.

Our beliefs in matters of fact arise from sentiment rather than from reason. For Hume, imagination and belief differ only in the degree of conviction with which their objects are anticipated. Although this positive answer may seem disappointing, Hume maintained that custom or habit is the guide of life and the foundation of all natural sciences.

The primitive human belief, Hume noted, is that we actually see (and hear, etc.) the physical objects themselves. But modern philosophy and science have persuaded us that this is not literally true. According to the representationalist philosophy, we have no direct experience of the presumed cause! If we know objects only by means of ideas, then we cannot use those ideas to establish a causal connection between the things and the objects they are supposed to represent.

In fact, Hume supposed that our belief in the reality of an external world is entirely non-rational. It cannot be supported either as a relation of ideas or even as a matter of fact. Although it is utterly unjustifiable, however, belief in the external world is natural and unavoidable. We are in the habit of supposing that our ideas have external referents, even though we can have no real evidence for doing so.

Where does this leave us? Hume believed himself to be carrying out the empiricist program with rigorous consistency. Locke honestly proposed the possibility of deriving knowledge from experience, but did not carry it far enough and Berkley noticed further implications. Next, Hume has shown that empiricism inevitably leads to an utter and total skepticism.

According to Hume, knowledge of pure mathematics is secure because it rests only on the relations of ideas, without presuming anything about the world. Experimental observations (conducted without any assumption of the existence of material objects) permit us to use our experience in forming useful habits. Any other epistemological effort, especially if it involves the pretense of achieving useful abstract knowledge, is meahingless and unreliable.

The most reasonable position, Hume held, is a "mitigated" skepticism that humbly accepts the limitations of human knowledge while pursuing the legitimate aims of mathematics and the sciences. In our non-philosophical moments, of course, we will be thrown back upon the natural beliefs of everyday life, no matter how lacking in rational.

Hume thought that a human being is a bundle of different perceptions and in that sense has no fixed identity. He criticised the idea that everything has a cause. In fact, he doubted everything that we assume on the basis of our common sense and also on the basis of scientific knowledge. Philosophers have found it hard to answer his penetrating doubts. Hume influenced philosophical debates about principles of knowledge.

As mentioned earlier, Hume has been described as awakening Kant from his dogmatic slumber; it is partly as a reaction to Hume that Kant attempted a theory of knowledge. He wanted to rise above the skepticism of Hume to look for certainties, yet he was not in favor of the pure rationalism of Descartes. Immanuel Kant took rationality of the human mind to a transcendental level and this attempt put him in the category of idealists.

In the next section we will carry forward our discussion of theories of

knowledge to cover the idealist approach to understanding the social reality around us. Before moving on to the next section, it is a good idea to complete Reflection and Action 5.1 exercise for absorbing what John Locke and David Hume have said about the ways of acquiring knowledge.

Reflection and Action 5.1

According to Locke our ideas about things come out of our experience of sensations and reflections. And Hume takes it further by concluding that a lot of what we think of as certainties are only habits.

What are you expected to do?

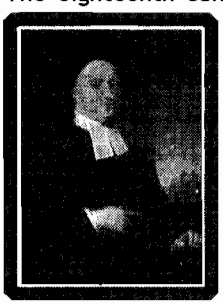
In the light of the above statements find out from at least five persons, including those who haven't been schooled in scientific explanations, as to how they will explain the movement of the sun and how they perceive that the earth is round. Write a short note of about five hundred words on their explanations and share it with the fellow students and the academic counselor at your Study Center.

5.5 Idealism

In philosophy, idealism refers to a system of thought in which the object of external perception is held to consist of ideas. Idealism holds that the mind plays a key role in the constitution of the world as it is experienced. In the history of thought you can discern different forms and applications of idealism. Its most radical form has been rejected because it is equivalent to solipsism. Solipsism© is the view that all reality is nothing but the activities of one's own mind and that in reality nothing exists but one's own self. Idealists generally recognise the existence of the external or natural world and do not claim that it can be reduced to the mere process of thinking. They believe that the mind is active and capable of producing and sustaining modes of being that would not have existed otherwise, such as law, religion, art and mathematics (See Box 5.4 for the ideas of George Berkeley.)

Box 5.4 Idealism and George Berkeley

The eighteenth century Irish philosopher George Berkeley is closely identified with the Idealist philosophy. He believed that all aspects of everything of which we are conscious are actually reducible to the ideas present in the mind. For example, the idea of a chair or a cow already exists in our minds; therefore, we recognise the chair or the cow when we find it. Thus the observer does not conjure the external objects (chair or cow) into existence. In fact, Berkeley held that the true ideas of the external objects are caused directly by God.



George Berkeley (1685-1753)

You may contrast idealism with realism, which is a doctrine that universals

or general ideas have objective existence and matter as an object of perception has real existence. In this sense, idealism is a theory that posits the primacy of spirit, mind, or language over matter. It includes claiming that thought has a crucial role in making the world the way it is. In other words, thought and the world are made for one another, or, they make one another.

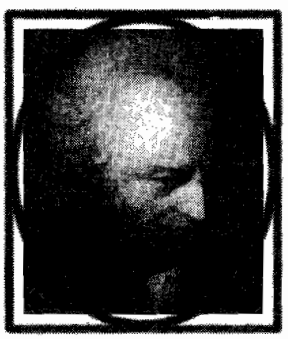
The eighteenth century German philosopher, Immanuel Kant further refined idealism through his critical inquiry into the limits of possible knowledge. Kant held that the mind forces the world we perceive to take the shape of space-and-time. Hegel (1770-1831) thought that history must be rational in something significantly like the way science is. You can say that "idealism" denotes the belief that abstract or mental entities have some sort of reality "independent" of the world. Plato thought that all properties and objects we could think of must have some such independent existence. Confusingly, this kind of idealism was once termed "realism".

Immanuel Kant: *a priori* categories

As pointed out earlier, Kant's (for a biographical note on him see Box 5.5) aim was to move beyond the traditional dichotomy between rationalism and empiricism. The rationalist had tried to show that we can understand the world by careful use of reason; this guarantees the undoubtability of our knowledge but left serious questions about its practical content. The empiricist, on the other hand, had argued that all of our knowledge must be firmly grounded in experience; practical content was thus secured, but it turned out that we could be certain of very little. Both approaches had failed, Kant argued, because both were premised on the same mistaken assumption. To correct this he wrote his book, *The Critique of Pure Reason (1781)*. In this book Kant explained his ideas about the foundations of our knowledge of the physical world. He had great faith in moral freedom, in human beings' ability to choose what is right.

Box 5.5 Immanuel Kant (1724-1804)

Immanuel Kant was born in Konisburg, Germany. He rarely ever left the small town that he lived in. He grew in the background of pious religious upbringing. Though he did not attend Church in his later years he kept his German Puritanical upbringing intact. Yet, he could not isolate himself from the skeptical current of that time. The men whom he later aimed to refute, and most of all Hume, influenced Kant. One biographer, Durant (1961: 261-262), says that Kant's life "passed like the most regular of regular verbs, rising, coffee-drinking, writing, lecturing, dining, walking". During these quiet years he wrote on many things, physical as well as metaphysical. He wrote about planets, earth, and volcanoes and on anthropology and even on pedagogy.



Immanuel Kant (1724-1804)

In his book, *The Critique of Pure Reason*, Kant is not attacking pure reason as much as he is highlighting its limitations. He in fact wants to exalt pure reason to transcendental level without the corrupting elements of the senses. He is not totally against the role that the senses play nor is he disavowing reason. What he does is to combine both empiricist and rationalist elements. How does he achieve this? He makes distinctions between where our knowledge originates and what kind of knowledge it is. Understanding these distinctions (see Box 5.6) is important in order to follow Kant's explanations.

Box 5.6 Analytic and Synthetic Propositions and A Priori and Posteriori Knowledge

In an analytical proposition, the predicate is contained in the subject. For example, the cricket balls are round.

In a synthetic proposition, the subject and predicate are independent of each other.

To explain further, Kant maintained that a priori knowledge comes purely from reasoning independent of experience. For example, 2+2=4 is an example of a priori knowledge. A posteriori knowledge is based on sensory experience. For example, the statement, 'The bird is sitting on the tree.' is based on sensory experience.

Kant went on to explain exactly how the thought process worked. According to him we have some intuitive categories such as space and time, which are absolute and independent of and preceding sense impressions. On the question of Berkeley's problem of whether we will ever know the reality or the essence of objects, Kant has no problem with the existence of objects. As Osborne (1991: 103) expresses Kant's position, "The mere existence of my own consciousness proves the existence of objects outside of me". But Kant sets limits to knowledge and distinguishes between phenomena and noumena© (see Box 5.7).

Box 5.7 Phenomena and Noumena

According to Kant, it is vital always to distinguish between the distinct realms of phenomena and noumena. All of our synthetic *a priori* judgments apply only to the realm of phenomena. While phenomena are the appearances, which constitute our experience; noumena are the things themselves, which constitute reality, or what he calls *ding*-and-*sich* (the thing in itself). Since the *thing in itself* would by definition be entirely independent of our experience of it, we are utterly ignorant of the noumenal realm.

In Kant's view, the most fundamental laws of nature, like the truths of mathematics, are knowable precisely because they make no effort to describe the world as it really is but rather prescribe the structure of the world as we experience it. By applying the pure forms of sensible intuition and the pure concepts of the understanding, we achieve a systematic

view of the phenomenal realm but learn nothing of the noumenal realm. Mathematics and the sciences are certainly true of the phenomena; only metaphysics claims to instruct us about the noumena.

Let us at this point complete Reflection and Action 5.2 for fully grasping Kant's idea of noumena.

Reflection and Action 5.2

The noumena according to Kant are beyond our realm of knowledge. In the light of this statement answer the following questions.

Questions

- Do you think religion can be considered a noumena, as it is beyond the scope of explanation?
- Do you feel that the scientific explanations are inadequate to explain religious phenomena?
- Is there a contradiction between scientific explanation and matters of faith?
- How do you explain the position of a scientist, who believes in supernatural events like religious miracles?

So far we have discussed the ideas which are subsumed within the positivist outlook for understanding social reality. As you have already gathered in the units of Block 1 of the book, not everyone agreed with the assumptions discussed above. Many philosophers searched for meaning in observations they made. They focused on the processes by which we establish meanings in phenomena. For them important issue concerns the way we come to know about what is happening in the world outside ourselves. Phenomenology is a school of thought, which has influenced profoundly the development of new approaches of making sense of social reality. Let us discuss in the next section the main ideas of the philosophy of this school.

5.6 Phenomenology: Bracketing Experience

The limited understanding of the phenomenal world that one was able to obtain using the approaches discussed in the various sections of this unit so far, gave impetus to the search for new approaches. Phenomenology provided inspiration to such seekers. Phenomenology treats consciousness as a given datum upon which we may build the foundations of claims to knowledge. Here is a presumption of an unmediated access to consciousness. The focus is on explaining the nature of practical consciousness. The intention is to reject a priori constructions and pay attention to the description of experience. This involves a description of the physical actions of the actors as well as their intentions and purposes, the way they make classification, attribute senses and meanings to their world. In many ways, these ideas of phenomenology found full expression in ethnomethodolgy. Let us find out where these ideas came from.

In the late nineteenth century, a group of Austrian philosophers grew

dissatisfied with the excessive subjectivity fostered by the philosophy of the later German idealists. The Austrian philosophers were against excessive analysis of experiences. Instead of looking for causes and theories they concentrated on experiences as they present themselves to consciousness, without recourse to theory, deduction, or assumptions from other disciplines such as the natural sciences.

Franz Bentano (1838-1917) was the first scholar to develop the basic approach of phenomenology. Brentano claimed that the central concern of philosophy is to understand the nature and content of awareness in ways that illuminate the distinction between the mental and the non-mental.

In his book, *Psychology From an Empirical Standpoint*, Brentano (1874) proposed that every mental act be understood to have a doubly significant representational function. The function is to both designate itself reflectively and a phenomenal object intentionally. Indeed, this distinction between acts and their objects is the crucial distinction for Brentano, since "intentionality is the mark of the mental". One and the same phenomenal object can be intended by mental acts of different modalities, like believing, imagining, etc. Brentano held that although each intentional act is itself subjective, its intention is an objective thing or fact in the world.

A disciple of Brentano, Edmund Husserl carried forward Brentano's ideas and we will now discuss Husserl's contribution to the development of the new approach.

Edmund Husserl

Brentano heavily influenced the German philosopher Edmund Husserl (1859-1938). Husserl introduced the term phenomenology in his book, *A General Introduction to Pure Phenomenology* (1913; trans. 1931) and held that the task of phenomenology was to study essences, such as the essence of emotions. Husserl stated that only the essences of conscious structures are the proper subject matter of phenomenology. As formulated by Husserl, phenomenology is the study of the structures of consciousness that enables consciousness to refer to objects outside it. Such a study requires reflection on the content of the mind to the exclusion of everything else. Husserl called this type of reflection the phenomenological reduction. Because the mind can be directed toward nonexistent as well as real objects, Husserl noted that phenomenological reflection does not presuppose that anything exists, but rather amounts to a "bracketing of existence", that is, setting aside the question of the real existence of the contemplated object.

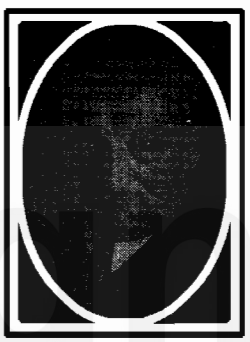
What Husserl gathered when he contemplated the content of his mind were such acts as remembering, desiring, and perceiving and the abstract content of these acts, which Husserl called meanings. These meanings, he claimed, enabled an act to be directed toward an object under a

certain aspect; and such directedness, called intentionality, he held to be the essence of consciousness. Transcendental phenomenology, according to Husserl, was the study of the basic components of the meanings that make intentionality possible.

The question arises whether there were scholars who used phenomenological methods? We take one example of such a researcher. His name is Martin Heidegger.

Martin Heidegger (1889-1976)

Martin Heidegger, a German philosopher, employed the methods of phenomenology in pursuit of more comprehensive metaphysical goals. In Heidegger's full-fledged existentialism, the primary task of philosophy is to understand being itself, not merely our knowledge of it. Many feel that Heidegger's philosophy was more of a statement on the existence of modern alienated humankind rather than any philosophical propositions. He felt that traditional learning focuses on 'what is', whereas it may be far more illuminating to examine the boundaries of ordinary knowledge by trying to study 'what is not'.



Martin Heidegger (1889-1976)

Heidegger (1963) held that it was only through the experience of nothingness that you are truly aware of something. For him traditional logic is no help, since it considers all negation as emanating from something positive. Heidegger proposed that we must abandon logic in order to explore the character of nothing as the background out of which everything emerges. Carefully contemplating nothing in itself, we begin to notice the importance and vitality of our own moods. Above all else, nothing is what produces in us a feeling of dread. This deep feeling of dread, Heidegger held, is the most fundamental human clue to the nature and reality of nothing. Heidegger was making a statement on ontology or existence rather than actually theorising on knowledge.

The phenomenological movement in philosophy had a great influence on sociology. Such sociologists as Alfred Shutz have adapted it to promote an understanding of the relationship between states of individual consciousness and social life. As an approach within sociology, phenomenology seeks to reveal how human awareness is implicated in the production of social action, social situations and social worlds. Alfred Schutz distilled from Husserl's rather dense writings a sociologically relevant approach. Schutz (1972) set about describing how subjective meanings give rise to an apparently objective social world, in which the activities of everyday life have a duration or temporality. It comprises



Alfred Shutz (1899-1959)

a continuity that remains throughout the waking hours of the individual's life. According to Shutz, individuals organise intentionality of their activities in terms of their overall priorities,.

The short note on phenomenology in this unit is just to give you an idea of what has engaged the attention of knowledge seekers besides the issues of empiricism, rationalism and idealism.

5.7 Conclusion

In this unit we attempted to present some of the main ideas regarding the theories of knowledge. The influence of these philosophical ideas is wide ranging. You would have already found references to some of these ideas in the units of Block I of the book and you are likely to encounter them in subsequent units as well. The focus on the salient ideas associated with the quest to make sense of the world around us has hopefully given you an introduction to epistemological issues at the back of methodologies in social science research.

Further Reading

Nagel, Ernest 1961.*The Structure of Science*. Routledge: London (For problems of epistemology)

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Unit 6

Philosophy of Social Science

Contents

6.1 Introduction
6.2 Foundations of Science
6.3 Science, Modernity and Sociology
6.4 Rethinking Science
6.5 Crisis in Foundation
6.6 Conclusion

Learning Objectives



It is expected that after reading the Unit 6, you will be able to answer the following questions

- What were the diverse philosophical influences on sociology?
- What are the major currents of thinking in sociology like the positivist tradition and interpretative thinking?
- How were Enlightenment and the project of modernity idealised in sociology?
- How was modernity shattered by the post-modernist critique?

6.1 Introduction

Social science or, to put it more specifically, sociology is a formal body of knowledge that has grown, evolved, created a community of scholars, and established a distinctive tradition of learning. This is possible because it has a method, a set of principles or guidelines for observing the social reality, and constructing a systematic body of knowledge. In other words, it has a philosophy.

You can make out that here we are using the word philosophy not in the metaphysical or spiritual sense of the term. By philosophy we mean a way of seeing and observing, a way of thinking, arguing and arriving at truth. It is, therefore, important to understand the philosophy of social science. Only then can you comprehend how social scientists think, argue and construct the knowledge of society, and how it differs from the other branches of knowledge. A couple of examples would make it clear.

You may have read epics like the *Ramayana* and the *Mahabharata*. These are extraordinarily rich narratives that give you a glimpse of social history. But then, when modern historians write the history of the ancient period, their way of constructing history is qualitatively different from these epics. They may have used these epics as possible sources, but they are not storytellers, their goal is not to adore, glorify or condemn certain characters, or mythologise the past. They seek to remain 'neutral', rely on all possible facts, and write about the politico-economic life,

social formations, tools and technologies used in the given period. Modern history, it is therefore argued, is not fiction, or a narrative, or mythical account. Instead, it is a kind of science based on hard facts and empirical evidence.

Likewise, when M.N. Srinivas (1966) came forward with the notion of 'Sanskritisation', a process that indicates how the lower castes emulate the norms, values, practices of the forward castes, it was based on hard empirical evidence. It was, therefore, different from the textual account of the rigid and immobile caste system. In other words, the sociological reading of caste, which is based on a field view, is qualitatively different from the way it is being seen in the scriptures.

As a matter of fact, mythologies, folk tales, epics, travelogues and literature are innumerable sources from which we come to know about human society. But what give a distinctive identity to modern social science are its philosophy, its method of enquiry, and its ways of acquiring knowledge. No wonder you often say that history is not mythology, cultural anthropology is not travelogue, sociology is not journalism, and political science is not an election speech. This is not to suggest that mythology and travelogue, or journalism and election speeches, are domains of falsehood. The point we are trying to make is that the methodology of social science is qualitatively different. It is a formal, structured body of knowledge having its own technical idioms and vocabulary, and distinctive ways of collecting data and arriving at generalisations. Social scientists, it is argued, are "objective" and "value-neutral"; they rely on hard empirical facts, and the social science account is, therefore, not an ideological, subjective, valorisation or condemnation of social reality. It is often believed that understanding this methodology is like comprehending the very philosophy of modern science that gave an identity to social science. In this unit you would learn about this intellectual trajectory: how modern social sciences grew and evolved

6.2 Foundations of Science

We call it social science. But what is science? Science, you often tend to believe, is objective. Science is based on facts; science needs rational and dispassionate analysis, not an emotional or sentimental judgment. In order to make sense of the philosophic roots of modern science, we would briefly refer to two distinguished thinkers, Francis Bacon (1561-1626) and René Descartes (1564-1650), because it is generally agreed that their contributions in the seventeenth century provided the foundations of modern science.



Francis Bacon (1561-1626)

Bacon taught us the first important lesson of objectivity©: how to spell

out the book of nature as it is, how to observe it without any pre-selection and bias. For Bacon, there are many delusions that act as obstacles and divert us from truth. As a result, we confuse the reality with our own subjective idea of it. We must overcome all these delusions that Bacon regarded as the 'idols of mind'. There are four species of idols that Bacon (1970: 89-96) identified.

- ***Idols of the tribe*:** These idols are common to the human species as such, and emanate from the typical human weakness: our urge to see what we like to see in the world, our search for regularity, and our obsession with our own beliefs. Human minds, Bacon (1970: 92) argued, are like 'uneven mirrors' that distort the reality. Superstitions and prejudices continue to prevail because of these idols. In fact, the human being's 'feelings imbue and corrupt his understanding in innumerable and sometimes imperceptible ways'.
- ***Idols of the den:*** These idols, unlike the idols of the tribe, are unique to specific individuals. Each individual has his/her own dispositions and idols. Some, for instance, are inherently optimistic, some are pessimistic, and some strive for antiquity; some love change and innovation. All these individual peculiarities tend to affect one's ways of seeing, and hence distort the reality.
- ***Idols of the market:*** These idols are those that emanate out of human interaction, and cause severe linguistic confusion. Our language often proves to be inadequate to describe the reality as it is. No wonder, Bacon (1970: 94) said that 'the great and solemn disputes of learned men often terminate in controversies about words and names'.
- ***Idols of the theater:*** These are those idols 'that have crept into men's minds from the various dogmas of peculiar systems of philosophy' (Bacon 1970: 90).

For Bacon, these idols are essentially obstacles and must be overcome. Only then is it possible to see and observe the world without bias. In other words, nature exists out there, and it is only pure empiricism (not contaminated by our feelings and sentiments) that can grasp it. And this objective knowledge, he believed, would enable human beings to establish their superiority over nature. It is in this sense that knowledge is indeed power. And the relationship between the knower and the known is detached and impersonal; the vulnerability of the self of the knower is controlled, and the act of knowing becomes a dispassionate exercise.

If Francis Bacon provided the foundations of empiricism or what is known as the method of induction, Rene Descartes taught us the fundamental lessons of rationalism (or deductive reasoning). Descartes privileged the mental and intellectual, and argued that it was through clear ideas, or pure rationality, that human beings could arrive at truth and became free from all uncertainties and errors. For him, the sense could not be

reliable source of knowledge; the senses could deceive one. As a result, in an act of *meditation*, Descartes (1641: 439-440) began to doubt everything that he learned through the senses.

> I will assume therefore that not God, who is supremely good and the source of truth, but rather some malicious demon of the utmost power and cunning who has employed all his energies in order to deceive me. I shall think that the sky, the air, the earth, colors, shapes, sounds and all external things are merely the delusions of dreams, which he has devised to ensnare my judgment. I shall consider myself as not having hands or eyes, or flesh, or blood or senses, but as falsely believing that I have all these things.

Yet there was one thing Descartes felt certain about. Even if a demon deceived him, the fact that he was being deceived confirmed his existence as a thinking being. Descartes (1641: 440) wrote,

> I have convinced myself that there is absolutely nothing in the world, no sky, no earth, no mind, and no body. Does it follow that I too did not exist? Not if I convinced myself of something, then I certainly existed. But there is a deceiver of supreme power and cunning who is deliberately and constantly deceiving me. In that case I too undoubtedly exist, even if he is deceiving me; and let him deceive as much as he can, he will never bring it about that I am nothing so long as I think that I am something. So after considering everything very thoroughly, I must finally conclude that this proposition *I am, I exist*, is certainly true whenever it is put forward by me or conceived in my mind.

In other words, as Descartes argued, 'man is a thing that thinks'. This led him to privilege the indivisible mind that makes one think, and separate it from the non-thinking body. While one cannot separate oneself from one's mind, one can, however, exist without one's body! Descartes (1641: 467) said,

> There is a great difference between the mind and the body, inasmuch as the body is by its very nature always divisible. For when I consider the mind or myself in so far as I am merely a thinking thing, I am unable to distinguish any parts within myself. I understand myself to be quite single and complete. Although the whole mind seems to be united to the whole body, I recognise that if a foot or arm or any other part of the body is out off, nothing has thereby been taken away from the mind.

For Descartes, this mind/body dualism is absolutely important. The message he conveyed was clear. What provides solid foundations is a distinctively clear/ rational thought emanating from the ***indivisible, integrated, coherent mind***. And this rational thought is pure, abstract, disembodied, completely dissociated from the senses, from pain and pleasure, from feelings and emotions.

Needless to add, these two fundamentals, namely, objective empiricism and disembodied rationality, gave a momentum to modern science. But then, it was the Enlightenment in the eighteenth century (it was a logical culmination of European Renaissance, Reformation and Industrial Revolution (for details see Box 6.1 and Block 1 of ESO 13 of IGNOU's B A programme) that was really a turning point, a breakthrough that generated a new way of seeing, and celebrated the science of Bacon,

Descartes and Newton as the most cherished and legitimate body of knowledge.

Box 6.1 The Enlightenment

The Enlightenment refers to an intellectual movement, primarily in France and Britain, that spans approximately one hundred years from the 1680s to 1789. Preceding and setting the stage for the Enlightenment were writers and scientists who investigated the natural world and systems of thought, writers such as Galileo Galilei, Issac Newton, Francis Bacon, and René Descartes. Enlightenment writers include Hobbes, Locke, Diderot, Montesquieu, and Rousseau. The French writers were sometimes called the philosophers. The leading representatives were religious skeptics, political reformers, cultural critics, historians and social theorists (Zeitlin 1990:1).

In contrast to systems of thought where the sacred had dominated and where questioning was discouraged, Enlightenment thinkers viewed human reason as dominant. No subjects of study were to be forbidden, there were no unaskable questions, with all aspects of human life appropriate for examination and study. In doing this, Enlightenment thinkers combined the philosophic tradition of abstract rational thought of Descartes and other philosophers with the tradition of experimentation or empirical philosophy from Galilei, Newton, Bacon and others. The result was a new system of human inquiry that attacked the old order and privileges, put emphasis and faith on science, the scientific method and education, and acquired the practical function of asking critical questions about existing institutions and demanding that the unreasonable ones, those contrary to human nature, be changed. All social obstacles to human perfectibility were to be progressively eliminated. (Zeitlin1990: 2).

The writings of the Enlightenment profoundly affected politics and the development of sociology. The French Revolution (1789) and the American Revolution (1776) had many causes but many Enlightenment ideas and ways of thinking had a great effect on these political and social changes. The slogans of "liberty, equality, fraternity" and "life, liberty, and pursuit of happiness" state the political ideals of these revolutions and reflect the ideas of Enlightenment thought.

Possibly it is hard to speak of a singular/unifying Enlightenment agenda, because the philosophers, such as Voltaire (1694-1778), Monstesquieu(1689-1755), Immanuel Kant (1724-1804) and Adam Smith (1723-1790), did not necessarily speak the same language. Nevertheless, from these Enlightenment philosophers it is not altogether impossible to identify a series of the following salient features of the new thinking.



Adam Smith
(1723-1790)

- Instead of a God ordained society, Enlightenment spoke of the primacy of reason. It fought a great battle against Christianity,

particularly its implicit notion of originals in and imperfectability. Voltaire asserted that human beings were neither good nor evil as such; instead, the specificity of circumstances would matter a great deal in unfolding the potential of human beings (as mentioned in Mary 1996). In other words, it is possible for human beings to shape their destiny and create a better world. In that sense, the Enlightenment agenda was future-oriented and optimistic.

- Its optimism was sustained by its epistemology: its spirit of critical enquiry. 'Our age', wrote Immanuel Kant (1783), 'is in a special degree, the age of criticism, and to criticism everything must submit'. Nothing was therefore taken for granted. This criticality gave a new momentum,enabled humankind to come out of the trap of closed/dogmatic thinking, and finally revealed a positive relationship between reason and freedom, science and truth.

- This criticality was not necessarily negative in nature. As a matter of fact, it destroyed as well as constructed. It did not oppose the ethical/spiritual core of Christianity. It opposed only the closed/ dogmatic character of Christianity and provided the foundations of a new world based on a secular/liberal worldview. In other words, the roots of *modernity*: a project that celebrates scientificity, rationality and individuality could be found in the Enlightenment agenda itself. It was progressive. It believed in a linear/historical progress, which gave a new dynamism to the exploration of knowledge, innovation and experimentation.

- As far as the knowledge of human society was concerned, the philosophy of the Enlightenment gave a new direction, as outlined below.

i) Society exists out there readily amenable to empirical observation.

ii) This knowledge of society can be objective and universal, and hence cumulative and progressive.

iii) This knowledge is different from and superior to ideological distortions and religious beliefs.

iv) This knowledge is positively useful for the restructuring of human society.

Let us now discuss in more detail the interface between science, modernity and sociology.

6.3 Science, Modernity and Sociology

It would not be wrong to say that the modern social sciences emerged out of this epistemological optimism. It was, therefore, not surprising that right from its inception modern sociology, to take a specific example,

was guided by these two philosophic foundations: a) objective/universal science, and b) progressive and historically inevitable modernity. Sociology saw itself as a science: a scientific study of society. As an objective, value neutral and empirical science, it differentiated itself from religion, metaphysics and commonsense. As you have been learning about positivism and even classical sociology and the way both grew in the late nineteenth-and-early twentieth-century, you would discover the immense impact of Enlightenment philosophers on sociology and its methodology. Likewise, sociology emerged in order to make sense of the new age. Sociology, it is often said, was a product of Enlightenment modernity (Nisbet 1967). Not solely that. The leading sociologists of the late ninetieth and early twentieth century, from Auguste Comte to Karl Marx, were the children of modernity. In their own specific ways, they celebrated the new age and wrote substantially about it. We would take some examples to make this point clear (see Box 6.2 for examples).

Box 6.2 Examples of Emile Durkheim and Karl Marx

Emile Duekheim

First, recall Emile Durkheim (1858-1917), who wrote *The Rules of Sociological Method* (1895, English translation published in1938/ 1964). He believed in the scientific study of society, and wanted sociology to project itself as a science of social facts, not a political/partisan ideology. And one of his major writings, *The Division of Labour*(1893, English translation published in 1964), was an attempt to conceptualise the formation of modern industrial societies characterised by heightened differentiation, specialisation and a complex form of division of labor. He made a distinction between such a modern society with its 'organic solidarity', and a simple and/ or traditional society having 'mechanical solidarity'.

Karl Marx

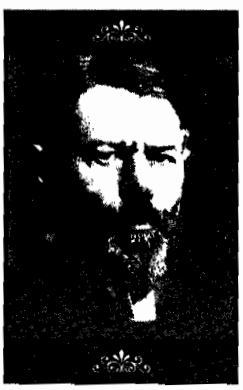
Second, think of Karl Marx (1818-1883), who believed in the Enlightenment affirmation of scientific reasoning. He seemed to be heavily influenced by Newton (1642-1727) and Darwin (1809-1882). And it is now well known that he sought to dedicate the second volume of *Capital* (1867) to Charles Darwin. Marx's 'scientificity' could be seen in his urge to discover the 'iron laws' of capitalist development, his inclination to plead for universal generalisations like 'the history of hitherto existing societies is the history of class struggle' and the distinction he made between historical materialism and ideology. Ideology, he argued almost like Francis Bacon, distorts and falsifies the reality, whereas the science of historical materialism enables us to see the reality as it is: how the mode of production seeks to govern the socio-cultural life and resultant conflicts and contradictions in society. Marx's affinity with modernity could be seen in his faith in historical progress, in science, in urbanity. No wonder, he didn't appreciate the 'Asiatic mode of production' or 'oriental despotism', and saw immense possibilities in the British rule in India because it enabled us to overcome our isolation and stagnation, and experience the light of modern civilisation!

It is not our contention to argue that these thinkers were blind champions of modernity. They were great scholars, and immensely sensitive. They could see the pathologies of modernity. You already know that Durkheim was concerned about anomie: the growing normlessness in modern

societies (see Block 3 of ESO 13 of IGNOU's B A programme). You also know that Marx was a great humanist who critiqued the fragmented character of capitalism, and its alienation. And you are also aware that Max Weber, yet another great sociologist of the classical era, spoke of the pathos of disenchantment inherent in the modern age. But you need to appreciate the essential point. Even when they saw problems with modernity, they did not want to regress to a non-modern age. Instead, they retained their faith in the foundations of modernity and science, and sought to accomplish the agenda of modernity by making it more humane and egalitarian.

As you can see, science with its central principles of objectivity, universalisation and causal explanation did have a tremendous impact on the formation of modern social science. This, however, does not mean that there was absolute agreement on the 'unity of method'. True, positivism, a dominant mode of sociological enquiry in the nineteenth and early twentieth century, did not see much qualitative difference in the study of nature and socio-cultural domain. But then, there were many who differed, and pleaded for a separate mode of enquiry in social and cultural sciences. Its roots could be seen in Immanuel Kant (1724-1804), one of the leading Enlightenment philosophers. While meditating on nature, he spoke of the two distinct principles– a) the physical component being enslaved by the senses, and b) the moral component that strives for truth, justice and beauty (Seidman 1983). No wonder, one aspect of the Enlightenment social theory that spoke of human beings' conditioning gave birth to material/ structural analysis, and the other mode of enquiry that spoke of human beings' freedom gave importance to voluntarism, human agency, creativity and reflexivity.

Herein lies the point of departure. There are social scientists who would argue that unlike an object in the physico-chemical or biological world, the human being is a creative/reflexive creature, and human society is, therefore, a domain of meanings, not just an 'external thing' constraining us. In other words, human society, it is argued, has to be seen as a product of creative accomplishment on the part of the social actors. The task of social science is to understand and interpret these meanings. Max Weber, as you will learn in Unit 7, emerged out of this philosophic tradition. For Weber (1949), sociology is an interpretative study of the subjective meaning complex of social actions. He regarded it as verstehen, a method of understanding the conscious/subjective meanings social actors attach to the world. It was in this sense that Weber saw beyond mere economism, and interpreted early capitalism as a domain of meanings that the proponents of Protestantism or Calvinism attached to the world (for details Block 4 of ESO 13 of IGNOU's B A programme).



Max Weber
1864-1930

Well, Weber did speak of the human agency. But this does not mean that his sociology was "subjective" in nature. Instead, he sought to unite the interpretative study of subjective meanings with an objective causal analysis. He was not against the basic tenets of science: objectivity, value neutrality and causal explanation. What he was objecting to was the positivist urge to equate society with nature, and undermine the domain of meanings. He was therefore talking about '◎ideal types', which were more like models rather than exact scientific laws.

In the twentieth century the the tradition of interpretative sociology was further developed through phenomenological and ethno-methodological traditions (Giddens 1976). The central thrust of these traditions is that the world is largely a world experienced by human beings, and the task of social science is to describe, understand and make sense of this world: how people themselves define and construct it. Alfred Schutz (1899-1959), a major proponent of the phenomenological tradition, spoke of the inter-subjective world in which people interact, communicate and understand one another through the process of typification◎: a process that enables people to fix and define one another, and have a shared role-expectation. It is through this process of typification, that a meaningful and stable social order is possible. For Schutz (1972) the everyday world in which people interact is the *paramount reality*. It is taken far granted. And that makes society possible. But then, there are other realms, like the realm of dreams, or the realm of scientific theorising, in which people experience the world. All these finite provinces of meaning have their own notions of time and space, and shifts from one realm to the other involve 'shock'. But then, for Schutz (1972), the paramount reality is most important, and all of us have to come back to it and experience the world as direct/ real actors. Sociology, for Schutz (1972), must describe and understand how people experience the world. This means that sociology must take people's descriptions and definitions seriously.



Alfred Schutz (1899-1959)

It is in this sense that sociological constructs are 'second order constructs'. Likewise, Harold Garfinkel (1967) spoke of ethno-methodology, or 'people's methodology'. The task is to describe how people themselves define their world, not to `explain it in terms of some context-free, abstract, universal generalisation. In other words, in these traditions you are witnessing a shift from abstract explanation to meaningful understanding, from universality to specificity, from theory to description, from structural causes to people's lived experiences.

Let us complete Reflection and Acion 6.1 to fully grasp the notion of construction of meaning.

Reflection and Action 6.1

Hygiene is an example of social construction. What might be considered hygienic pure and proper in one culture might be considered improper or unhygienic in another culture. What might be considered a tradition might be a crime according to some. For instance, female circumcision in parts of Africa is a custom for some cultures, but many oppose it as an act of violence. In India, when Sati, the burning of the widow, was performed, in Rajasthan, in 1986 , it was upheld by a section of the community as valorisation of womanhood and tradition while it was considered a criminal act by the Indian State.

While there are typical and peculiar social constructions very relative to one's culture, so much so that understanding them might involve interpreting them in one's own cultural logic, there are also such aspects of society which are universally found among cultures and across cultures.

In the light of the above examples and statements, write down answers the following questions on a separate sheet of paper.

Questions

- Can one be value-neutral in situations such as female infanticide and sati?
- If meanings are relative to the cultures that construct them, then is it possible to compare two differently oriented cultures?
- Can you think of more examples of such relative constructions of meanings?

The two traditions of social science, positivist and interpretative, have a point of convergence, because both these traditions emerged out of Enlightenment modernity. In the positivist tradition you can see the Enlightenment affirmation of the legitimacy of scientific explanation. And in the interpretative tradition you can find the affirmation of the Enlightenment optimism centered on human beings' agency and their ability to create their own world.

But then, as you would learn, these very foundations are in a crisis, since all these modern principles, scientific objectivity, historical progress, coherent/rational self, and the agency/ freedom of the actor, are doubted, particularly with the advent of post modernity. And it has caused a severe philosophic crisis, and sociology has to cope with it.

6.4 Rethinking Science

Before you learn more about the challenges that post-modernists have posed to the discipline, it is important to devote some attention to the philosophy of science (see Unit 1). Science, as you have already learnt, provided the foundations of modern social science. But then the very notion of science has undergone dramatic changes in our times, and the philosophers of science have made us rethink science. No wonder, this intense debate on the nature of science did have its impact on the philosophy of social science. It is, therefore, important that you learn something meaningful about this debate.

Let us begin with Karl Popper (1902-1994), a leading philosopher of science in the twentieth century, who changed our understanding of science and society. Popper grew up in Vienna, taught in New Zealand and England, encountered logical positivism and Marxism, and came forward with his distinctive idea of science (Popper 1972). He was heavily

influenced by the changes in physics that emerged out of Einstein's theory of relativity; it revealed that Newtonian physics, which was dominant for more than two hundred years, could be interrogated. This led him to plead for the relative character of science. Science is not something solid and stable, or eternally valid. Instead, science, for him, is a set of conjectures subject to falsification and refutation. No wonder, as Popper (1972: 37) asserted, the creation of the scientific status of a theory is its falsifiability, or refutability or testability. A theory which is not refutable by any conceivable event, he reminded us, is non-scientific. Contrary to popular belief, irrefutability is not a virtue of science. The challenge confronting the scientific community is not to search for confirmations/ verifications of the existing theory, but to search for falsification and refutation. It is not at all necessary to absolutise or sanctify any particular source of knowledge, be it Baconian empiricism or Cartesian rationality, and think that the knowledge gained through it is a domain of absolute certainty. This would lead to dogmatic thinking and generate a false belief that the world is full of verifications of the existing theory. Popper, however, critiqued this dogmatic thinking, and argued that science could progress only through an open culture promoting the spirit of refutability and falsifiability. See below a quotation from Popper (1972: 27).



Karl Popper
(1902-1994)

> So my answer to the questions how do you know? What is the source or the basis of your assertion? What observations have led you to it? would be: I do not know: my assertion was merely a guess. Never mind the source, or the sources, from which it may spring, there are many possible sources and I may not be aware of half of them; and origins or pedigrees have in any case little bearing upon truth. But if you are interested in the problem which I tried to solve by my tentative assertion, you may help me by criticising it as severely as you can, and if you can design some experimental test which you think might refute my assertion, I shall gladly, and to the best of my power, help you to refute it.

It is only through this culture of "critical rationalism" that science progresses. Science is inherently critical and democratic, perpetually progressing through trial and error, conjectures and refutations. But pseudo-science© is dogmatic; it is too certain of its explanatory power, it sees only confirmations and verifications. With this understanding of science Popper critiqued logical positivism, determinism and Marxism. For instance, Marxism, Popper alleged, is not genuinely interested in falsifiability. Instead, it is dogmatic, desperately striving for confirmations and verifications. Popper (1972: 35) said:

> A Marxist could not open a newspaper without finding on every page confirming evidence of his interpretation of history; not only in news, but also in its presentation, which revealed the class bias of the paper – and especially of course in what the paper did not say.

Moreover, Marxism as a doctrine of historicism[◎], as Popper (1972: 337) argued, is inclined to large-scale historical prophesies. But then, 'the kind of prophecies which Marxism offers are in their logical character more akin to those of the Old Testament than to those of modern physics'. This sort of prophecy is possible only in a domain that is well isolated, stationary and recurrent, say the solar system. But unlike the solar system, human society cannot be separated from our deeds. Society, far from being repetitive, is perpetually changing, evolving and growing, 'The fact that we can predict eclipses does not, therefore, provide a valid reason for explicating that we can predict revolutions' (Popper 1970: 340).

In other words, Karl Popper gave a new meaning to science. He sought to free science from positivistic certainties. Science, for him, is relative; science is like myth-making. And what promotes science is not the arrogance emanating from cognitive certainty, but a spirit of humbleness that encourages the possibility of falsifiability and refutability.

Thomas Kuhn (1922-1996) was yet another major philosopher of science who taught us about normal science and its inherent conservatism, and extraordinary science leading to scientific revolutions. For Kuhn, *normal science* relies on the centrality of the paradigm that a particular scientific community takes for granted. To use Kuhn's, (1970: 10) own words, 'paradigms are some accepted examples of actual scientific practice, examples which include law, theory, application, and instrumentation together, that provide models from which arise particular coherent traditions of scientific research'. A paradigm, in other words, provides the background, and directs the trajectory of normal science. Its power lies in its ability to attract an enduring group of adherents away from competing modes of scientific activity. It was in this sense that Newton's *Principa and Optics*, Franklin's *Electricity* and Einstein's *Theory of Relativity* acted as paradigms at different junctures of scientific history. For Kuhn, normal science does not seek to refute, falsify or interrogate the prevalent paradigm. Instead, it seeks to actualise the potential of the paradigm itself, and resolve all residual ambiguities through further elaboration, experimentation and fact-gathering activities. Kuhn (1970: 23-24) said,



Thomas Kuhn (1922-1996)

> Normal science consists in the actualisation of that promise, an actualisation achieved by extending the knowledge of those facts that the paradigm displays as particularly revealing, by increasing the extent of the match between those facts and the paradigm's predictions, and by further articulation of the paradigm itself.

Kuhn characterised this entire process as a 'puzzle solving' activity. The reason is that the problems normal science investigates are more like puzzles that can be solved only through the rules provided by the paradigm

itself. Whatever does not fit into the paradigm is kept aside. Kuhn (1970: 37) elaborated:

> A paradigm can insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies. One of the reasons why normal science seeks to progress so rapidly is that its practitioners concentrate on problems that only their own lack of ingenuity should keep them from solving.

No wonder, the centrality of the paradigm, the commitment to it, and its specificity give a concrete direction to science. It becomes a profession with its specific adherents and specialists, with its journals and publications. And, paradoxically, it is this conservatism that leads to the cumulative progress of normal science. But then, there are situations when the crisis/ anomaly begins to confront the scientific community. It may arise because of the persistent failure of normal science to make sense of the new phenomenon. This crisis situation leads to extraordinary science. It is extraordinary because, unlike normal science, it acknowledges the crisis, interrogates the established paradigm, and dares to become innovative. Kuhn (1970: 90-91) held,

> Confronted with anomaly or with crisis, scientists take a different attitude toward existing paradigms, and the nature of their research changes accordingly. The proliferation of competing articulations, the willingness to try anything, the expression of explicit discontent, the recource to philosophy and to debate over fundamentals, all these are symptoms of a transition from normal to extraordinary research.

And eventually, it is this extraordinary science that leads to a 'paradigm shift' resulting in scientific revolutions. It was the way Einstein, to take a specific example, made a revolution in physics. The revolutionary or new paradigm is incompatible with the earlier one. Indeed, Kuhn repeatedly emphasised on the 'incommensurability of paradigms'. There are substantial differences between successive paradigms. For instance, in one solutions are compounds, in the other mixtures. One is embedded in a flat, the other in a curved matrix of space. The result is that the two groups of scientists see different things when they look from the same point in the same direction.

It is not easy for the scientific community, as Kuhn reminded us, to accept the new paradigm, because massive conservatism/ dogmatism characterises the community of normal scientists. It is, however, important to realise that, despite this resistance, the new paradigm succeeds in attracting more and more adherents, and eventually establishes its hegemony. The new paradigm appeals because it is said to be 'neater', 'more suitable', or 'simpler' than the old.

What are the implications of this understanding of science for us? Normal science, because of the centrality of the paradigm, is extremely focused. It is also narrow and conservative because it does not wish to see beyond the paradigm. Things are, however, different in other creative fields

like music, graphic arts and literature, and even the social sciences, the field that, unlike natural science, cannot be said to have a hegemonic paradigm to follow. No wonder, in these fields learners are made aware of competing and often incommensurable approaches, and they must ultimately choose for themselves. An example would make this difference clear. Students of physics working on optics would feel so confident about the dominant paradigm that they would find no reason to entertain any other competing theory. That is precisely what the success of a paradigm is all about, its ability to defeat all competing approaches. But imagine students of sociology working on religion. For them, there is no hegemonic paradigm. Instead, they are likely to be aware of multiple, competing and even incommensurable approaches to religion, say, the Durkheimian, Weberian and Marxist approaches. This makes social science more 'open ended' and fluid.

Paul Feyerabend (1924-1994) was another leading thinker who critiqued the hegemony of scientific method. No method, even the most successful one, for Feyerabend (1982), has the right to subdue and marginalise other methods. No wonder, he refused to give his consent to scientism[9], that is, the belief that science is the only valid form of knowledge. Instead, he revealed the politics of science, its relationship with power, and the way through propaganda and other strategies it murdered all alternative forms of knowledge. Scientism, he insisted, would go against the true spirit of a democratic society, because democracy should imply the plurality of knowledge systems, methods and traditions of enquiry. Each tradition, each fairy tale, each story, for Feyerabend (1982), has its validity. Nothing is dead or meaningless. It is important that we embrace an 'anarchist theory of knowledge' implying that everything is possible.



Paul Feyerabend
1924-1994

You may be wondering why we are discussing so much the philosophy of science. If you think deeply, you would realise that it is meaningful for social science. There are two lessons that you can learn.

i) Positivism that seeks to legitimise the 'certainty' of science gets eroded. For Popper, science is like a conjecture subject to refutation; for Kuhn, science is conservative, and prevails because scientists too, like any other group of people, are being guided by peer group pressure and other socialising forces; and for Feyerabend, science has its own history of domination and violence. In other words, it speeds the process of de-legitimisation of the positivistic foundation of social science.

ii) With the demystification of science, sociology tends to become more sensitive to the plurality of methods and traditions. It acquires the courage to come out of the shadow of natural science.

In order to fully grasp the arguments presented above, let us complete Reflection and Action 6.2 and then proceed with the discussion on crisis in foundations of the social sciences.

Reflection and Action 6.2

Science as the only legitimate explanation is coming under increasing criticism. While it is acknowledged that science and technology have made immense progress and have made efforts to solve many of human problems such as hunger and disease and have tamed to some extent the wrath of the elements of nature, they have not been able to solve all of human problems, questions and search for meanings. This inability of science is one reason given for the increasing presence of religion in the everyday lives of people the world over. And if science is not the only legitimate explanatory avenue then what are the alternatives?

Some firm believers of Christianity contend that "evolution is a fantasy that scientists and other secularists cling to because it explains humankind through a process other than God's divine hand". They wish "the creation angle could be worked into the school curriculum somehow as another possible explanation. It could even be presented as a "theory"..." (source: http://lashawnbarber.com)

In the context of the above statements, write the answers to the following questions on a separate sheet of paper.

Questions

- Do you think the rising religiosity among people has anything to do with the fact that science does not answer all our questions and needs?
- Should we be offering an alternative explanation to understand the deeper question of existence in our school curriculums, as some Christians have argued it?
- What according to you is a proper explanation which is worthy of being considered as a theory or as a part of a social science discipline?

***SPECIAL NOTE FOR THE COUNSELLOR OF M A SOCIOLOGY FOR AN ACTIVITY DURING THE COUNSELLING SESSION: Please, form a discussion group from the learners of M A Sociology at your Study Center and discuss the last question in the group. Organise a debate on this topic and prepare a programme for broadcasting by Gyanvani in collaboration with the IGNOU Regional Centre in your area.**

6.5 Crisis in Foundation

It is, however, the advent of post-modernity that has caused a severe crisis to the philosophic foundation of the social sciences. As you already know, social science or sociology was a product of Enlightenment modernity. Its foundations lay in its adherence to scientific objectivity, its belief in reason and progress and its acceptance of the supremacy of western modernity. Post-modernity deconstructs all these foundations, and asserts that there is no universal truth, there is no culture that can claim itself to be superior to others, and the world is a site of differences. In other words, for post-modernists, there is no grand truth on science, progress and modernity. Instead, there are multiple voices, and the very notion of a rational/ coherent subject is questioned (Harvey 1989).

There are many reasons for the disillusionment with the project of modernity. The experience of war, violence and totalitarianism in the twentieth century, the growing assertion of the colonised people, and the resultant decline in the legitimacy of western power, the arousal of subaltern voices, the proliferation of new technologies of communication, and the rising consumer culture making a distinction between 'high' and 'low' meaningless– all these factors, as you would learn, led many sensitive thinkers in the West to rethink and interrogate the very foundations of modernity. The question is: what are its implications for sociology? In MSO 001, you would learn more about post-modernity. Nevertheless, it is not difficult to identify some implications as shown in Box 6.3.

Box 6.3 Implications of Post-modernism© for Sociology

Sociology, from Comte to Marx, was heavily influenced by science. Its objectivity, its universality and explanatory power. Hence sociology was seen as different from ideology/ narrative/ fiction/ metaphysics. Sociology as a science of society was thought to be more objective and true, a piece of reliable knowledge. But then, for post-modernists, science has lost its sole claim to truth; science itself is being seen as yet another narrative, a story, and an ideology. And, therefore, science cannot be seen as the master narrative. There is no master truth, no totalising theory. Instead, in this world of multivocality there are diverse stories and truths. It is a world without consensus, without coherence, without a meta-theory.

❖ Hence all these modern sociologies with their *totalising claims*, Comte's law of three stages, Durkheim's division of labor leading to organic solidarity, Weber's modernity as widespread rationalisation, and Marx's theory of class analysis, lose their significance. And sociology becomes, to use Zygmunt Bauman's (1987) words, "merely an act of translation of multiple traditions without any claim for legitimating the grand truth". And as science is being deprived of its validity claim sociologists in the post-modern setting become free to play with innumerable sources: narratives, life histories, fictions, popular cinema and music.

❖ Post-modernists questioned the sanctity of knowledge as an objective quest for truth. As Michel Foucault would argue, knowledge is never separated from power, and power from knowledge (discussed in Sheridan 1980). For example, psychiatry can be seen as an integral component of a disciplinary society. With its notion of 'normalcy' it seeks to modulate /control sexuality or madness. It is like formulating a concept like discourse© that embodies knowledge as well as power, and has a principle of exclusion and inclusion. Hence we have a discourse on madness or sexuality that allows psychiatrists, doctors and other 'normalising judges' to categorise people as 'mad' or 'sexually deviant'. In other words, everything is constructed, and there is no natural/ permanent truth. Furthermore, the idea of an emancipatory modern

society gets challenged, and we are told about a disciplinary society characterised by a widespread network of surveillance machinery.

Yes, post-modernists have caused a severe crisis. For them, there is no foundational truth (as put forward by Bacon and Descartes) that can prove to be objective, there is no universal/ totalising theory (like Marxism) that can overcome local contexts and heterogeneity, and there is no "superior" method (like science or positivism). Here is a situation, a typical post-modern condition, leading to relativism, incoherence and schizophrenia.

But then, there are social scientists who do not give their consent to post-modernism, even when they see problems with modernity and science. And this debate goes on. As you progress you will learn more about it and also participate in the debate.

6.6 Conclusion

In this unit we have tried to understand the philosophical bases of the social sciences and how different epistemological and metaphysical issues dealt within philosophy have had a bearing on various perspectives and methodologies of the social sciences. As you can see from the discussion in this unit, there has been no single paradigm or theory which has dominated the social sciences, including sociology. Though sociology was influenced by natural science and its methodologies, especially in its early stages, in an attempt to establish itself as a discipline, it has realised that the subject matter of sociology, involving as it is human beings, is not amenable to generalisations and laws of the Newtonian kind. With the discovery of increasingly different worldviews and particular cultures, it became difficult for sociologists to come up with universal explanations. Even if they did, the same came under heavy criticism. The increasing need to represent plurality has produced a new wave of critique leading to a post-modernist's valorisation of many methods and in that almost everything is acceptable.

Further Reading

Phillip, Derek L. 1973. *Abandoning Method*. Jossey-Brass: New York (For a critique the epistemological foundations of common research procedures)

Coser, Lewis A. 1969. *Sociological Theory*. Macmillan: London (For a general collection of key passages from classic writings in sociological theory)

Unit 7

Positivism and its Critique

Contents

7.1 Introduction
7.2 Heroic Science and Origin of Positivism
7.3 Early Positivism
7.4 Consolidation of Positivism
7.5 Critiques of Positivism
7.6 Conclusion

Learning Objectives



It is expected that after reading Unit 7 you will be able to learn and discuss the following themes.

- Positivism and its influence on sociology
- The contributions of Comte and Emile Durkhiem
- A critique of positivism
- Emergence of 'reflexive sociology'

7.1 Introduction

You have already become familiar in Unit 6 with an overview of the philosophy of social science. At this juncture, it would be a good idea for you to focus and concentrate on specific issues and modes of enquiry. In Unit 7 we are going to discuss positivism, a method of enquiry that sought to give immense cognitive prestige to the discipline, and wanted to convince its adherents that sociology too could be a science and follow the scientific methodological principles of empirical observation, deductive reasoning, and formulation of laws or universal generalisations (see Box 7.1 for salient features of positivism). As a matter of fact, this self-perception of sociology as a science sought to serve the following three purposes—:

- It separated sociology as an empirical science from humanities and philosophy.
- It gave a professional identity to the sociologist who ought to overcome the limiting identities emanating from caste, class and gender, and think in a more objective/rational/ universal fashion.
- The knowledge it would acquire would help us to reconstruct our society, and create a better world.

Section 7.2 traces the origin of positivism and Sections 7.3 and 7.4 discuss the early developments in positivism and its consolidation. Though positivism became a powerful sociological method, it had its critics. In Section 7.5 we show that positivism has now lost much of its appeal.

Box 7.1 Salient Features of Positivism

The salient features of positivism can be characterised as follows.

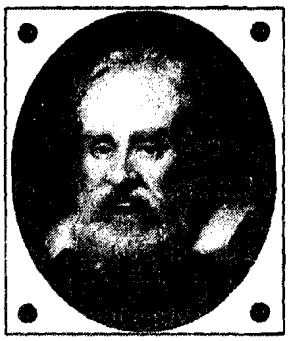
- ❖ It believes in the *unity of method*. Sociology is not different from the natural sciences as far as the method of enquiry is concerned.
- ❖ It celebrates objectivity and value neutrality. It, therefore, separates the knower from the known, subjectivity from objectivity, and fact from value.
- ❖ Sociology is not commonsense. It rests on explanatory principles, which give a universal character to the discipline.
- ❖ Sociology is a formal and organised body of knowledge, characterised by specialised skills and techno-scientific vocabulary.
- ❖ Sociology can strive for abstraction and generalisation. Human experiences can be explained through law-like generalisations.
- ❖ The scientific knowledge of society can be used for social engineering.

7.2 Heroic Science and Origin of Positivism

Herein lies an important question. Why did positivism grow at a certain juncture of history, and establish itself as the leading voice in the discipline? You already know how modern science was evolving, arousing immense optimism, and becoming hegemonic. The scientific thinking emanating from Bacon, Descartes and Newton, and scientific inventions and discoveries were altering the cultural/intellectual landscape of Europe. And eventually, the Enlightenment in the eighteenth century (see Box 7.2), as you have already learnt, was a turning point. It meant celebrating a new age of reason, objectivity and criticality. It was like coming out of the medieval order, religious influences, and asserting that scientific thinking would enable us to create a better world. It was difficult to escape the influence of the age. It was difficult not to be influenced by the spectacular success story of science. Science became knowledge itself: real, objective and foundational! And to survive in such a milieu was to accept science and its ascending power.

Box 7.2 Triumphs of Natural Sciences in the Eighteenth Century

The Enlightenment witnessed a period of spectacular triumphs in the natural sciences. Beginning with Issac Newton (1642-1727) and Galileo Galilei (1564-1642), natural science began a conquest of the natural world, which was a staggering success. This success did not go unnoticed in the social sciences. Rather, as many commentators have noted, the social sciences were born in the shadow of these triumphs. Furthermore, the methodological lessons that the natural sciences were teaching seemed to be very clear: if the methods of the natural science are strictly adhered to then the spectacular success of these sciences could be matched in the social sciences. The social sciences had only to await the arrival of their Newton (Hekman 1986: 5).



Galileo Galilei
(1564-1642)

Details in Box 7.2 possibly explain the origin of positivism. The assumption was that the identity of sociology as "true knowledge" could not be established without adopting the method of the natural sciences. There was yet another important factor. The new age characterised by the Industrial Revolution, expanding trade and commerce, and emergent bourgeoisie altered power relations in the West. It was the time that witnessed the assertion of the new elite: technologists, scientists and capitalists. They saw immense possibilities in science, and were strong adherents of a positivistic/ scientific culture and mode of enquiry. Yes, there were dissenting voices, say, the voices emanating from romanticism® that critiqued the worship of science and reason, and pleaded for imagination, subjectivity and creativity (as pointed out by Gouldner 1970). But then, the language of science was irresistible. The politico-economic establishment was sustaining it. Science was going to stay, and positivism was its inevitable consequence.



Issac Newton
(1642-1727)

The entire phenomenon can be understood better if you reflect on the self-perception of science. For instance, it is argued that science is a radical departure from common sense (Nagel 1961: 1-14). Well, common sense may not necessarily be false. But common sense, unlike science, is seldom accompanied by a search for systematic explanations – the explanations derived from solid factual evidence. For instance, before the advent of modern science people knew the function of the wheel. But it was only modern science that provided us with an explanatory principle like the frictional force to make sense of the operation of wheels. Likewise, the principles formulated by Newton could explain innumerable facts: the behavior of the tides, the paths of projectiles, and the moon's motion. It is also argued that, unlike the indeterminacy of common sense, the language of science is more specific, focused and pointed. It abhors all sorts of vagueness. Even though the poets may speak of infinite stars, it would be argued, astronomers are interested in calculating and measuring their exact number. Furthermore, science, unlike common sense, is a distant, detached and abstract exercise. Whereas common sense has an intimate relationship with our everyday world, science is essentially neutral. You may enjoy the color of the sunset: but then, the electromagnetic theory, which provides a systematic account of optical phenomena, retains its remoteness and abstraction. In fact, science deliberately neglects the immediate values of things. That is why; it is argued that science is primarily critical in spirit. Whereas common sense tends to take things for granted, science problematises even our most cherished beliefs. This does not mean that common sense is necessarily false and science is true. What distinguishes science is its

critical spirit, its insistence on empirical evidence. Here we quote the words of Nagel (1971: 13).

> The difference between the cognitive claims of science and common sense, which stems from the fact that the former are the products of the scientific method, does not connote that the former are invariably true. It does follow that while common sense beliefs are usually accepted without a critical evaluation of the evidence available, the evidence for the conclusions of science conforms to standards such that a significant proportion of conclusions supported by similar structured evidence remains in good agreement with additional factual data when fresh data are obtained.

Many were articulating this supremacy of science as a more reliable, objective and critical knowledge. For instance in Box 7.3 we bring to you Merton's (1972) four institutional imperatives of science.

Box 7.3 Merton's Four Institutional Imperatives of Science

- Science is *universal*. The validity of a scientific statement does not depend on any particularistic criterion. It is against all sorts of ethnocentrism. It is valid for all.
- Science implies the *communism of knowledge*: Scientist, it is argued, want nothing more than esteem and recognition. Scientist's findings and discoveries, far from remaining a private property, become a collective heritage. It is this shared culture that enables science to evolve, grow and progress dramatically.
- Science demands *disinterestedness*: a process of rigorous scrutinisation and examination of one's findings without any bias.
- Science is *organised skepticism* that distinguishes it. Everything for science is an object of critical enquiry. There is nothing sacred or profane. Science investigates, examines and problematises everything. That is the success story of science.

In the self-perception of science as given in Box 7.3, you see a *positive* story: a positive affirmation of the virtues of science, its ability to construct objective, empirical, critical and universal knowledge, which is free from personal/ political bias and prejudice. In a way, it is a *heroic* notion of science. Positivism was also an affirmation of this positive/ heroic science. It was positive because it meant certainties of science. And it also meant a positive attitude towards life: using science for improving our lot.

7.3 Early Positivism

Positivism, as you can gather, emerged out of a situation in which there was tremendous optimism centered on the cognitive power of science. As mentioned in Unit 6, you also know that modern sociology evolved at a specific juncture of European history when the entire social landscape altered because of the scientific revolution, the Enlightenment and the French Revolution. It was indeed a new age, and sociology as a formal/

academic discipline was trying to make sense of it. In fact, the roots of early positivism could be found in the first half of the nineteenth century in France. Imagine the state of post-revolutionary France. There was a significant change in the domain of knowledge. The separation of science and philosophy became inevitable; new scientific journals started appearing, and a close link between science and industry was established. It was felt that there was a single scientific method applicable to all fields of study. Possibly Saint Simon (1760-1825), one of the early sociologists, articulated this aspiration rather sharply. A scientist, he felt, is one who predicts, and it is this power of prediction that gives him the power. He, therefore, pleaded strongly for extending the scientific outlook from the physical sciences to the study of human beings. It was an urge to create some kind of a *social physics* so that sociology could accomplish its historical mission: completing the unfinished agenda of the Industrial Revolution.

Indeed, this close affinity with science gave birth to positivism. Auguste Comte (1798-1857), the founder of modern sociology, established positivism as the most cherished doctrine of sociology (see also Unit 1). Yet, like Saint Simon, Comte too was witnessing the revolutionary transformation. In a way, he saw the contradiction between the two social forces: theological/ military and scientific/ industrial. Like a visionary, he felt that this contradiction could be resolved only by the triumph of the scientific/ industrial society. Scientists, as he saw all around, were replacing theologians as the moral guardians of the new social order, and industrialists were replacing the warriors. Not solely that. Comte too shared the Enlightenment assertion that it was possible for science to grasp the workings of the world. He believed that positivist or scientific knowledge was the inevitable outcome of the progressive growth of the individual mind as well as the historical development of human knowledge.


Saint Simon
(1760-1825)

From 1871 to 1823 Comte and Saint Simon collaborated so closely that it was almost impossible to distinguish the contributions of the two. It was at this juncture that they spoke of social physics, and the need to discover natural and immutable laws of progress which are as necessary as the law of gravity. But then they separated, and eventually Comte emerged as an independent scholar. It was during 1830-1892 that he published six volumes of *Course of Positive Philosophy*. And finally, during 1851-1854, he published four volumes of *System of Positive Politics*.

What made Comte immortal in the discipline was his celebrated 'law of three stages' (see also Unit 1). First, he spoke of the *theological stage*: a stage in which the mind explains phenomena or mundane occurrences by ascribing them to the unfathomable gods. The fact is that without

some guide one cannot begin to make systematic observations. And sciences in their infancy could not escape the questions relating to the essences of phenomena and their ultimate origins to which theological answers are most appropriate. Second, he spoke of the *metaphysical stage* in which abstract forces, powers and essences, rather than spiritual forces, are considered responsible for worldly affairs. And finally, as Comte argued, there was *a positive* or scientific stage in which we abandon the search for ultimate origins, purposes, or abstract forces, and become more concrete and focused: we observe the relations between phenomena, and arrive at laws because *the aim of positive philosophy is to consider all phenomena as subject to invariable natural laws* (see the example in Box 7.4).

Box 7.4 An Example to Understand the Deeper Meaning of Comte's Law of Three Stages

Let us take a simple illustration to comprehend the deeper meaning of these three stages of knowledge. Imagine fire as a phenomenon. It is possible to explain it, as the Vedic hymns suggest, as a manifestation of a powerful deity called *Agni*. Now Comte would have argued that explaining fire as a manifestation of *Agni* is a theological explanation. But suppose one goes beyond these Vedic rituals, and enters a higher stage of contemplative/abstract thought, and sees fire as something symbolising human beings' quest for truth and purity: burning all egotistic passions and impulses. Yes, Comte would have argued that it is a metaphysical explanation. But then, if you argue that fire is just a physico-chemical phenomenon that can be explained in the form of a natural law, Comte would have argued that you have finally arrived the positive stage. In other words, positivist knowledge is empirical and universal; something that is concrete and demonstrable. Here is a piece of knowledge without a metaphysical/ theological significance. It demystifies the world. So when you see the rains, you need not explain it as *Indra's* blessing; nor do you see it as a manifestation of man's poetry to overcome the dryness of his being. Instead, the rains you see, in this positivist stage, can be explained in terms of the scientific principles of heat, cloud formation and water cycle!

Not all branches of knowledge, argued Comte, reach the positive stage simultaneously. The 'lower' sciences, like astronomy, mechanics, chemistry and biology, develop fast. These are lower sciences because these are less complex, less dependent on the other sciences, and their distance from human affairs is far greater. But sociology, being more complex, and more near to everyday life, reaches the positive stage quite late. Comte was, however, hopeful that even for sociology the time had finally arrived. It could now project itself as a positive science, analyse social phenomena, and discover the laws governing the relations among them. Sociology, for him, is the *queen of the sciences* because without the guidance of its laws, the discoveries of the lower sciences could not be utilised to their maximum advantage for humanity.

There are two kinds of sciences, namely, *analytic* and *synthetic*. Physics and chemistry can be said to be analytic because they establish laws among isolated phenomena. Biology is synthetic because it is impossible

to explain an organ apart from the living creature as a whole. Likewise, according to Comte, sociology is synthetic because everything, be it religion or state, has to be studied in the context of the entire society.

It is not difficult to draw the implications of positivism. There is no free will in mathematics and physics. Likewise, as Comte thought, there is no free will in sociology. Sociology. Comte believed, could determine what is, what will be, and what should be. In other words, social phenomena are subject to strict determinism.

Let us understand what it means. Even a child learning elementary mathematics would tell you that 2+2=4. If you and I want it to be different, it cannot be altered. In other words, 2+2= 4 is an iron law, say, like the law of gravitation. It prevails irrespective of our subjective states of mind.

That is precisely the kind of knowledge positivism is striving for. Suppose as a Marxist you put forward a sociological law that socialism is inevitable because that is the way history progresses. You are arguing like a positivist, and equating Marxism with an invariable natural law like the law of gravitation that exists, no matter what kind of life projects you and I have, and what kind of thoughts we cherish.

Yes, Comte was a great proponent of science. He believed in the essential Enlightenment notion of progress and in the arrival of the new age of scientific objectivity. Yet, let us not forget that Comte was also a great moralist. He was deeply concerned about social order and its moral foundation. In fact, he sought to use positivist sociology to reconstruct his society. No wonder, positivist sociology, for him, would act like a religion, of course a secular religion for humankind. This led Nisbet (1967:58) to comment that 'positive sociology for Comte is simply medievalism minus Christianity'. Look at the state of the French society Comte was confronting. True, the revolution was a turning point. But then, it also led to new problems, which, as he felt, were quite disturbing. For instance, he could not give his consent to the prevalent 'anarchy' leading to exaggerated individualism. It was, for him, a disease of modern civilisation. Nor did he give his consent to those who pleaded for divorce rights. His anxiety was that it would lead to the breakdown of the centrality of the family; it would also weaken the community. This moral crisis, or the crisis of order, was something that must be resolved. And it was his conviction that the new positivist sociological knowledge could fulfill the void, and serve the therapeutic function of religion. No wonder, he was equally concerned about social static or restoration of order. In fact, if you think deeply, you would realise that Comte's positivism conveyed the interesting message that science, despite the progressive role it played, was also an integral component of the Establishment, 'an ideology of order'!

7.4 Consolidation of Positivism

Auguste Comte provided the intellectual foundation of positivist sociology. And possibly it was this French tradition that gave birth to one of the most distinguished classical sociologists, Emile Durkheim (1858-1917). Durkheim consolidated and elaborated positivist sociology. In a way, the *Rules of Sociological Method* that he published in 1895 gave a new momentum to the discipline. The subject matter of sociology, he repeatedly emphasised, is the domain of *social facts* that cannot be comprehended by any other discipline. It is, therefore, important to know how he defined social facts.

You can understand it better through an example from your everyday life. Imagine one fine morning you choose to walk barefoot. Nobody has compelled you to do so; it is your free choice, your own decision. But then, imagine one evening you decide to visit a temple, and offer your prayers. Before entering the temple you remove your shoes, wash your hands, and walk barefoot.

Do you see a qualitative difference in these two experiences? Yes, there is a significant difference. In the second case you are not really free. Well, you may argue that it is you who have chosen to walk barefoot inside the temple complex. But that is because you have internalised the prevalent practice so well that it looks almost natural and spontaneous. Imagine what would have happened had you tried to enter the temple without removing your shoes. You would have experienced severe constraint and resistance. From the temple authorities to the other devotee: all would object to your act and regard it as an insult to the sacred space. In other words, walking barefoot inside the temple is a fact that exists out there as a thing. It has an independent force that transcends your own will. If you disobey the practice, you would be forced, coerced, isolated or ridiculed. Such facts, according to Durkheim, are called social facts.

Everybody eats, drinks and sleeps. But not all such facts can be called social. Then, there would be no difference between biological/ physiological facts and social facts. In fact, there are some distinctive features of social facts. First, social facts exist outside you. Imagine a tree that you are seeing from your window. It has a reality of its own. Even if you close your eyes and refuse to see it, the tree exists as it is. Likewise, Durkheim (1964: 1) explained that

> When I fulfill my obligations as brother, husband, or citizen, when I execute my contracts, I perform duties which are defined, externally to myself, and my acts, in law and in custom. Even if they conform to my sentiments and I feel their reality subjectively, such reality is still objective, for I did not create them; I merely inherited through my education.

These facts are indeed different. The currency you use in your economic exchange, the language you speak in the process of communication, the

rituals you celebrate as a member of a religious community, all these are social facts. Their existence does not depend on your or my will. As Durkheim (1964: 2) put it, 'here are ways of acting, thinking, and feeling that present the noteworthy property of existing outside the individual consciousness'.

Second, social facts are endowed with *coercive power*. True, in our everyday life we do not experience this constraint. The reason is that, because of habit, socialisation and internalisation, we tend to experience social facts as natural and spontaneous. But then, as Durkheim (1964: 2-3) reminded, 'if I do not submit to the conventions of my society, if in my dress I do not conform to the customs observed in my country and in my class, the ridicule I provoke, the social isolation in which I am kept, produce, although in an attenuated form, the same effects as a punishment in the strict sense of the word'.

Third, social facts as things need to be distinguished from their individual manifestations. In fact, Durkheim held that social facts 'acquire a body, a tangible form, and constitute a reality in their own right, quite distinct from the individual facts which produce it'. For example, codified legal and moral rules, or articles of faith wherein religious groups condense their beliefs; none of these can be found entirely reproduced in the applications made of them by individuals. Yet, sociologically it is important to categorise their tangible, crystallised aspects as social facts, not their individual manifestations.

The meaning of 'social' in social facts is, therefore, clear. As Durkheim (1964: 3) stated, 'their source is not in the individual, their substratum can be no other than society, either the political society as a whole or someone of the partial groups it includes, such as religious denominations, political, literary, and occupational associations'.

To sum up, you can borrow Durkheim's (1964: 13) own words, and conclude:

> A social fact is every way of acting, fixed or not, capable of exercising on the individual an external constraint; or again, every way of acting which is general throughout a given society, while at the same time existing in its own right independent of its individual manifestations.

You can understand Durkheim's scientific sociology better if you look at the 'rules' he prescribed for studying social facts. One such rule which has often been talked about is that it is absolutely necessary to *observe social facts as things*. What does it mean? A thing is a thing because its facticity cannot be altered even if you and I want it. It is in this sense that external objects like a tree, a table and a chair exist as things. If you wish to observe a thing as it is, you should not confuse it with your own ideas and sentiments. A tree needs to be seen as a tree, even if you hate trees. In other words, almost like Francis Bacon, Durkheim would argue that our ideas and sentiments or 'idols' should not prevent us

from seeing a thing as it is (see Unit 6 for the discussion of Bacon's ideas). A sociologist must follow this fundamental lesson of scientific objectivity. Take, for instance, marriage as a social fact. As an individual, you may not like the institution of marriage. But when as a sociologist you plan to study marriage as a social fact, retain your objectivity, separate your own likes and dislikes from facts, and see it as a thing codified in marriage laws, religious traditions and social customs. In other words, it is like separating the knower from the known facts from values. It is similar to the way a physicist studies the behavior of atoms, or a geologist studies the formation of mountains. Durkheim (1964: 30) elaborated further.

> Social facts...qualify as things. Law is embodied in codes; the currents of daily life are recorded in statistical figures and historical monuments; fashions are preserved in costumes; and taste in works of art. By their very nature they tend towards an independent existence outside the individual consciousness, which they dominate. In order to disclose their character as things, it is unnecessary to manipulate them ingeniously.

Likewise, Durkheim recalled Rene Descartes, and reminded us of the need for overcoming all presuppositions. For Durkheim (1964: 32) it is like overcoming 'inferior' faculties like emotions, sentiments and feelings. Only then is it possible for the sociologist 'to emancipate himself from the fallacious ideas that dominate the mind of the layman'. No wonder, Durkheim (1964: 35) pleaded strongly for a scientific vocabulary in the discipline. Sociologists must avoid the indeterminacy of common sense language, and be clear about the specificity of the concept they use.

> The subject matter of every sociological study should comprise a group of phenomena defined in advance by certain common external characteristics, and all phenomena so defined should be included within this group.

It is equally important to avoid all sorts of vagueness while studying/ observing an object. The physicist substitutes for the vague impressions of temperature and electricity by the visual representations of the thermometer and the electrometer. Likewise, when a sociologist studies social facts, s/he should not be carried away by their individual manifestations. Instead, it is important to find their expression in tangible and crystallised forms; for example, in legal codes, moral regulations, popular proverbs, statistical figures and religious conventions. Take an example. Suppose you are studying caste as a social phenomenon. It is possible that Ambedkar and Gandhi might have experienced and responded to caste hierarchy in different ways. But if you are practicing Durkheimian positivist sociology, you need not to be carried away by these individual manifestations. Instead, your task is to see caste as a thing, a structure rooted in codified laws, religious sanctions and social customs.

An important characteristic of science is its explanatory power. As sociology is scientific, it must explain social facts. For Durkheim, sociological explanations are objective and independent and cannot be reduced into psychological terms. It was in this sense that Durkheim (1964: 102)

made an interesting point that 'a whole is not identical with the sum of its parts'. It acquires an independent character that is qualitatively different from those of its component parts. Society is, therefore, not identitical with the sum of individuals. It is, of course, true that without individuals there is no society. But society transcends the individual. While explaining social facts, it is important to understand the supremacy of the collective over the individual. Durkheim (1964: 104) clarified that

> The group thinks, feels, and acts quite differently from the way in which its members would were they isolated. If, then, we begin with the individual, we shall be able to understand nothing of what takes place in the group. In a word, there is between psychology and sociology the same break in continuity as between biology and the physiochemical sciences. Consequently every time that a social phenomenon is directly explained by a psychological phenomenon, we could be sure that the explanation is false.

It was in this sense that Durkheim, as his other substantial works suggest, provided sociological explanations for social facts like suicide, division of labor and moral education. In fact, as Durkheim (1964: 110) categorically stated, 'the determining cause of a social fact should be sought among the social facts preceding it and not among the states of individual consciousness'. Likewise, the function of a social fact needs to be seen in its relation to some social end. Take, for instance, punishment as a social fact. For Durkheim, its cause is the intensity of the collective sentiments that the crime offends. Likewise, its function is to maintain these very sentiments at the same degree of intensity. No wonder, for him, when the teacher punishes the child its function is not to cause physical suffering to the concerned child but to restore the sanctity of moral order in the classroom. To explain a social phenomenon, as Durkheim argued, is to find its cause as well as its function. And both cause and function are essentially social, not to be reduced to the individual psyche.

The craft of scientific sociology that Durkheim constructed gave a new momentum to the discipline. Sociology, he asserted, must come out of the influence of philosophy, and establish itself as a science. The principle of causality, he believed, can be applied to social phenomena. And sociology, as a result, would be free from ideological analysis; it would be neither individualistic, nor socialistic. Instead, sociology would be an objective study of social facts. This objectivity might reduce the 'popularity' of the discipline. But then, as if speaking like a prophet, Durkheim (1964: 146) said,

> We believe, on the contrary, that the time has come for sociology to spurn popular success, so to speak, and to assume the exacting character befitting every science. It will then gain in dignity and authority what it will perhaps lose in popularity...Assuredly, the time when it will be able to play this role successfully is still far off. However, we must begin to work now, in order to put it in condition to fill this role some day.

Let us not forget that Durkheim, despite his strong plea for scientific sociology, was deeply concerned about the moral foundation of society,

its stability and order. Possibly modern/ industrial societies, and their implicit differentiation, specialisation and division of labor made him confront a new problem. Gone are the days of simple societies characterised by 'mechanical solidarity'. But then, can modern societies survive merely through egotistic individualism and selfish interests? No wonder, he evolved a strong critique of utilitarianism and its celebration of the atomised individual trying to maximise one's pleasure. Instead, Durkheim continued to retain his belief in the moral supremacy of the collective, and he saw that the increasing differentiation in a modern society, paradoxically, would lead to more and more mutual dependence and create 'organic solidarity'. It was this consistent search for the basis of moral order that led him to explore the domain of religion and of the sacred, and school and moral education. In a way, in both Auguste Comte and Emile Durkheim you are witnessing an endeavour to reconcile positivist sociology with social order and stability.

Positivism, it seems, is both an assertion of science as well as a quest for order and stability. Does it mean that science is yet another form of ideology? (See Unit 1, where a similar question has been answered in the affirmative.)

Let us now complete the Reflection and Action 7.1 exercise to check our own understanding of Durkheim's idea of social facts.

Reflection and Action 7.1

For Durkheim social facts are external and coercive and social facts should be treated as things to be studied through concrete expression in legal codes religious expressions, proverbs, customs etc. Based on the above notion of social facts, write on a separate sheet of paper your answers to the following questions.

Questions

- ❖ What can be given as examples, based on your own experience, to substantiate Durkhiem's statement that social facts are coercive?
- ❖ Do you think that human beings are constantly seeking to escape the binding aspects of society; if they do so, in what way do they achieve this? Give examples.
- ❖ After collecting a few proverbs relating to gender relations, find out in what way do they capture the status of women?

7.5 Critiques of Positivism

Yes, in the French sociological tradition you saw the evolution and consolidation of positivism. But then it reached the other parts of the world and became a powerful sociological method. Positivism had its appeal. It sought to give a 'scientific status' to the discipline. The search for precision, objectivity, causality and value neutrality made it acceptable. This positivist social science found its logical culmination in the cult of numbers, in the mathematisation of social phenomena, in the urge to reduce qualitative human experiences into quantified statistical figures. And it has also its remarkable achievements.

But then, you can guess that not everyone can feel comfortable with positivism. First, it is possible to say that what is applicable in the domain of nature is not necessarily applicable in the domain of human society. Because, unlike nature, society consists of self reflexive agents who think, argue, contest, and through their practices and actions transform the world. Hence society cannot be subject to abstract/ universal generalisations. Positivism, it is alleged, undermines the creativity, reflexivity and agency of social actors. As you have already learnt in Unit 6, interpretative sociology was a refreshing departure from the positivist tradition.

Second, it can also be argued that the so-called 'ethical neutrality' of positivism reduces it to a mere technique, separated from moral/ political issues. And, paradoxically, it is precisely the politics of positivism. The establishment to legitimise itself often uses its scientific nature. In other words, positivism can prove to be pro-establishment, status-quoist, non-critical and non-reflexive. In the twentieth century this critique of positivism came rather sharply from critical theorists, or the adherents of the Frankfurt School Marxism. What is asserted is that science has lost its emancipatory power. Instead, science itself has become an integral component of the establishment. In fact, the experience of war, large-scale violence, the growth of fascism, the spread of the "culture industry", and the emergence of the 'authoritarian personality', in other words, the darkness of the twentieth century led these thinkers to speak of the 'dialectic of enlightenment'. No wonder, from Adorno to Horkheimer to Marcuse, the central thrust of their argument was that positivist science was nothing but a form of instrumental rationality leading to domination and manipulation of human and natural resources. They critiqued this instrumental rationality, and pleaded for a more critical, reflexive, qualitative and emancipatory social science.

Third, as you have already learnt in Unit 6, post-modernists deconstruct the very foundation of science. No wonder, for post-modernists, positivism loses its cognitive power and legitimacy. And in a way the distinction between objective science and subjective narrative gets eroded, sociology becomes yet another narrative filled with biographies and life histories, and a non-positivist/ post-modern sociology does not look fundamentally different from cultural studies!

As you understand, positivism emerged at a time when sociology was trying to establish itself as a science. And positivism continues to have its appeal (as was also pointed out at the end of Unit 4). But then, with the passage of time, with new experiences leading to disillusionment with the so called 'neutrality' of science, and with new sensitivity to reflexivity and creativity, we see the growing critique of positivism. Positivism has indeed lost much of its appeal. You can understand this changing intellectual milieu if you concentrate on the following two specific critiques of positivism.

A) Reflexive sociology resisting methodological dualism

Reflexive sociology, as put forward by Alvin W. Gouldner (1920-1980), is a meaningful alternative to positivism. Gouldner (1970), an American sociologist, wrote with a high degree of moral sensitivity, and critiqued positivism. He warned us of the methodological dualism© implicit in positivism. This dualism separates the knower from the known, subject from object, fact from value. Not solely that. It views that if the sociologist engages politically, emotionally and aesthetically with the object of his/ her study, the 'scientific nature' of the discipline would suffer. This cold objectivity, as Gouldner (1970: 496) would argue, is essentially an expression of alienation, that is, the alienation of the sociologist from his/her own self. It is like looking at sociological knowledge as just a piece of amoral technique.

> Methodological Dualism is based upon a fear; but this is a fear not so much of those being studied as of the sociologist's *own self*. Methodological Dualism is, at bottom, concerned to constitute a strategy for coping with the feared vulnerability of the scholar's self. It strives to free him from disgust, pity, anger, from egoism or moral outrage, from his passions and interest, on the supposition that it is a bloodless and disembodied mind that works best. It also seeks to insulate the scholar from the values and interests of his other roles and commitments, on the dubious assumption that these can be anything but blinders. It assumes that feeling is the blood enemy of intelligence, and that there can be an unfeeling, unsentimental knower.

Gouldner (1970: 493), however, pleads for methodological monism©, and asserts that the separation between the knower and the known must be overcome, because you cannot know others without knowing yourself. That is why, self-reflexivity is absolutely important. To know others a sociologist cannot simply study them, but must also listen to and confront himself/ herself. Knowing is not an impersonal effort but 'a personalised effort by whole, embodied men'. Reflexive sociology invites methodological monism, and, therefore, alters the very meaning of knowledge. It does not remain merely a piece of information. Instead, it becomes an awareness! It generates self-awareness and new sensitivity. Reflexive sociology, you would appreciate, is heavily demanding. Unlike positivist sociology in which you can remain 'neutral' and 'apolitical', reflexive sociology demands your moral commitment and ethical engagement. You cannot separate your life from your work. Gouldner (1970: 495) wrote,

> Reflexive Sociology, then, is not characterised by what it studies. It is distinguished neither by the persons and the problems studied nor even by the techniques and instruments used in studying them. It is characterised, rather, by a *relationship* it establishes between being a sociologist and being a person, between the role and the man performing it. Reflexive sociology embodies a critique of the conventional conception of segregated scholarly roles and has a vision of an alternative. It aims at transforming the sociologist's relation to his work.

Take an example. Suppose you wish to study the phenomenon called 'slum culture'. A way of doing it is, of course, a highly positivistic/ technical research. You hire research assistants, send them to the

particular slum with a questionnaire, and instruct them to distribute copies of it after random sampling. The data you gather get classified and quantified, and you make your conclusions. These are the conclusions derived from 'hard' facts. And never do you feel the need to engage yourself as a person with the slum. In other words, your dispassionate exercise is not different from the way a mathematician solves a puzzle, or a scientist works in a lab.

Now Gouldner's reflexive sociology would oppose this kind of research. Instead, it would make you reflect on your own self and your politics and morality. Possibly you are urban, upper class, English speaking and relatively privileged. What does it mean for you to understand the slum culture? Isn't it the fact that their suffering cannot be separated from your privilege? Can you understand them without questioning this asymmetrical power? These questions born out of self-reflexivity would possibly create a new sociology which, far from objectifying the world, tries to create a new one. Possibly new trends in sociological research emanating from feminist and Dalit movements resemble this sort of reflexive sociology. Because in these research trends one sees not just technical objectivity, but essentially a high degree of empathy, an urge to understand suffering, and a striving for an alternative praxis.

B) Agency and structure: process of structuration

Another significant critique of positivism has come from Anthony Giddens, a leading sociologist of our time. Giddens' (1976) book, *New Rules of Sociological Method*, is a turning point. It is a text in which he studied the intellectual trajectory of the discipline, and negotiated with interpretative traditions, and reflexed on a set of new rules. It does offer an alternative to positivistic/ scientific sociology. Giddens is categorical about the fact that nature and human society are two different realms of enquiry. Nature is not a human production, but society is being perpetually created, renewed and altered by human agents. That is why there are limits to natural science methodology in sociology. In sociology, argues Giddens (1976: 13), 'those who still wait for a Newton are not only waiting for a train that won't arrive, they're in the wrong station altogether'. This seems to be the reason why he began his intellectual conversation with phenomenological/ ethno methodological traditions, the way these 'interpretative' sociologies seek to understand meanings, that is, the meanings that conscious human actors attach to the world, and construct their knowledge of the everyday world they live in. Although, for Giddens, there are possibilities in these traditions, we need to see beyond. Because the meaning you and I attach to the world has to be situated in a social context, and asymmetrical resources and capabilities often characterise this context. Take an example. Imagine yourself as a student in the classroom. It is, of course, true that you are not a puppet-silently performing the prescribed 'role'. Instead, you are a creative agent attaching meanings, and creating an inter-subjective world called the classroom.

But, then, there is a problem. Your agency/ freedom is not unlimited. Because differential/ unequal resources might characterise the classroom: teacher versus student. Even a simple site like the classroom is, in fact, a site of conflict and contestation. Giddens (1976), therefore, argues that interpretative sociology alone is not sufficient; it is equally important to be aware of the complex relationship between the agency and structure. This critical/ creative engagement with methodological issues led him to put forward a set of rules which can be summarised as follows.

First, sociology is not concerned with a "pre-given" universe of objects. Instead, sociology deals with a world that is constituted or provided by the active doings of subjects. It is in this sense that 'the production and reproduction of society has to be treated as a skilled performance on the part of its members' (Giddens 1976: 160). Let us understand it. Suppose you are studying a phenomenon called caste. Even a rigid system like caste, you realise, is not pre-given. Instead, human agents are perpetually creating and transforming what we call a caste society. That is why, lower caste movements or Dalit movements or divergent reforms take place, and the social reality that sociologists study remains perpetually vibrant and alive. It is a skilled performance which is in perpetual flux.

Second, although society is a skilled performance, the creativity of the social actor, as you have just learnt, is not unlimited since all of us, irrespective of our creativity, are historically located social actors, working under certain conditions. It is in this context that we ought to be aware of the limits/ constraints provided by the social structure. But then, what is interesting about Giddens (1976: 161) is that he is talking about the duality of structure. 'Structure must not be conceptualised as simply placing constraints upon human agency, but as enabling'. An example would make this point clear. Imagine that you are speaking a language. No matter how creative you are, you cannot speak whatever you wish. You have to follow the grammar: a set of rules. But then, it is not just an experience of constraint. Language also enables you to speak. Moreover, a living language is not static; through their linguistic expressions and practices people make changes in the structure of the language. This is what Giddens (1976: 161) regards as the process of structuration and says that for him, 'to enquire into the structuration of social practices is to seek to explain how it comes about that structures are constituted through action and, reciprocally, how action is constituted structurally'. In a way, the process of structuration enables him to overcome the duality of structure and agency. Yes, you cannot imagine yourself without the `rules' that the structure provides. But at the same time, you are not a puppet. You can innovate, experiment, and alter the structure.

Third, Giddens asserts that a sociologist cannot escape the language that lay actors use to make sense of their world. That is why, meaningful sociological research requires immersion in the form of life which the sociologist seeks to study. Immersion does not, however, mean that the

sociologist has to become a 'full member' of the community. This only means the ability 'to participate in it as an ensemble of practices'.

And finally, sociological concepts, asserts Giddens, are based on double hermeneutic©. The reason is that social actors themselves have already interpreted society as being a skilled performance, and hence the sociologists further reinterpret it within their theoretical schemes, mediating ordinary and technical language. About hermeneutics you will read in Unit 8.

These debates and contestations, you need to realise, have enriched the discipline. And it is important that you become aware of these multiple voices within the discipline.

Let us at the end of our discussion, complete the Reflection and Action 7.2 exercise.

Reflection and Action 7.2

Structures are as much constraining as enabling, people constantly innovate and interpret the given structures.

Explain the above statement with an illustration from a contemporary situation and write a short note on the process of structuration. Discuss your note with fellow learners of M A Sociology at your Study Center.

***It is a request to the Academic Counselor to organise an essay competition on this topic and send the top ten essays to the Coordinator of MSO 002. The best essay will have a surprise appearance.**

7.6 Conclusion

In Unit 7 we have discussed the antecedents of positivism in the context of tremendous strides made in the sciences and of the general milieu of Enlightenment. Auguste Comte is considered the founder of sociology for he tried to conceive of similar methodology for the social sciences and the study of society. Positivism, as we can see, had a tremendous impact on sociology and in some ways helped establish it as a discipline. The propositions and theories of Comte have, however, been refined especially in the case of Durkhiem. He, by far, has been responsible for defining the subject matter of sociology and in laying out the rules to study society. Subsequent thinkers have critiqued his visualisation of an overarching coercive society, but Durkhiem still lays out a road map for us to follow and be clear in distinguishing individual acts from societal acts. The subsequent methodologies and perspectives in sociology attempted to privilege the agency of the individual. We have discussed Giddens' work as an example of this approach. Another critique that came strongly against positivism came from Gouldner, who felt that positivism with its methodological coldness separates the knower from the known and therefore he pleads for a reflexive sociology. Many in the

social sciences, especially in social anthropology, have recommended reflexiveness. The issues of who represents whom has come under severe debate not only in anthropology but also in the general debates in the social sciences. With the post-modernist critique of unilinear theories there is an increasing tendency to look for multi-vocality. The question that can be asked in this context is what relevance do theories, which support generalising tendencies, have in the globalising world?

Further Reading

Allan Kenneth 2005, *Explorations in Classical Sociological Theory, Seeing the Social World*, Sage Publications (Pine Ford Press): New York.

(The book uses ideas of modernity and post-modernity to help student understand how the theoretical, historical perspectives apply to their own time period.)

Giddens, Anthony 1984. The constitution of Society, Outline of the Theory of Structuralism, Polity Press: Cambridge (Chapter 1 on Elements of the Theory of Structuration and Chapter 6 on Structuration Theory, Empirical Research and Social Critique)

Unit 8

Hermeneutics

Contents

8.1 Introduction
8.2 Methodological Disputes in the Social Sciences
8.3 Tracing the History of Hermeneutics
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Learning Objectives 

It is expected that after reading Unit 8 you will be able to discuss the following themes of the hermeneutics perspective in the social sciences.

- Location of hermeneutics in methodological disputes in the social sciences
- History of hermeneutics
- Links between hermeneutics and sociology
- The position of investigator in interpretation of tradition
- Explanatory understanding in hermeneutics
- Critical or depth interpretation

8.1 Introduction

Unit 8 on Hermeneutics is the last Unit of Block 2 of Book 1. Block 2 deals with the philosophical foundations of social research. As mentioned in Unit 5, we are taking up a detailed discussion of Hermeneutics in Unit 8. Hermenutics (the interpretation of tradition) is a part of the methodological quest to understand the social reality. As it has been applied as a method in sociology, we need to look at its location in the scene of methodological disputes in the social sciences and trace its history for learning of its significance in sociological inquiry.

You will find that not much work in sociology in India has the applied hermeneutics approach, but its application is quite popular in areas where tradition is perceived as significant in the lives of the people. Wherever there is a new interpretation of the tradition, application of hermeneutics becomes a necessity. Unit 8 is going to provide a new tool in your hands. Hope, you will make use of it in your researches.

After introducing in Section 8.2 methodological disputes in the social sciences the unit traces in Sections 8.3 and 8.4 the history of hermeneutics and shows its relationship with sociology. In the end it discusses philosophical ideas of hermeneutics.

8.2 Methodological Disputes in the Social Sciences

Two main traditions have dominated the philosophy of social science for quite some time now, the divide being between those for whom social science is the explanation of social phenomena through a search for causes, and those for whom social science is the understanding and interpretation of the meaning of social action. This dispute over the nature of social science has a long history during which it has manifested itself in many forms.

There was the dispute over methods (Methodenstreit) of the 1890s in Germany in economics and Carl Menger (1841-1921), the neo classical Austrian economist, insisted that the exact laws of theoretical economics were identical in form to those of the natural sciences such as mechanics. Gustav Schmoller (1838-1917), of the German younger economic history school, roundly opposed Carl Menger (see Bryant 1985). Schmoller was also a member of the Society for Social Policy (Verein fur Sozialpolitik), which had been set up in 1872 at Eisenach as a reform movement. The Society (Verein) never took up concrete political programmes, instead it published several studies of specific concrete problems in the socio-economic sphere. For these studies, Schmoller advocated an inductive, empirical and historical approach in opposition to the deductive and abstract approach of Menger.

At this point, some neo-Kantian philosophers entered the debate and the dispute became generalised from a conflict over the methodology of economics to a conflict about the nature of social science (see Box 8.1).

Box 8.1 Conflict over Methodology of Social Science

Windelband (1848-1915), of the Heidelberg neo-Kantian school, in his Rector's address of 1894, distinguished the nomothetic natural sciences from the ideographic human sciences (see also Box 1.5 in Unit 1). This difference, according to him, was not due to nature or society being the object of study of these sciences, the difference was the result of these sciences having distinct cognitive interests and goals. The natural sciences have a technical goal and interest while the human sciences have a practical goal and cognitive interest.

Another important debate over the methodology of the social sciences in Germany was the debate on the value and purpose of scientific research (Werturteilsstreit), which began in 1903 and lasted for over a decade, and in which a famous participant was Max Weber. Weber cut through the debate in his own particular way, although he numbered himself among the descendants of the historical school (Schmoller, Windelband) For him the social world was composed of unique objects and singular configurations. He did not reject causal analysis as inappropriate to the social sciences. Believing in the 'value relevance' of all social action, Weber saw the method of 'interpretative understanding' as essential to

social science, but he also said that it had to be complemented by causal analysis. Not only did Weber's category of 'value relevance' not exclude causal analysis, it also did not exclude Weber's advocacy of a 'value-free' social science and this was the issue that he debated with Schmoller in the early 1900s (Weber 1949).

Finally, there was the post Second World War debate on positivism or positivist dispute (Positivismusstreit) in Germany, which began in 1961 with Popper's opening address to the German Sociological Association at Tubingen (see Bryant 1985 and also Adorno et. al. 1976)). Popper presented twenty-seven theses on the logic of the social sciences, and Adorno answered him. The debate was to be between a supposedly positivist methodology advocated by Popper and Adorno's anti-positivist stance, but Popper spiked the proceedings somewhat by claiming himself to be a critic of positivism. In spite of this, the dispute continued with Habermas coming in on the side of Adorno (1903-1969) and continuing the attack on Popper's methodology as positivist, and Hans Albert (1904-1973) defending this methodology. In this debate too, as in the earlier ones, one side insisted on the human/historical/cultural/social sciences having their own methodology, distinct from that of natural science. The name given to this distinct methodology of the human sciences was hermeneutics.

8.3 Tracing the History of Hermeneutics

In a way, the story of hermeneutics is much older than these methodological disputes. Should we begin this story of hermeneutics as a methodology for the social sciences with the figure of Hermes, who brought the messages of the Greek gods to mortals? As a messenger, did Hermes just repeat verbatim the words of the gods to the mortals, or did he first have to "interpret" what the gods said, to "understand" their words, before he could convey their 'meaning' to the mortals. (The Greek word, "hermeneus" means an interpreter.)

This concern with godly things remained when hermeneutics, the science of interpretation, resurfaced during the Reformation©. Hermeneutics really came into its own during the Reformation when, against the Catholic insistence on church authority and tradition in matters of understanding and interpreting the Holy Scriptures, Protestant reformers had to come up with alternative principles of the interpretation of the Bible. Did the church's insistence on its functionaries being the arbiters of the meaning of Christian religious texts imply that these religious texts were incomplete in themselves, and one had to go outside of them to a priest to discover their meaning? The recovery of the classical texts during the Renaissance had also led to a humanist hermeneutics, and the twelfth century interest in the Justinian© legal code generated its own hermeneutics of jurisprudence. The person responsible for bringing all these elements together, and known

as the father of modern hermeneutics, was Schleiermacher (1768-1834). While Schleiermacher (see Box 8.2 Schleiermacher on Hermeneutics) held his chair in Protestant theology at the University of Berlin between 1810 and 1834, he taught a course on hermeneutics.

Box 8.2 Schleiermacher on Hermeneutics

Schleiermacher believed that human beings have a linguistic disposition and their linguistic competence enables them to understand the utterances of others. He considered hermeneutics an art and believed that every utterance, whether spoken or written, contemporary or historical, could be understood through an interpretation. Every utterance was an embodiment of the speaker's thought, and this thought could only be embodied in language. Understanding and interpretation, therefore, always had two aspects or components, namely, a grammatical or linguistic component and a psychological or divinatory component. According to Schleiermacher (1819: 74), "Just as every act of speaking is related to both the totality of the language and the totality of the speaker's thoughts, so understanding a speech always involves two moments: to understand what is said in the context of the language with its possibilities, and to understand it as a fact in the thinking of the speaker."



Schleiermacher (1768-1834)

Schleiermacher (1819: 75) insisted that "these two hermeneutical tasks are completely equal, and it would be incorrect to label grammatical interpretation the 'lower' and psychological interpretation the 'higher' task". Grammatical interpretation corresponds to the linguistic aspect of understanding. This dimension is tied to the hermeneutical circle of part and whole, for it involves a consideration of the relation between an isolated expression or work and the pre-given totality of language or literature. Psychological interpretation, on the other hand, is a divinatory dimension that attempts to recover the individuality and originality of the speaker or the writer, to recreate the creative act.



Hermes, a Greek God

The goal of understanding is to 'understand the text at first as well and then even better than its author'. Since we have no direct knowledge of what was in the author's mind we must try to become aware of many things of which he himself may have been unconscious, except insofar as he reflects on his own work and becomes his own reader. Moreover with respect to the objective aspects, the author has no data other than we have (Schleiermacher 1819: 83).

8.4 Hermeneutics and Sociology

Having reached the stage of the rules of interpretation, to interpret well we have to linguistically contextualise the utterances of the writer, as well as historically contextualise the writer. We are still puzzled. What do the rules of the interpretation of texts have to do with sociology? Don't they belong instead to such disciplines as literary criticism? The answer to these questions is, in the words of Thompson (1981: 37), "In the wake of their work, the text to be interpreted was no longer a mere fragment of classical or Christian literature, but rather history itself as the document of the achievements and failures of humanity." Thompson's words echo the great German historians, Leopold von Ranke (1795-1886) and Gustav Droysen (1808-1884). When history itself became the story or the text that was the object of study, it was only a small step from this vantage point to view social practices and social institutions as text analogues, the meaning of which had to be interpreted.

Defining sociology in this way would have, however, seemed meaningless to Auguste Comte (1798-1857), the founder of sociology, who published his Course of Positive Philosophy in six volumes between 1830 and 1842. For Comte (see Box 8.3 Comte's View of Sociology), all phenomena are subject to invariable natural laws; in so far as human phenomena are concerned, the fundamental laws are the laws concerning the human beings' intellectual history, the evolution of the way of thinking of human beings about themselves and the world around them.

Box 8.3 Comte's View of Sociology

Comte saw sociology as the culmination of an intellectual history, which began from Theology to Metaphysics to Sociology. This law of the three stages, like the law of gravity, had been at work since the beginning of the human being's life on earth; each branch of our knowledge has passed successively through three different theoretical conditions, namely, the theological or fictitious, the metaphysical or abstract, and the scientific or positive. In the theological state, the mind supposes all phenomena to be produced by the immediate action of supernatural beings, and in the metaphysical state, the mind supposes abstract forces, veritable entities, inherent in all beings. In the positive state, the mind has given over the vain search after Absolute notions, the origin and destination of the universe and the causes of phenomena, and applies itself to the study of their laws, that is, their invariable relations of succession and resemblance (see Gordon 1991). Various disciplines like physics and biology had passed through the theological and the metaphysical stages and had now become scientific. If sociology followed the route of these sciences, it would also achieve a scientific status.

It was against a position like Comte's that in 1883, Wilhelm Dilthey (1833-1911) published his *Introduction to the Human Sciences* in 1883, in which he argued that it was unfortunate that while the human sciences had successfully freed themselves from the domination of theology and metaphysics, they had succumbed to the domination of the natural

sciences. Dilthey opposed Comte by positing a methodological divide between the natural sciences (the Naturwissenschaften) and the human sciences (the Geisteswissenschaften) which include the social sciences. Human beings are certainly part of nature, but unlike other natural objects like stones, air and trees, they are imbued with consciousness. They have an inside and when they do something, that something has a meaning for them, just as when an author writes something, he intends to convey some meaning through his writing. How can we know social action without the recovery of its meaning for its actors? When Dilthey asked this question, hermeneutics jumped from being a method of interpreting texts to being the method for the social sciences, and this jump fore-grounded the question of what is it that is assumed in conceptualising social action as a text. Then the task was to interpret the text and understand its meaning.

According to Dilthey, understanding is a category of human life. When human beings act, they act according to their reading of the situation in which they are. In order to understand their action, we have to first understand their understanding of the situation in which they acted. Dilthey argued that the formal methods of interpretation in the human and the social sciences are derived from these 'elementary forms of understanding' that are characteristic of everyday human life and social interaction. Dilthey (1883: 154) held, "Understanding arises, first of all, in the interests of practical life where people are dependent on dealing with each other. They must communicate with each other. The one must know what the other wants. So the first elementary forms of understanding arise."

For Dilthey, the object of understanding is always a 'life-expression'. Life expressions are of three classes, namely,

- The first of these classes are concepts, judgements and larger thought-structures.
- Actions form another class of life expressions.
- The third class is the 'lived experience'.

The understanding of any expression of life takes place in the medium of 'objective mind'. Taking over the Hegelian category of 'objective mind', Dilthey (1883: 155) writes, "For even the work of genius represents ideas, feelings and ideals commonly held in an age and environment. From this world of objective mind the self receives sustenance from earliest childhood. It is the medium in which the understanding of other persons and their life-expressions takes place."

Elementary forms of understanding give rise to higher forms of understanding. Even though understanding takes place in the medium of objective mind, "the subject matter of understanding is always something individual.... We are concerned with the individual not merely as an example of man in general but as a totality in himself" (Dilthey 1883: 158). Even

when one accepts Dilthey's insistence on the 'intrinsic value' of the individual, one is uneasy about how his adopted category of 'objective mind' fits with his emphasis on the individual. Dilthey's categories of objective mind and of the human being as a totality in himself or herself are analogous to Schleiermacher's distinction between the linguistic and psychological components of understanding. For both these thinkers, a central issue is that of how these two aspects of understanding fit together.

It is interesting to note that this dilemma of Dilthey's hermeneutics is matched by the structure-agency debate generated by structural-functionalism. Till the 1960s, the Parsonian model of structural-functionalism, which used a causal form of explanation, dominated sociology, particularly of the Anglo-American variety. The nineteen sixties saw a revolt against this model, in the form of ethnomethodology, symbolic interactionism and hermeneutics. Both ethnomethodology and hermeneutics insisted that instead of explaining social action by citing either structures or intentions as causes, the social scientist needed to understand the meaning of the action. For ethnomethodology, if the route to meaning lay through intentions, this still meant that intentions were not causes, instead they were the creators of meaning. For hermeneutics on the other hand, these meanings were derived not so much from intentions as from social and cultural practices (Alexander 1987).

8.5 Philosophical Hermeneutics

Getting back to our main story, while Dilthey's methodological concerns were further developed by Enrico Betti (1823-1892), Hans-Georg Gadamer (1900-2002) took the discussion of hermeneutics to a different plane. Gadamer argued that if one were to take seriously the claim of understanding being a category of life, then one could not see hermeneutics narrowly as a methodological tool, but one had to instead speak of 'universal' hermeneutics, since all human experience has a hermeneutic dimension. In an unselfconscious manner, we are engaged in the hermeneutic task of understanding all the time, but we only become conscious of it when we have an experience of misunderstanding, when we feel that we have not read the situation correctly. Just as breathing is a constant part of us as long as we live, so is 'understanding' a part of our being in the world. In the introduction to *Truth and Method*, Gadamer (1975) categorically stated that the hermeneutics he was developing was not a methodology of the human sciences. The philosophical questions of *Truth and Method* were: "what is understanding, and how is understanding possible?" Gadamer (see Box 8.4 Gadamer's Conception of Understanding) defined hermeneutics as the "basic being-in-motion of There-being which constitutes its finiteness and historicity and hence includes the whole of its experience of the world". ...The study of

hermeneutics is thus the study of Being, and, ultimately, the study of language, because "Being that can be understood is language" (as quoted in Hekman 1986: 94).

Box 8.4 Gadamer's Conception of Understanding

In *Truth and Method*, Gadamer found fault with both the Enlightenment and the Romantic conception of understanding as being based on a false opposition between reason and tradition, or between judgment and prejudice. Understanding is not a matter of judgments alone; nor do prejudices always lead to misunderstanding. Similarly, if the canons of rationality enable one to understand only to make sense in the context of certain traditions, then the tradition is not a matter of simple inertia. It is instead "...constantly an element of freedom and of history itself. Even the most genuine and solid tradition does not persist by nature because of the inertia of what once existed. It needs to be affirmed, embraced, and cultivated. It is, essentially, preservation, such as is active in all historical change. But preservation is an act of reason. ... . At any rate, preservation is as much a freely chosen action as revolution and renewal." (Gadamer 1975).

In his thinking about hermeneutics, Gadamer, much more than Dilthey and Schleiermacher, also problematised the position of the investigator. For Gadamer, 'any interpretations of the past, whether by a historian, philosopher or linguist, are as much a creature of the interpreter's own time and place as the phenomenon under investigation was of its own period in history. The interpreters are always guided in their understanding of the past by their own particular set of prejudices. Acts of understanding or interpretation require the overcoming of the strangeness of the phenomenon to be understood and its transformation into an object of familiarity in which the horizon of the historical phenomenon and that of the interpreter become united.' This fusion of horizons between the object and subject of study is possible because the historical object and the hermeneutic operation of the interpreter are both part of the overriding historical and cultural tradition or continuum, which Gadamer calls effective history (for more on fusion of horizons and effective history, see Dostal 2002).

8.6 The Hermeneutics of Suspicion

Our next thinker who has made a contribution to hermeneutics is Jorgen Habermas (1929-). Since Habermas came to hermeneutics from a Marxism mediated by the Frankfurt school, his methodological principles show the influence of both Marxist and Freudian theory. For Habermas, the history of the human sciences shows that human beings pursued knowledge in order to fulfill three interests, namely,

- The knowledge constitutive interest of the empirical-analytic sciences is in technical control.
- The knowledge constitutive interest of the cultural sciences is practical.

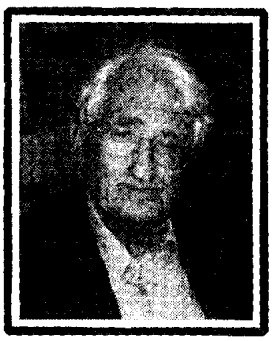
❖ The knowledge constitutive interest of the critical sciences is in emancipation.

Positing a relation between the logical-methodological rules of a science and its knowledge constitutive interests, Habermas argues that the methodological structure of Freudian psychoanalysis is paradigmatic for a critical science of society. Habermas calls the method of psychoanalysis a form of 'depth hermeneutics'; which incorporates explanation and understanding into a science oriented towards methodological self-reflection. (We will learn a little later Ricouer has labelled Habermas' method of psycho-analysis as 'hermeneutics of suspicion'). Successful psychoanalytic practice is defined in terms of the patient himself or herself being able to understand and overcome his or her neurosis. This idea can be generalised to the position that human beings, unlike objects in nature, have a consciousness and an understanding of what it is that they are doing. If the social scientist does not want to stay limited to this understanding, she or he is also not to ignore it by calling it false consciousness.

Habermas uses his category of depth hermeneutics to contest Gadamer's concept of philosophical or universal hermeneutics. Habermas allows that understanding the meaning of something that seems unfamiliar can come about when that unfamiliar action is placed in its historical and social context. But in the case of what he calls 'systematically distorted communication', he points to the problem of lack of understanding which remains even when the action is contextualised. We can use the example of a neurosis – say the compulsive washing of hands – to illustrate the point. If we seek to understand the meaning of someone constantly washing hands, over and above the placing of that someone in her or his social horizon, we need to also unearth the event which triggered that neuroses in the person. In order to understand this case, we have to first explain it (see Box 8.5).

Box 8.5 Habermas' Concept of Explanatory Understanding

Habermas (1985: 305) came up with the category of 'explanatory understanding' and said that "The What – the meaningful content of the systematically distorted expression – cannot be "understood" if the Why – the origin of the symptomatic scene in the conditions responsible for the systematic distortion itself - cannot be "explained" at the same time... explanatory understanding, as a depth-hermeneutical deciphering of specifically inaccessible expressions, presupposes not only, as simple hermeneutical understanding does, the trained application of naturally acquired communicative competence, but a theory of communicative competence as well. Such a theory concerns itself with the forms of the inter-subjectivity of language and the causes of their deformation."



Jorgen Habermas (1929-)

Wanting to employ depth hermeneutics as a resource for the emancipatory interest of the critical sciences, Habermas asks us to be conscious of the problem of the understanding turning into reconciliation in Gadamerian hermeneutics. Unless we are conscious of the possibility of 'systematic distortions', the 'strangeness of the phenomenon' might be overcome not through explanatory understanding but through reconciliation.

8.7 Phenomenology and Hermeneutics

Finally, in his hermeneutics, Paul Ricoeur carries this Habermasian turn back to explanation further. In his 'The Model of the Text', first of all, in order to prove the relevance of hermeneutics as a method to the social sciences, Ricoeur shows human action as having the same structure as a written text. Ricoeur (1971) first distinguishes between spoken and written discourse. In written discourse, unlike in an oral conversation, the link between the author and the meaning of what the author has written, as well as the link between the meaning of what is written and the specific interlocutor to whom it is addressed, is broken. Like written discourse, human action is also detachable from its author; it has consequences of its own, it always goes beyond its relevance to its initial situation, and it can be seen as addressed to an infinite number. These various similarities are sufficient to warrant the treatment of action as a text, and so to justify the distinctive status of a hermeneutical discourse on human action.



Paul Ricoeur
1913-2005

Like Habermas, Ricoeur also sees psychoanalysis as a type of hermeneutics. But this hermeneutics, Ricoeur points out, is not a hermeneutics of faith; it is, rather, a hermeneutics of suspicion. Whereas the hermeneutics of faith is animated by a willingness to listen and by a respect for the object as a revelation of the sacred, the hermeneutics of suspicion is animated by a skepticism towards the given and a rejection of respect for the object.

It is not only psychoanalysis that questions the authority of the meaning producing subject - so does structuralism: the objective meaning of a text is something other than the subjective intention of the author, and so the problem of the right understanding can no longer be solved by a simple return to the alleged intention of the author. Not that hermeneutics, even in the hands of Schleiermacher and Dilthey, ever reduced meaning to intentionality, but what is new in Ricoeur is that he begins to speak of the transition 'from Understanding to Explanation' and 'from Explanation to Understanding'. Ricoeur (1971) argues that we should consider structural analysis to be a necessary stage between a

'naïve' interpretation and a 'critical' interpretation, between a 'surface' interpretation and a 'depth' interpretation. The final movement in the dialectic of interpretation thus culminates in an act of understanding that is mediated by the explanatory procedures of structuralist analysis.

8.8 Conclusion

An application of hermeneutics refers to making end use of a traditional text, like the judge interprets and applies the law to a case, or the preacher interprets and applies a religious tenet to a contemporary moral issue. In this sense, hermeneutics is visible all around us and we hope that you are going to find some use of hermeneutics in your researches. In the units that follow, you will read about contemporary perspectives used in sociological research. It will be interesting for you to discover the application of hermeneutics in some of the contemporary social research.

Further Reading

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Unit 9

Comparative Method

Contents

9.1 Introduction
9.2 Relationship with Common Sense; Interrogating Ideological Location
9.3 The Historical Context
9.4 Elements of the Comparative Approach
9.5 Conclusion

Learning Objectives



It is expected that after reading Unit 9 you will be able to

- Locate the significance of the comparative approach in the context of the core issues of the objective versus subjective, macro versus micro and value neutrality versus partisanship
- Identify a few lessons for your own research on social issues.

9.1 Introduction

Navigating with the core issues of the objective versus subjective, macro versus micro and value neutrality versus partisanship, Unit 9 refers to the relationship of comparative method with common sense and interrogates its ideological location. Next, as comparative method has its own distinct historical legacy and trajectory, the author has provided a discussion of the historical context within which the method emerged. The trajectory of the method is relevant to the way it is operationalised during the course of empirical research. Further, there is a systematic delineation of key features of the method. Throughout the unit, there has been a focus on the linkages between the overall theoretical assumptions, research methods and field techniques. There is also substantial reference to social science research carried out in India on comparative method and this will provide you with a solid base in applying comparative method in your own research because, as said earlier, there can be no sociology without comparisons. This unit will provide you with some identifiable lessons for your own research on social concerns.

9.2 Relationship with Common Sense; Interrogating Ideological Location

Students of sociology are well aware about both the distinction between common sense and sociology as well as the danger of collapsing sociological knowledge to common sense understanding (Beteille 2002). It is in the context of a discussion on the comparative approach that this allusion to common sense again becomes important. You are well aware that we use comparison and contrast in everyday life and it is no wonder that

application of 'compare and contrast' in the study of human society and culture is also equally common. If you think about your day-to-day understanding of the social world around you, you would realise that you are involved in comparing and contrasting processes. In addition, all of us keep evaluating things, people, foods, cultures etc, in terms of their inherent qualities being superior or inferior. It is quite commonplace to hear comments that "our food is tastier than theirs" or that "they have a more developed culture than ours". In the latter statement one detects an evolutionary assumption, meaning that there are stages of development and each successive stage is superior to the preceding one. For long in sociology it seemed perfectly in order to compare the "barbaric" to the "civilised", or the "primitive" to the "modern". Sociologists now more self-consciously use "simple" and "complex" societies to avoid the embedded value judgment that rests on an evolutionary comparative approach. Interestingly however, there is also awareness even at the everyday level that comparisons are not nice and we ought to value each person, object or idea for itself.

You would notice that some themes of the comparative approach also make their presence within everyday notions. Indeed the connection and spilling over of the two levels make it doubly difficult to distinguish the sociological approach to comparison and our own lay approach. Beteille (2004: 112) makes a careful and important distinction between the lay comparative and sociological comparative approaches.

> While the extensive, not to say automatic, use of comparison may be natural to the process of human thought, the same cannot be said about *the conscious search for a comparative method with definite or at least defined rules of procedure*. Here one will find characteristic differences among the various disciplines that together make up the social sciences. Some disciplines, such as economics and psychology, have focussed largely on universal structures and processes common to all human beings everywhere, and paid little attention to characteristic and persistent differences between societies. Others, such as history in particular, have dwelt much more on the specific features of given societies without venturing too far across their chosen boundaries in space and time. *The comparative method as a tool of investigation, designed consciously to discover the general features of all societies (or cultures) without losing sight of the distinctive features of each, has been a particular obsession of sociology and social anthropology....* (Emphasis mine)

In his L. T. Hobhouse Memorial Trust Lecture, 33, Evans-Pritchard (1963: 3) stressed the necessity of comparison and commented that 'in the widest sense there is no other method. Comparison is, of course, one of the essential procedures of all science and one of the elementary processes of human thought'. Evans-Pritchard was echoing what Durkheim (1964: 139) wrote, 'Comparative sociology is not a particular branch of sociology; it is sociology itself, in so far as it ceases to be purely descriptive and aspires to account for facts'.

Macfarlane (2004:95) wrote that 'a number of observers have noted

that in order to understand one phenomenon, one must place it in perspective or comparison to others' and quoted Lowie (1950: 9) who put it,thus: 'At the same time a phenomenon is understood only in relation to others: "He little knows of England who only England knows." Hence it is well to look at western culture in perspective'.

Most social scientists are generally aware that they are involved in comparison all the time. As Macfarlane (2004: 94) has put it, "In the case of history, the comparisons are usually in time, in that of other social sciences, predominantly in space. The most familiar method of the historians is to take their own societies as the norm and then to see how far the past is similar or different from them. This is also what an anthropologist, sociologist, or economist tends to do, in the dimension of space rather than time." Further Macfarlane has quoted Pocock (1961: 90), who commented, "Informally, comparison is built into the method of the subject, for even in his first piece of field-work the anthropologist is comparing the categories of his own society with those of the society he studies...".



R Lowie
(1883-1957)

Macfarlane has further quoted de Tocqueville's (1861, i: 359) work, which illustrates such a method of comparison, revealed in his memoirs.

> In my work on America...though I seldom mentioned France, I did not write a page without thinking of her, and placing her as it were before me. And what I especially tried to draw out, and to explain in the United States, was not the whole condition of that foreign society, but the points in which it differs from our own, or resembles us. It is always by noticing likenesses or contrasts that I succeeded in giving an interesting and accurate description...

As would be obvious to you by now, sociologists at different times have been aware about the problem of comparison and value judgements. How did the classical sociological thinkers and advocates of the comparative approach like Durkheim and Weber negotiate this? How did they manage to resolve the conflict between their commitment to a value neutral sociology and a commitment to comparison in terms of an evolutionary progression that tacitly accepted that western societies had reached the highest stage of evolution? We discuss this in the next section, which is on the historical context of the comparative method in sociology.

Before turning to the next section, it is good to keep in mind that not only had classical sociologists succumbed to the appeal of comparative method, but such thinkers as Herodotus, Aristotle, Polybius, Plutarch among the ancient scholars and Bodin and Machiavelli from the Renaissance had also used it. You can also draw a long list of scholars who derived inspiration from classical sociologists' application of comparative approach and gained a rich understanding of different societies and cultures. Macfarlane (2004: 108) has included in such a list

the names of Perry Anderson, Fernand Braudel, Louis Dumont, Ernest Gellner, Jack Goody, E. L. Jones, David Landes and William McNeill. Contemporary sociologists, for example Andre Beteille, would make a case for continuing the application of the comparative method, though with due care to avoid the mistakes made by its earlier practitioners. This point of view has a lesson for you – to look at the method with considerable caution and possibilities of entering into debates about various ways of using the method.

9.3 The Historical Context

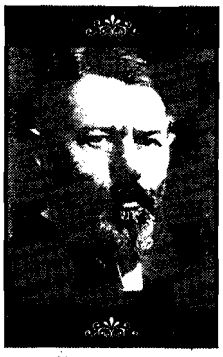
Although ancient and medieval scholars made use of comparisons in their writings, the comparative method as a designated method of social research was a product of nineteenth-century sociology and social anthropology. In the nineteenth century, the principal attraction of the comparative method came from the belief that it could be used for discovering scientific laws about human society and culture. The strong advocates of the comparative method believed in the possibility of a natural science of society that would establish regularities of coexistence and succession among the forms of social life by means of systematic comparisons. It must not be forgotten that in the nineteenth-century sociology and anthropology the study of social and cultural phenomena was typically combined with the study of the physical or biological aspects of human life.

The early sociologists, namely, Emile Durkheim in France, Herbert Spencer in England and Max Weber in Germany, considered comparison to be one of the basic processes of the way human beings think. Both Spencer (see chapter II of the first volume of *Principles of Sociology*, published between 1876 and 1896) and Durkheim (see chapters V and VI of *The Rules of Sociological Method*, published in 1895) were greatly influenced by the organic analogy. Durkheim, in particular, developed a methodological use of the organic analogy in formulating a comparative approach to understanding the social world. Durkheim's systematic use of the comparative method gave an impetus to its wide application in sociology and social anthropology during the first half of the twentieth century. You can mention the name of Radcliffe-Brown and all his associates as followers of this valuable method in their researches in different parts of the world (see Box 9.1 for a critical look at comparative method).

Box 9.1 A Critical Look at Comparative Method

Undoubtedly, sociologists and anthropologists were able to reap a rich harvest of scholarly monographs, comparing and contrasting the relationship between structure and social practices. Most of such social research had a particular conception of society. This view held that society is a reality *sui generis* and one could observe it from outside and describe the same objectively. Ingold (1990: 6) has questioned the utility of this concept of society and held its uncritical use responsible for the failure of the comparative method to achieve the expectations raised by its extensive application.

Max Weber's approach to the comparative method took a different route because he was not at all sympathetic to viewing sociological inquiry ending with the explorations of causes and functions of social phenomena. Weber was more concerned with their meanings. To quote Weber (1949: 15), "We can accomplish something which is never attainable in the natural sciences, namely the subjective understanding of the component individuals." Not only was the early use of the comparative method tied to the idea of a natural science of society, it was, more specifically, tied to the theory of evolution. A large part of the nineteenth-century anthropology was concerned with the origins of social phenomena and the reconstruction of the stages through which they had evolved from their most simple to their most complex forms.



Max Weber
(1864-1920)

Beteille (2004: 114), commenting on the tension between a value neutral and objective approach and the influence of an evolutionary approach on early sociologists such as Herbert Spencer, Emile Durkheim and Max Weber, remarks,

> They believed that society, culture, religion, family, marriage, and so on gave shape to human life everywhere, and called for serious intellectual attention not only at home but also abroad. In this sense, comparative method required in its practitioners a certain detachment from their own society and culture that was not required of the practitioners of the historical method. Many of the latter had been ardent nationalists. Since the comparative method does not admit, at least in principle, of privileged exceptions, it cannot as easily or as openly accommodate the spirit of nationalism. The pioneers of the comparative method in sociology and social anthropology were all influenced to a greater or lesser extent by the theory of evolution. Indeed, it was the search for the stages of evolution that largely shaped the comparative method of Spencer and Morgan. This imposed certain limits on the extent to which they did in fact assign equal value to all societies and culture. It was tacitly accepted that western societies had reached the highest stage of evolution and that all other societies stood at graduated distances below them.

There were hardly any voices outside the West to challenge these settled opinions. A gulf existed from the very beginning between the aspirations of the comparative method and its achievements. As you will find in Units 10 and 11, both the feminist and participatory approaches in a very fundamental manner unsettle the assumption of value neutrality and argue instead that the perceptions of the dominant section are passed off as the universal and neutral view. For instance the perception of the privileged white male scholars of the nineteenth century could unquestioningly pass off as universal knowledge (see Unit 4). In that sense the genesis of the comparative approach is very different from the feminist and participatory approaches whose influences in social science research are more recent and whose position vis-à-vis the idea

of value neutrality are also very different. Not surprisingly the questions that have been raised by the feminist and participatory approaches have influenced in a much deeper way the disciplines of sociology and social anthropology, the main practitioners of the comparative method.

To come back to what Beteille (2004: 127) remarked about Weber and Durkheim,

> They were aware that viewpoints might vary according to class or political affiliation, but they did not take much account of variations due to differences of national tradition. They took ideas and values in no-western societies into account, but only as objects of investigation and not as elements in the construction of method. This has become a source of some anxiety to scholars from Asian and African countries.

The important question that Beteille (2004: 127) then raises is whether this limitation can be remedied by 'recommending different methods for observation, description, and comparison to persons rooted in different geographical locations'. The answer probably is 'no'. However the sociologists, by explicitly stating their locations (national, ethnic, gender, even theoretical predilections[◎]) at the start of the respective studies, would only promote methodological rigor. For the reader would be in a position to critically examine the internal coherence of the sociologists' studies as well as the dominant assumptions upon which they rest.

At another level, that is the level of the number and nature of the comparisons, it has been suggested that we avoid binary[◎] thinking and do not employ a dyadic mode of analysis. Comparing a pair, for example England and India or the West and the rest, may inevitably imply one of the pair to be better/ superior/ higher than the other. Macfarlane (2004: 103) refers to Burke's (1972) comments on feudalism[◎] as an ideal type that 'there is a tendency to see French feudalism as the 'proper' form and all other forms of 'feudalism' as deviations'. Burke has questioned this assumption and observed that this is the case because the western scholars had articulated most concepts in sociology on the basis of reflections of their own societies. Macfarlane has made a case for a three-way comparison (see Box 9.2).

Box 9.2 Macfarlane's Suggestion of a Three-way Comparison

Macfarlane (2004) has recommended 'an explicit three-way comparison of actual, concrete, historical cases, but they are set against a backcloth of the Weberian ideal types, which alone make the comparisons possible. ... By extending the triadic method of two cases and an ideal type to the more complex one of at least three cases and an ideal type, we move a long way from those problems of relativism and essentialism, which have plagued much social science for more than one hundred and fifty years. We can move towards a position where we simultaneously stress the similarities of peoples and rejoice in their uniqueness and differences'.

Let us, at this stage in our discussions of comparative approach, complete Reflection and Action 9.1 in order to fully grasp the issues involved in understanding the significance and at the same time problem of applying comparative approach to our study of the social world.

Reflection and Action 9.1

Consider the following examples and answer the questions related to them.

Examples

Sir Henry Maine contrasted India and Europe.

Marx made comparisons among the various modes of production.

Max Weber compared Protestants with Catholics within Europe and also contrasted Europe with religions like Islam, Hinduism and Confucianism.

Questions

- What is the single element that stands out as foremost in the above contrasts and comparisons?
- Are the above instances primarily of contrast or comparison?
- Are such contrasts examples of binary oppositions?
- In order to avoid comparing societies with huge gaps, as for example Europe and India, is it better to compare England and Japan? Identify the points of similarities and differences between England and Japan.

9.4 Elements of the Comparative Approach

Notwithstanding the critical remarks in the previous section on the problems of negotiating between comparison and the rule of no value judgment, the comparative method has been used in sociology as a matter of its natural practice. To state some of the features in a schematic fashion, we find the following characteristics in the comparative method.

- Belief in the possibility of a natural science of society
- The goal of detachment and an uneasy link with the theory of evolution
- Influence of organic analogy
- The intent to have systematic comparisons

Though sociologists have argued over the first three characteristics, they have remained by and large faithful to the intent of having systematic comparisons.

For this reason, it is necessary to look at the following elements of the method, namely,

- Methods of comparison
- The units of comparison
- The purpose of the comparative approach

Let us discuss each of the three elements at length so that we are able to derive some useful tips for the application of the method in our own researches.

i) Methods of comparison

As Macfarlane (2004: 99) noted, "Comparison can be undertaken in numerous ways, each appropriate to its task, and one cannot lay down in advance which will be the best. All one can do is to raise some of the alternatives". You may note the three types of approach distinguished by Durkheim (1964).

- ❖ We could consider a single society at a given time and analyse the broad variations in particular modes of action or relationships occurring in that society.
- ❖ We could consider several societies of a generally similar nature which differ in certain modes of action or relationships; more precisely, we could here compare either different and perhaps contemporaneous societies, or the same society at different periods, if these exhibit some limited cultural change.
- ❖ We could compare several, perhaps numerous, societies of widely different nature yet sharing some identical feature; or different periods, showing radical change, in the life of the same society.

ii) The units of comparison

Again, we refer you to Macfarlane (2004: 100), who noted, "The success of the comparative method will, of course, depend on the comparison of things that can be compared. This consists of several features. One is that the units compared are roughly of the same order of magnitude; for instance, it would not be particularly fruitful to compare the handshake in England with the family system in China".

Next, Macfarlane said, "Second, in order for comparison to be effective things must be of the same class or order in some way. Thus to compare, say marriage in America with tea drinking in China would probably be fruitless. The selection of the comparisons is all-important. Yet even by choosing something that looks similar, one can be deceived. Words like 'city', 'marriage', 'family, 'law' are notoriously loaded with ethnographic assumptions. Even such apparently obvious terms as 'house', 'meal', 'body' carry complex set of assumptions within each culture".

iii) The purpose of the comparative approach

Social scientists consider the comparative method as just one of the many tools in their kit. It is essential for the user to consider why one is using a particular tool, what is the purpose, and how best to use it. In this regard, Macfarlane suggests that 'it helps to a) distance the over-familiar, ii) familiarise the distant, and iii) make absences visible. Let us elaborate this point a little more.

❖ **Distancing the over-familiar**

'Distancing the (over) familiar', or turning the obvious into the unobvious means to create a gap between oneself and the familiar things so that one can see them in a different light. Most researchers face the problem of not seeing what is familiar or similar to one's own and hence self-

evidently 'normal'. Not touching the rim of a glass that has water meant for drinking may not appear strange to us in India. You will notice again the concerted attempt even within theoretical realms of sociology to question the common sense, the taken for granted aspect of reality.

❖ **Familiarising the distant**

Many of the things we encounter in our work are so unfamiliar and distant that we cannot get inside their logic or 'understand' them. This is equally problematic. The usual temptation is either to avoid the subject altogether or to dismiss it as irrational nonsense. Now the solution may be 'known' in a sort of way through the studies of others in other societies. Examples would be the insights which anthropological studies of curious phenomena like the blood feud or witchcraft gave to historians studying the same phenomena in the West.

❖ **Making absences visible**

The comparative method helps us to reveal absences. Always, you will find that many interesting things are the absences, and it is not easy to be aware of these. Macfarlane (2004: 97) has given the example of Robert Smith (1983: 152), who recounts how a Japanese scholar replied when he was asked why ancestor worship persists in modern Japan: 'That is not an interesting question. The real question is why it died out in the West?' Of course, both are interesting questions, but the absence is certainly just as curious.

At the end of this interesting section, let us complete Reflection and Action 9.2.

Reflection and Action 9.2

A)

Dumont (1986: 243) said, "A solid and thorough comparison of values is possible only between two systems as wholes". Basing yourself on this view of comparative method, give at least five systems of social relations for carrying out a successful exercise of comparison.

B)

How does the comparative approach help in familiarising the distant? Burgess (1982: 217) quoted the mathematician G. Polya , who suggested that we 'ransack our memory for any similar problem of which the solution is known' and try to solve the problem. Give examples of studies of curious phenomena, which have helped the researchers to understand problems in their own fields. You may give examples from your everyday experiences of a similar type.

C)

What is the difference between contrast and comparision? Obviously these are two different processes. Identify the differences with examples.

9.5 Conclusion

Dealing with the complex issues involved in the operations of contrasting and comparing, we have taken an overview of the history of the application

of the comparative method. In addition, we have also looked at the comparative method as one of the tools that social scientists use to give body to their explanations of social reality.

Further Reading

Beteille, Andre 2002. *Sociology: Essays on Approach and Method*. Oxford University Press: New Delhi (for its essays on the nature of the discipline of sociology and the methods sociologists use to study the social world)

Beteille, Andre 2004. The Comparative Method and the Standpoint of the Investigator. IN Vinay Kumar Srivastava (ed.) Methodology and Fieldwork. Oxford University Press: New Delhi. Pp. 112-131

Evans-Pritchard, E. E. 1963. The Comparative Method in Social Anthropology. *L.T. Hobhouse Memorial Trust Lecture, 33*

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Unit 10

Feminist Approach

Contents

10.1 Introduction
10.2 Relationship with Common Sense; Interrogating Ideological Location
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10.4 Features of the Feminist Method
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10.6 Feminist Discourse in India
10.7 Conclusion



Learning Objectives

it is expected that after reading Unit 10 you will be able to

- Critically present a conceptual frame for analyses of the ways in which social institutions, practices and discourses define women and men and their statuses in society in general and in India in particular
- Unpack the taken-for-granted assumptions about gender that are common to sociological inquiry
- Show how central assumptions about gender relations continue to shape the organisation of the social world regardless of their empirical reality
- Discuss some of the contributions the feminist approach has made to the sociology of gender in particular and to sociology in general.

10.1 Introduction

After discussing in Unit 9 the significance of the comparative method in social research, we now turn in Unit 10 to the equally significant application of the feminist method in contemporary social research. You can say that feminist method helps us to look at the social world through the prism of gender. It intersects with other hierarchies and social forms. It is true that the classical sociologists generally excluded consideration of actions of women. Consequently, discipline of sociology had little to say about women. Marx, Durkheim and Weber made stray comments on women and family. This is the reason why the emergence of feminist sociology has brought much excitement and optimism among the new generation of sociologists.

After mapping its ideological location, Unit 10 covers the historical context of the feminist method. Next, the author identifies three stages in the growth of the feminist approach since the 1970s and then delineates key features that mark the feminist method. A reference has been made to Maria Mies' methodological guidelines for feminist research.

10.2 Relationship with Common Sense; Interrogating Ideological Location

It is critical to make explicit the domain assumptions that underlie all theories and methods. The sociology of knowledge presumes that knowledge, much like social institutions and beliefs, is socially constructed and therefore has a necessary symbiotic relationship with social classes, castes, groups and communities. However while it is easy to discern the domain assumptions that characterise those systems of knowledge, which are marginal and seen as overtly political, the same is not true of established dominant approaches. Hence it is only with the surge of post-colonial writings that it now may appear that Orientalism or a west centricity marked the classical comparative approaches. Unlike this apparent neutrality that shrouded the comparative method, the feminist method is seen as overtly political. Indeed a false but persistent dichotomy is created between the academic and political approaches. The same would be true of a Marxist or Dalit or Black perspective. In the case of the feminist method, however the hostility often is intense and responses range from a tendency to trivialise to a tendency to demonise. Such responses can be understood in the context of the far-reaching and fundamental challenges that the feminist method poses to conventional knowledge systems.

These challenges are contrary to the extant common sense of any existing society. And here I would like to stress that this is contrary not only to traditional and modern patriarchal common sense but also to modern but dominant theoretical approaches (see Box 10.1).

Box 10.1 Examples of Traditional and Modern Patriarchal Common Sense

Illustrative of the traditional patriarchal common sense would be the belief that women are mean minded and petty. A fitting reply that Tagore (in "Ghare Baire") had for that was 'indeed they are, much as the Chinese women's bound feet were... bent and deformed'.

Illustrative of a modern patriarchal common sense would be that women ought to be educated but for the sake of being better home makers. You would know that matrimonial columns in India are replete with demands for modern but traditional brides. In other words selective virtues of modern and traditional women would be combined for customised services to run a system that is essentially patriarchal.

The question that you may legitimately ask at this point is how do the examples in Box 10.1 help us understand the feminist method. I would try to answer this at this level by asking a question I often ask in class. The discussion runs like this.

'The rate of divorces is rising because of the increase in the number of educated women.'

The responses to the above statement vary. Some students in the class

agree in an unqualified manner believing indeed that educated women are responsible for breaking homes. Others are uncomfortable with the covert suggestion that therefore women ought not to be educated. And some others make a methodological point suggesting a reformulation of the variables in the stated hypothesis. In other words could we not alternatively formulate the statement as follows?

'The rate of divorces is rising because of the unwillingness of educated men to treat their wives as equals.'

Or you could say that

'The rate of divorces is rising because more women are willing to break out of bad marriages rather than suffer a life in silence.'

The purpose of providing these illustrations was to make explicit the connection between everyday common sense and the ease with which it converges with sociological formulations. It is not surprising that Talcott Parsons' model of the family assumed women to perform expressive roles and men instrumental ones. The point in contention is not that it does not conform to the empirical reality but that it takes the extant as given, and not problematic. The traditional and modern patriarchal norms are thus embedded in the dominant theoretical formulations (see Johnson 1991). The dominance of the established methods was such that it appeared to be naturalised (see Harding 1987: 2-14). For what can be more obvious and natural than the fact that men and women are different? It made sense to claim that 'anatomy is destiny' and to argue that the division of labour was and is biological in origin (see Box 10.2).

Box 10.2 Examples of Anatomy is Destiny

As recently as the early 1980s the British Secretary for State for Social Service, Patrick Jenkin in a television interview on working mothers stated: 'Quite frankly I don't think mothers have the same right to work as fathers. If the Lord had intended us to have equal rights, he wouldn't have created men and women. These are biological facts; young children do depend on their mothers' (cited in Rose 1994: 19).

In classical as well as neoclassical economic thought, we find that there is quite early in history the discussion of women's wages and conditions of their employment. For example, Smith (1776) noted that women work for wages but at the same time he thought that a man should have enough wages to bring up his family. He considered women's reproductive roles as essential for society. Adam Smith held that women did not have the capacity to take rational decisions in economic matters.

Here is another common example to show the how the feminist approach interrogates and challenges very sensitive and deep-rooted structures, leading to considerable hostility and at the least discomfort. Often people say that women are making a fuss over a minor thing when they do not wish to change their surname after marriage. However if the question is posed that if it is so minor then why the fuss when she wishes not to

change. Or it could be asked that if it is so trivial then why do not men change their surname on marriage. The issue of course is not of scoring debating points. The issue is that ordinary customs do often rest on a deep-rooted patriarchal structure. Change of surname implies change of lineage, family, belonging, and identity and is seen as demonstrative of effectual loyalty. You will clearly note how the comparative approach would not evoke sharp criticism or passionate reaction unlike the feminist.

Let us complete Reflection and Action 10.1 in order to explore our own responses to the issue raised above.

Reflection and Action 10.1

Organise a debate at your Study Center on 'No harm if a woman does not change her surname after marriage'. Listen carefully to all the points of view in favor or against the topic and then write a note of about one thousand words, incorporating all the social reasons given by the speakers for and against the theme. At the end of the note, you may also give your own viewpoint. Fifteen days after the debate and writing of the note, reflect once again on your views. Do you still hold the same views as you did earlier?

10.3 The Historical Context

We noted the nineteenth century academic context within which the comparative method arose. More recent anthropologists would point to the fact that colonialism and the access to the study of 'other' cultures was a political context that cannot be wished away. This political context was, in a manner, camouflaged, owing to the unquestioned dominance of western power and western scholarship. The natives have just begun talking back. The political context also went unnoticed because the method explicitly advocated value neutrality and indeed took pains to delineate guidelines to avoid obvious pitfalls of bias. In sharp contrast the feminist approach has an overt political context. And also overtly states its value preferences. A commitment to gender equity is embedded within the approach.

While the first phase of the women's movement dates back to the suffragette movement of the west (see Box10.3) and the national movement in the colonised countries like ours, it is only with the second phase of the women's movement in the 1970s that a systematic interrogation of the social sciences from a feminist approach took place. Unlike the lineage of the comparative method, as shown by Chaudhuri (2004), the feminist method has an inextricable link with the feminist movement. The issue here is not whether each practitioner of feminist scholarship is an activist or not. The issue is that the basis of feminist knowledge emerged from a radical movement that questioned the given social order as both natural and divinely destined. We discussed the far-reaching impact of changing or not changing surnames above (see Box 10.3 about lesser known facts about feminist movement).

Box 10.3 Did You Know?

Did you know that the suffragette movement of the West was a long-drawn out struggle. Despite various feminist movements, formal equality for women took long to come. Women in late nineteenth century England were not recognised as individuals in either the legal or liberal theoretical sense. Men still had formal power over the rest of the family, and women were mostly excluded from the public sphere. Mill and Taylor, along with some early United States feminists such as Elizabeth Cady Stanton and Susan B. Anthony, argued that the equality of women required full citizenship for women. This would include giving women enfranchisement. After 1865, when Mill was in the English parliament, he fought for women's suffrage. He also fought "to amend the laws that gave husbands control over their wives' money and property" (Eisenstein 1979: 128).
Source: http://uregina.ca/~gingrich/o28f99.htm

Furthermore by the 1980s, it was becoming clear that the feminist scientific revolution, like those that Kuhn (1970) had studied, would not take place without resistance (see also Unit 6). As Kuhn (1970) has noted, scientific disciplines are aptly named; they discipline thought by making some ideas seem natural and others almost unthinkable. The practice of science involves commitments to such disciplines. The commitments of the scholarly community to certain ideas and ways of thinking seem to stand in the way of new theories, however useful they might prove to be in the long run, as we will shortly discuss in the next section on features of the feminist approach to sociology. While calling for a critical appraisal of research in women's studies Krishnaraj (2005: 3008-3017) said, "Feminist research is expected to use theory not so much to test hypotheses but develop a better understanding through grounded concepts."

Let us now turn to the stages in the growth of a feminist approach and then to key features of the feminist method. But before proceeding to this important section of the unit, as you need to complete the Reflection and Action 10.2 exercise for fully understanding the thinking involved in pursuing the feminist method.

Reflection and Action 10.2

Read once again sections 10.1 and 10.2 of the unit and write the answers to the following questions on a separate sheet of paper.

What are the implications of a woman retaining her maiden surname?

Is it correct for a boy or a girl to put the mother's name as guardian in the school admission form?

Is it natural for the male to dominate in the family?

Is it possible to write gender-sensitive language?

Is it at all necessary to write gender-sensitive language? If yes, why and if no, why not?

***The Academic Counsellor may please organise a discussion on 'Critically looking at the Given Social Order' and encourage the learners to write short essays for publication in the local newspapers.**

10.4 Features of the Feminist Method

Much as in the case of the comparative method (while there are certainly some common features within the vast body of studies that warrant them being called comparative or feminist), it is important to assert that important differences also characterise what can be broadly termed the feminist method. For purposes of elucidation, I will first begin with the stages in the development of a feminist approach to sociology and then see what could be seen methodologically as some common features.

A) Stages in the development of a feminist approach to sociology

A useful way to mark the growth of a feminist approach to sociology is to identify three stages in the study of gender related issues since 1970.

- Initially, the emphasis was on sex differences and the extent to which such differences might be based in biological properties of individuals.
- In the second stage, the focus shifted to individual-level sex roles and socialisation, exposing gender as the product of specific social arrangements, although still conceptualising it as an individual trait.
- The hallmark of the third stage is the recognition of the centrality of gender as an organising principle in all social systems, including work, politics, everyday interaction, families, economic development, law, education, and a host of other social domains. As our understanding of gender has become more social, so has our awareness that gender is experienced and organised in race- and class-specific ways.

We can now usefully discuss some key features of the feminist method in the light of the above three stages.

B) Some Key Features

It has already been emphasised that important differences exist between different feminist approaches. Along with noting down the direct and indirect links with different political and theoretical approaches, we are here making a case for delineating what a feminist method in sociology entails. To start with, we can clearly distinguish between the traditional sociological approach to gender and the feminist approach. Most introductory sociology textbooks still treat gender as an individual attribute and gender inequality as an outcome of childhood socialisation. In contrast, current feminist thinking stresses the far greater input of the division of labour, power, social control, violence, and ideology as structural and interactional bases of inequality, not only between women and men, but among women and men of diverse social classes and racial ethnic groups. Gorelick (1991: 461) referred to Maria Mies, who had in the nineteen seventies provided



Maria Mies
(1931-)

methodological guidelines for feminist research. She stressed the need for replacing the practice of value-free research with a conscious bias towards women's struggles for social change. Secondly, she made a case for conscientisation of the researcher as well as the researched. Let us now outline the following key features that mark the feminist method.

❖ **Feminist sociology argues that research designs were based on men's experiences.**

Feminist social scientists demanded a fundamental transformation in how questions are asked and what criteria are employed to define an answer as acceptable (see Box 10.4 and Unit 4). Illustrative of this is the long practice of assuming that the head of the household is the eldest male member. It has been increasingly shown that the number of female-headed households in the rural areas of India is very high. But the very concept of a head of household was based on the urban middle class men's experience that women are 'housewives'. Another very common example is the manner that the category 'work' assumed that it meant regular work outside the home for which wages were given. However it has been increasingly realised that women for the most part work in the informal sector, in what are termed as household production units. Instances in the city of Delhi would be bangle and toy making, *zardozi*, assembling of electronic parts that are subcontracted to poor women in the slums, domestic workers etc. Indeed concerted efforts were made in the 1991 census to educate both census personnel and ordinary citizens that breaking stones or carrying bricks is also work. Apart from this informal work, which is growing with globalisation, the idea that housework is also 'work' is still considered alien (see Box 10.4 about ignoring women).

Box 10.4 Women Ignored from Social Research

One general line of criticism of feminists is that women are absent from the social analyses and social world of classical sociology. The language and analysis of classical sociology is that of men, male activities and experiences, and the parts of society dominated by males. Marx, Weber and Durkheim were typical of nineteenth century European writers who assumed that the social world was primarily that of male activities.

Source: http://uregina.ca/~gingrich/o28f99.htm

❖ **Feminist sociology is against a separation and reification of a division between the public and private.**

In sociology, when gender was seen primarily as an organising principle of the family, the other areas of social life were falsely conceptualised as "ungendered". The division between an ungendered "public" sphere and a gendered "private" sphere is both ideological and misleading (see Box 10.5). Illustrative of this would be the fact that male professionals would be preferred in the corporate sector and the argument given would be that men are more committed to work while women would be distracted; they get married and pregnant. The significant point is that men too

get married and become fathers but the dominant assumption is that the private sphere comprises the cleaning, cooking, shopping, child care, attending parent-teachers meet, looking after the sick, would be the women's work. The public sphere of work for women cannot therefore be reorganised until the private sphere is. In developing countries and increasingly in the developed ones too there are part-time or full-time female domestic workers. Sri Lankan, Philippino and Bangladeshi women among others are migrating across national borders to run middle class homes. This leads us to the third point (elaborated below) about the intersection of gender with other categories like class or ethnicity.

Box 10.5 Division between Public and Private Domains

One aspect of the long history of modern, urban, industrial society was the development of a separation between the public and private spheres. These had not always been separated in traditional societies, although there was often a sex-based division of labour and male dominance. But there is no doubt that with the development of capitalism, cities and industry, a public sphere dominated by men and male activities developed. Women generally became restricted to the private sphere of household and family, and had limited involvement in political, economic, or even social public life. While women were involved in more public activities, there were movements to restrict the participation of women in public life, for example, factory legislation and the family wage.

Source: http://uregina.ca/~gingrich/o28f99.htm

❖ **Feminist sociology recognises the diversity of gender statuses in the social order.**

Commenting on refining methods of study, Krishnaraj (2005:3012) wrote, "...,a positive feature of feminist method is the attention it pays to contexts rather than predefined, operationalised hypotheses." Feminist sociology focuses on statuses that intersect with social class, caste, race, ethnicity and international division of labour. Gender is therefore imbued with enormous differences in economic opportunity and political power (see Box 10.6).

Gender categories are not homogeneous. As mentioned above the domestic worker functions as "the bridge" between the public and private domains for she facilitates her employer's move into the public domain by taking over the latter's socially reproductive work, filling the gap as it were between the two domains. Although domestic service is low in the hierarchy of occupations, its easy availability throughout the world has caused economically vulnerable women with or without particular skills, training or education to migrate to distant places both nationally and internationally. Feminist research endeavours to emphasise diversified experiences and practices of women in terms of their race, age, ethnic, historical, backgrounds (see Stacey and Thorne 1998: 219-240). It makes a concious effort to include more than to exclude. Sociological concepts such as class, status, honour help in examining women place in society.

Box 10.6 Male/ Female Inequalities

Classical sociologists generally focused on differences and inequality. Marx was most explicit in this, but Durkheim and Weber developed various ways of examining difference and inequality. Issues such as the division of labour, exploitation and power, domination, and authority emphasise difference and inequality. Yet male/ female inequalities, or racial and ethnic inequalities, form little part of classical sociology. Feminists have identified patriarchy as a social system of inequality, but classical sociology had only a limited analysis of this. Marx and Engels did have a model of male/ female inequality, but it derived from property and economic considerations. Weber analysed patriarchy, but male/ female inequalities were not his primary concern in such analysis.

Source: http://uregina.ca/-gingrich/o28f99.htm

Indeed the belief that women move only on marriage or with families rested on a set of patriarchal assumptions such as that women are primarily and solely homemakers, that they are not independent workers, and that therefore migration for them can be only be as accompanying members of the migrant again believed to be the adult male breadwinner. Facts suggest otherwise. In terms of the scale of migration, women and children outnumber adult men. Of 150 million migrants worldwide, it is estimated by the International Labour Organisation (ILO) that 36-42 million are migrant workers and 44-55 million are members of their families. Furthermore female-headed migrant households are less likely to have adult male family members accompanying than male-headed household. According to the United Nations High Commission for Refugees, (UNHCR), women constitute 51 per cent of the 6.1 million refugees for whom information by gender is available (Bhabha 2003).

10.5 Feminist Methods adopt the Reflexive Stance

The transformations we seek in the disciplines are also transformations of our own ways of thinking. It is useful and reassuring then to share with others that the 'actual expertise and language of women is the central agenda for feminist social science and scholarship' (Du Bois 1983: 108). Feminist researchers have over the last decade been increasingly emphasising the need to hear the voices of women. Malavika Karlekar (2004: 387) writes,

> My confidence also grew in large part because of the ease with which women are today willing to share, to speak, and to rethink their lives again. Before I ventured back to the field again, I had many encounters of mutual sharing and trust which assured me that a context is not impossible to create and even recreate anew. For a fieldworker has to tell the story of many lives, one of which is surely her own, and when those voices she wishes to hear speak to her with a poignancy and an almost crystal-clear honesty, she works hard to suppress too many questions on her role and the problems of interpretation, understanding and so on. Twenty years ago I felt threatened, pained, inadequate, by that honesty and the reaching

out for answers. Today, I find it easier to cope with the expectations of respondents not only within myself but also because the scope of childcare, employment, domestic conflict resolution mechanisms, and so on, have increased and been legitimised. I can at least try and work towards some solutions to the age-old problem of wife abuse with a battered woman: with the balmikis I did not even have the courage to ask the question not only because I felt that it would be an invasion of privacy but also because I did not know how to approach it.

Engendering sociology means interrogating the processes by which sociological discourse was gendered by putting forth feminist reflexive understanding of sociology as emancipatory. Hence, for those of us committed to reflexive modernity, the task of engendering is one of underlining the ways in which sociological discourse is patriarchal, middle class, Hindu and Brahmanical. As Rege (2003: 41) said, "The uphill task is of reconceptualising basic categories of analysis, once the experiences of the marginalised have been brought to center".

Now at the end of the unit, let us complete the Reflection and Action 10.2 exercise in order to generate more debate on the theme of feminist approach to sociology.

Reflection and Action 10.3

After once again reading the entire text of Unit 10, discuss some of the following questions with at least five adults around you. Then write the answers to the questions on a separate sheet of paper. Based on your answers, write an essay on 'My Vision of Sociology'.

Questions

Like the classical sociologists, do you also consider that there are natural differences between women and men?

Do you reckon the female to be associated with the world of nature while men are associated with culture?

Do you regard women to be emotional and men to be rational in their thought and activities?

Do you agree with the observation that classical definitions of the social world do not include all parts of human action and interaction?

Would you like to see a sociology that includes social spaces occupied by women and children and social domains where women's experiences have been centred?

10.6 Feminist Discourse in India

The feminist discourse in India has organised itself around its critique of marriage and family. In this context, you may say that the feminists in India have articulated the debate in the last three decades of the twentieth century by theorising not only around deconstruction of oppression of women but also its negotiation and transformation in real life situations. Focussing on the economic class aspects of women's oppression, socialist feminism® has engaged in discussing the relationship between sexual, economic class and racial oppression. Scholars, like Hensman (2005: 70-), have provided a socialist feminist critique of marriage, family and

community as they feel that 'the original left critique is inadequate'. Similarly, John (2005: 712) has studied family and marriage in a historical perspective and shown how the social reform movement "during the nineteenth and early twentieth centuries engaged with the domestic domain via a critique of 'tradition', as embodied by specific subjects such as widows, child brides and others". Not just confined to the upper and middle class social reality, the feminists in India have drawn our attention to emerging critiques by Dalit and lower caste women. Formation of an all India group by the name of National Federation of Dalit Women symbolised another arena of debate around caste-based inequalities and Indian feminists faced the challenges that this critique brought out into the open about the invisibility of Dalit women's perception of exclusion from the mainstream the feminist movement (see Rao 2005). Violence against women and legal inequalities were of course the key themes discussed extensively by feminists in India but now they are entering the domain of marriage and family in the light of now fairly common occurrences, clashes of perceptions about sexuality and gender relationships (for an account of women's studies and sociology see John 2003).

10.7 Conclusion

We may conclude with a quotation from Ferree, Marx, Lorber and Heiser (1999: xii) that the feminist approach works to

> make gender visible in social phenomena, asking if, how, and why social processes, standards, and opportunities differ systematically for women and men. ...[This approach also recognises] that gender inequality is inextricably entwined with other systems of inequality. Looking at the world through a gender lens thus implies two seemingly contradictory tasks. First it means unpacking the taken for granted assumptions about gender that pervade sociological research, and social life more generally. At the same time, looking through a gender lens means showing just how central assumptions about gender continue to be the organisation of the social world regardless of their empirical reality.

The tasks mentioned in the quotation are in line with the current practices of sociology. Almost all over the world, there is a conscious effort in higher education institutions to integrate theory and research on gender in the curricula as a whole. This indicates the currents of transformation in the discipline of sociology.

Instead of arguing for a separate feminist methodology in which only women can carry out feminist research, you can make a case for locating feminist research within the theoretical and methodological discourse in mainstream social sciences. The study of gender occupies now a significant space in sociological research. The contribution of the feminist approach to sociology is not confined to providing narratives of women's experiences and to highlight the signs of sexism in conventional sociology. The feminist approach has contributed the inclusion of new themes and concepts. You may wonder

if the feminist approach is the harbinger of a paradigm shift in sociology. In the works, like *Feminist Foundation: Toward Transforming Sociology*, edited by K. A. Myres et al (1998) you may find claims to this effect. We may agree or disagree with such a reading of the impact of the feminist method on sociology, you have the right to argue that feminist research has now grown quite sensitive to its critics and as a result it tends today to be more inclusive. It is inclusive in the sense of focusing on more diverse experiences and perspectives of women of different races, ages, colours, cultures and histories. This trend has meant useful analyses of gender relations, which are increasingly correlated with the issues of racism, ethnocentrism and socio-economic formations (for example see Jain 1988). Feminism is no more a fad and the feminist approach is reflective of larger transformations in the perceptions and constructions of social reality.

Further Reading

Sydie, R. A. 1987. *Natural Women Cultured Men: A Feminist Perspective on Sociological Theory.* Methuen: Toronto (for a systematic analysis of classical sociologists, Marx, Durkheim and Weber, from a feminist viewpoint)

Tong, Rosemarie 1989. *Feminist Thought: A Comparative Introduction.* Westview Press" Boulder (for a discussion of patriarchy as a system characterised by power, domination, hierarchy and competition)

John, Mary E. and Janaki Nair (eds.) 1998. *A Question of Silence? The Sexual Economies of Modern India.* Kali for Women: New Delhi

Chaudhuri, Maitrayee 2004. *Feminism in India.* Women Unlimited/ Kali: New Delhi

Du Bois 1983. Passionate Scholarship: Notes on values, Knowing and Method in Feminist Social Science. IN G. Bowles and R. Duelli-Klein (ed), *Theories of Women's Studies.* Routledge and Kegan Paul: London.

Unit 11

Participatory Method

Contents

11.1 Introduction
11.2 Relationship with Common Sense; Interrogating Ideological Location
11.3 The Historical Context
11.4 Delineation of Key Features
11.5 Conclusion



Learning Objectives

It is expected that after reading Unit 11 you will be able to

- Locate the participatory approach to social research within the theoretical and methodological debates in main stream social sciences
- Provide the historical background of the emergence of the participatory approach
- Discuss the bases of participatory research methodology
- Compare conventional research methodology with the participatory approach to research
- Describe the operational dimension of the participatory approach and the uses of participatory rural appraisal.

11.1 Introduction

Unit 11 brings you to the end of our multi-dimensional discussion on research methodologies. In some ways we have undertaken a long route to reach this point where research becomes an all-pervasive activity to include you and me in the process of understanding the social reality. You may not fully agree with the approach and general tenor of Book 1. All the same you would find that you got a chance to be familiar with the main currents of methodological debates in the social sciences. While reading Book 2 and Book 3 you may like to refer back to some of the units in Book 1. Unit 11 will also be one of those units you would like to come back to. Mainly because the participatory approach has put forward a critique of value-neutral research and has argued for the inclusion of the researched in the process of inquiry into the social world, it is easier for you to relate to the approach. Let us see what is participatory approach.

11.2 Relationship with Common Sense; Interrogating Ideological Location

We have already seen in our discussion on the comparative approach why and how it is important to make a distinction between common sense

and sociological approach. Indeed a fundamental point that marked the beginnings of a social science of society was a self-conscious break with the common sense perception of reality. The taken for granted reality was not considered a valid starting point. To use an analogy® from natural science it meant that even if people perceived that the sun did set in the west and rose in the east, science could ably demonstrate that the sun did not move and the earth did. This is so despite the solid fixity of the lived experience of being in the earth. To recapitulate Emile Durkheim's *The Rules of Sociological Method* that social facts must be treated as things is a blunt affirmation that social phenomena belong to the realm of nature. Empirical science has to come to conquer prejudice and illusion in human beings' ideas about nature before social conduct can be examined scientifically. The latter is an especially difficult accomplishment, for prejudice and illusion are actually part of our social life. To regard social facts as things is to perform the act of detachment necessary to recognise that society has an objective existence, independent of any particular one of us; hence it can be studied by methods of objective observation.

For long the idea that it was actually possible to observe and study reality from the outside and from a location that was nowhere and everywhere, persisted. Even though the Marxist approach at one end and the phenomenological view at another challenged such an idea of neutrality, the feminist approach made a more recent serious theoretical challenge to this idea. From another position, the participatory approach has also raised this issue.

Before we move on to detailing both the historical context of the participatory approach and its main features, I would like to draw attention to another similarity between the implications of a feminist and a participatory approach. This is the entire issue of disciplinary boundaries and their sanctity. It is widely recognised today that a relationship exists between disciplining knowledge and the rise of academic disciplines, as we know it today. We also know that a particularly theoretical approach believes that we can draw clear domains of research, thereby break social reality into different parts like the economic, the political, the sociological, to be studied by different disciplines. Such a compartmentalised approach assumes that the theoretical tools developed by the disciplines are neutral and scientific. Using them, or doing normal science in such a case is adequate, without questioning the paradigms provided for. Both the feminist and the participatory approaches have questioned this. It is not just that there are suggestions for applying new techniques of research but the very epistemological basis of research has been opened up to reformulation.

It may be a useful exercise at this point to dwell on how the feminist and participatory approaches move on similar paths.

They both question the notion that traditional social research was indeed

value-free, universal and objective. They believe that the term universal standpoint in a caste, class, race, gender divided world cannot be universal. In other words the dominant view of society is represented as the universal viewpoint.

They question the objective approach advocated by mainstream scholarship.

They pose a challenge to the conventional disciplinary boundaries and advocate an interdisciplinary approach to conventional academic scholarship.

They promote the idea of an active engagement with a cause in society. For instance the feminist approach broadly would seek to incorporate gender analysis pursuant to the finding that much of what was practiced as value-neutral and objective knowledge was actually male-centred. Similarly the participatory approach too would agree that the voices and views of the marginal groups, whether based on class or caste or gender, were not adequately taken note of. Hence an active attempt methodologically has to be undertaken to redress this.

From the above description of similarities between the feminist and participatory approaches, you can easily make out that while applying the approaches we can gainfully use academic research for social change. You can see this expressed in an avowed close link between the feminist theory and the feminist movement, or, in professing a self-conscious commitment to gender equity when researching.

They believe in recognising diversity not just in society but also in the construction of social knowledge.

Having looked at the similarities between the feminist and participatory approaches to social research, let us now turn to the historical context within which the participatory method emerged.

Before discussing the historical context, let us complete Reflection and Action 11.1.

Reflection and Action 11.1

Participatory research assumes that its method makes the research a tool for development, because the dialogue between researcher and researched in a common process of learning gives an impetus to a process of education and awareness of those involved in it. Imagine yourself to be a part of such a research process. How would you reflect the participatory approach in the very organisation of research?

While identifying the needs of the target group, whose view would you seek and why?

Local opinion leaders

The people themselves

A government agency

A centrally sponsored scheme

11.3 The Historical Context

The effort in this unit is to communicate that approaches to study social institutions arise in the context of a society's concerns of the times. In Unit 9 you would have noticed the academic western context within which the comparative approach arose. You would have also noticed in Unit 10 how the feminist approach is inextricably linked to the growth of the women's movement. In this sense, as we have just noted, there is more in common between the feminist and participatory approaches.

To trace the history of the emergence of the participatory approach, we refer you to such educators of adult learners as Ivan Illich and Paulo Freire from the countries of the South. They opposed the idea of schooling and put forward a pattern of alternative pedagogy. This process later crystallised as the concept of participatory research. They facilitated a parallel discourse between the teacher and the taught. This was, as Tandon (1996: 20) said, to 'establish the control of the learner over his learning process'. This was the basic frame of participatory research. In 1974-75, a group of educators of adult learners coined the term 'participatory research' and the International Council for Adult Education gave it a concrete shape by adopting it. In all areas, including the non-governmental organisations, where research concerns the problems of social change and development, the term has gained currency. While commenting on the methodology and applications of participatory rural appraisal®, Mukherjee (1997: 27) wrote,

> A central concern for many of these agencies has been rural development. We thus had the development of the Rapid Rural Appraisal or RRA developed as a methodology in the 1970s, influenced by Farming Systems Research (FSR) and other methods. Some of the early path breakers of such methodology were Robert Chambers, Peter Hilderbrand, Robert Rhaodes and Michael Collinson who along with others met in Conferences at the Institute of Development Studies in October 1978 and December 1979. It soon spread to different parts of the world and in the mid-eighties there was a wide array of experience from the applications of RRA in different field situations.

In his Introduction to his book on Methodology in Social Research, Mukherji (2000: 46-49) has traced 'major influences and inspirations that fed into its evolution as a concept and practice of research'. One can do no better than reproduce in Box 11.1 his concise account of the influences and inspirations.

Box 11.1 Major Influences and Inspirations in the Evolution of Participatory Research

i) The *sociology of knowledge*, which relates ideas and ideologies espoused by social groups to the positions they occupy in the social structure. Therefore, alternative histories can be written of those struggles and voices that have not been recorded, and they can create histories (ideologies). The knowledge that may be generated by these marginalised (subaltern) groups can become the condition of change and transformation in their own lives through the process of knowing, learning and education.

ii) *Action research*[©], which was 'recaptured in Latin America and subsequently became the basis for participatory action research', emphasising 'the notion of action as a legitimate mode of knowing, thereby taking the realm of knowledge into the field of practice' (Tandon 1996: 21).

iii) *Phenomenological thinking* which 'legitimated experience as a basis of knowing' thereby expanding 'the basis of knowing beyond mere intellectual cognition' (p.21).

iv) The *debate on development* paradigm which was critical of top-down, expert-designed development projects and programmes, and brought in the issue of "people's participation, community participation, participation of those whose development is being attempted as central actors in their own development" (pp.21-22).

v) The emergence of *a new structure of civil society* through the institution of non-governmental organisations.

Let us now turn to appreciating the key features of participatory research methodology that has currently found many followers in different disciplines of the social sciences.

11.4 Delineation of Key Features

In sharp contrast to the idea of *detachment and value-neutrality* propagated by the early comparative approach, the participatory approach is open and emphatic about *attachment and partisanship* with the marginal groups whose perceptions, they argue, have been marginalised in social science knowledge. According to Partha Nath Mukherji (2000: 46), participatory research methodology is based on three important conditions, which we reproduce here in his words in Box 11.2.

Box 11.2 Bases of Participatory Research Methodology

i) There is a target community/group, which is in felt-need of changing its underdog (oppressed, marginalised, exploited) situation to a more favourable one.

ii) This target group in cooperation and conjunction with an acceptable, external interventionist-oriented researcher, formulates research goals, participates in data collection and, as far as possible, also in analysis and drawing of conclusions, which directly feed into decision-making relating to community action for change/development

iii) The ultimate aim of the external researcher is to attempt to ensure complete 'ownership of knowledge' (e.g., of the health system, technology, management techniques) by the target community. Participatory research is thus a process, specifically directed towards ameliorative or transformative change/development in the conditions of life and living of the group/ population, who themselves are participants in the research process.

Before we go into comparison of participatory research methodology

with the so-called traditional or conventional research methodology, let us also gain an idea of what the concept of participation entails. The term has of course received different interpretations and meanings in different contexts. Let us confine ourselves to the context of social research and in this context, you can say that participation has at least three dimensions.

- Participation entails the involvement of all those concerned with decision-making about what and how something has to be done.
- Participation involves mass contribution to the efforts for development. This implies the involvement of all those affected in the implementation of the decisions.
- All those involved in i) and ii) share in the outputs of the efforts planned and implemented for development.

These ideas about participation refer to the entire socio-economic processes of a society and therefore concern the researchers of social processes of change and development. There is no doubt that there exists a wide gap between the macro-level goals of a society and what generally happens in the name of participation. Often, the participation of the people in the actual work implementing a plan or programme is projected as community participation. In our opinion, unless the community shares in decision-making about planning and implementation of the plan or programme, we cannot name it as participation. Mere acceptance or occurrence of unpaid labour in the name of participation is the worse form of actual exploitation of labour. In this sense, you may argue for making a distinction between the participation of just a few local individuals and the organised involvement of the community as such. We need to also be cautious about going overboard and expecting the full autonomy of the community in controlling all activities of a plan. In real life situations such a notion of participation may not be feasible from any angle. All the same the idea of participation or of community participation, as we have developed in this paragraph, is only a logical progression of the ideas put forward by the educators of adult learners. In this sense, participation has an intrinsic value for participants and the researcher is also one among the participants. Most importantly, community participation ensures incorporation of indigenous knowledge and expertise into implementation of development plans. This leads to freedom from dependence on so-called professionals. Participatory research is a process, aiming to bring about improvement in the conditions of living of the people, who themselves participate in the research. Its by-product is the ownership of knowledge in the hands of the people, making for sustainability of improved conditions of living.

Mukherji (2000: **47-48)** has presented 'some of the basic tenets of so-called academic/ traditional1 conventional research (CR) methodology as perceived by action researchers/social activists who advance the

argument for participatory research (PR) methodology. This is because the latter is generally counterposed against the former' (see Box 11.3).

Box 11.3 Counterpoising Conventional Research against Participatory Research (in the words of Mukherji 2000: 47-48)

i) The interventionist role of the subject is a prime condition of PR – the scholar is committed to bringing about social change. The ideal position that an external subject-object distance should be maintained so that the situation being studied can remain unaffected by the subject (social scientist role) is considered untenable.

ii) It follows that in PR there is no scope for value-neutrality. It is applied towards desirable directed change and development.

iii) The top-down approach of CR, in which the researcher and her/his institution decides 'upon the focus, methodology and outcome of the study', and regards the people who are studied 'as objects who are there for the convenience of the researcher' (Fernandes and Viegas 1985: 12), has to give way to research which is viewed as 'a process which the people go through...as a step in awareness building about the situation of the oppressed' (Fernandes and Viegas 1985: 16). Most CR methodologies, it is argued, originated in the West with an explicit objective to control its subject people (Fernandes and Viegas 1985: 4). In contrast, *empowerment* of the *marginalised* through the research process is the avowed goal of PR (Fernandes and Viegas 1985: 21).

iv) CR focuses on scientific rigor in the explanation and/or understanding of phenomena, which is then disseminated to the scientific community through accredited journals. It Is assumed and expected that knowledge so generated sooner or Later, will contribute directly or indirectly to practical application through social policy, social work and action research PR, on the other hand, 'is viewed no more as a study of a people, but a process which the people go through and as a step in awareness building about the situation of the oppressed.' in which ideally, research 'is with and for the people and not on them' (Fernandes and Viegas 1985; 18).

Box 11.3 shows that participatory research criticises conventional research for its apparent insensitivity to the problems at the "grassroots". Conventional research on the other hand criticises participatory research for its lack of scientific rigor. But you would note that participatory research does not view itself as the "sole alternative" to conventional research. Fernandes recognises the value of so-called conventional research both in the mobilization of people and in projecting macro-realities essential for policy arguments. According to Mukherji (2000: 47-48), participatory research as discussed above by Fernandes and Viegas is a kind of tool-oriented method. We are here discussing methods or techniques of research. You may say that advocating an integration of the elements of both is an example of mixing methods that are suitable for inquiring into the practical objectives of a participatory plan. Mukherji (2000: 49) is also raising an interesting point about such macro theories as hermeneutics, post-structuralism, critical realism, which do not subscribe to positivism, but they are equally a part of the conventional research in the sense that they have little use for mobilising participatory

action research. Rather, Mukherji says, "The sweep and strength of the currents that such macro-theories generate in society often create the very conditions for grassroots actions to become significant and necessary".

The question comes up: how to design one's research to make it promote those'social values which are implied in the search for increased participation? As a matter of fact, established research institutions fit into the prevailing class relations that ensure benefits to the upper and middle-strata researchers only. Participatory research on the other hand assumes that through its method, research can itself turn into a tool for participatory development. Both the national and local power structures are by and large not conducive to accept the force of conscientisation® once it comes into existence due to participatory research methods.

Practitioners of participatory movements would certainly welcome research if it would help them to understand their own social identity, to become cognisant of their relationship to other social relationships affecting them and the greater potential of shared resources at the larger-than-one's family level.

The inclusion of questions on participation into one's research requires selecting key issues for inquiry. The criteria for selecting the issues need in turn be participatory. Here, the most important point is to beware of the rhetoric of participation, which is almost universal in all spheres of current discourse. Here, one quick Reflection and Action exercise would be in order to drive the point home.

Reflection and Action 11.2

In an international seminar on participatory approach, a participant described in the following words his country's commitment to participation.

"After the detailed programmes have been well planned, we tell the people exactly what to do so they will understand their responsibility to participate."

Respond to this application of the notion of participation by writing answers to the following questions.

Do you perceive a sense of participation present in the above statement?

Who is planning and who is taking the responsibility to participate?

Should those planning and taking the responsibility to participate be two different sets of people?

In advocating participatory research in the social sciences, we need to accept the fact that building participatory practices and institutions is a dynamic and gradually evolving process in response to social needs and values and available skills and resources. Participatory approaches cannot be either legislated or adopted in a matter of days. They generally grow over time with experience, practice and analysis of what works and what does not.

To return to the beginning, one has stressed throughout the Unit 11 the importance of the linkages between the overall theoretical assumptions,

the approaches and finally the appropriate field techniques that follow. It is but natural that the concern with development, with wanting to represent and incorporate the views of different sections of society would lead to a shift in the actual mode of doing field work. Thus a participatory approach has been spelt out to imply a participatory field appraisal. I very briefly touch upon the more widely used forms of the Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA).

Rapid Rural Appraisal or RRA is a way of organising people for collecting and analysing information within a short time span. It can be defined as any systematic process of investigation to acquire new information in order to draw and validate inferences, hypotheses, observations and conclusions in a limited period of time. It has flexibility to adjust to situations because it does not imply or recommend a standard set of methods to be applied in each case. The methods vary from situation to situation and are determined by local conditions, local problems and objectives at hand.

As a methodology for agricultural development RRA was developed for quick field-oriented results with objectives as follows:

- Appraising agricultural and other needs of the rural community;
- Prioritising areas of research tailored to such needs;
- Assessing feasibility of developmental needs and action plans;
- Implementing action plans, monitoring and evaluating them.

Participatory Rural Appraisal (PRA) is a methodology for interacting with villagers, understanding them and learning from them. It involves a set of principles, a process of communication and a menu of methods for seeking villagers' participation in putting forward their point of view to make use of such learning. It initiates a participatory process and seeks to sustain it. PRA is sometimes known as Participatory Rapid Appraisal where the emphasis is on both 'participatory' and 'rapid'. The emphasis on rapid is more in terms of data collection, which is compared to conventional survey methods.

11.5. Conclusion

There are many valuable lessons to learn from the participatory approach. However it is extremely important not to expect a magic wand kind of effect from this participatory approach. There is a danger of participatory approach (if used indiscriminately and without adequate theoretical training and historical awareness) becoming a handy tool of doing micro level studies that do not connect with the macro world. This disengagement with the macro world was always important but never as much as now in a global milieu. It is more so in the case of participatory approach, which appears to be rapidly changing into a set of unquestioned techniques (PRA) and losing ground with the epistemological assumptions

upon which it rose. While its brazen critique of value-neutrality is important, it is also important to be careful of hasty research entirely attached to the agenda and needs of non-government organisations and donor agencies. The significance of academic research cannot be overstated. In western countries the recognition for pure research exists, an imperative need for the sustenance of any democratic society. Not only is the emergence of ***a new structure of civil society*** through the institution of non-governmental organisations that Participatory Approach advocates important, ***so are older forms*** of ***civic society institutions like the social science departments in universities.*** The reduction of social science research to tools of participatory development programmes would be disastrous both for democracy and development. In this respect, Mukherji (2000: 50) advises, "Participatory researchers need to draw their understanding of social reality from these (theoretical) perspectives to discern at what level of change and development their researches are pitched – problem-solving largely at the symptomatic level or also reaching out to the systemic level?"

In the end we can conclude that the crucial feature of participatory research concerns the attitudes of researchers. This in turn determines the conceptualisation and conduct of the research activity. In this sense participatory research raise both professional and personal challenges that go beyond the issues of authorship and production of knowledge.

Please do not forget Reflection and Action 11.3.

Reflection and Action 11.3

If the definition of participation is "the organised efforts to increase control over resources and regulative institutions in given social situations, on the part of groups and movements of those hitherto excluded from such control", how many dimensions of participation would you like to cover in your research in a participatory mode? One example of a dimension is participation as an encounter between social classes/ interest groups and confrontation between local and metropolitan interests. Try to find out other similar dimensions.

Further Reading

Mukherji, Partha Nath 2000. ***Methodology in Social Research: Dilemmas and Perspectives.*** Sage Publications India Pvt Ltd: New Delhi (especially pp. 13-84)

Unit 12

Types of Research

Contents

12.1 Introduction
12.2 What is Research?
12.3 Types of Research
12.4 Conclusion

Learning Objectives

It is expected that after reading Unit 12 you would be able to

- ❖ Explain what is research
- ❖ Understand different purposes of research
- ❖ Gain familiarity with different types of research and their use at the level of techniques.

12.1 Introduction

Unit 12 is the first unit of Block 4 in Book 2 of MSO 002. Since Book 2 has the aim of initiating you into the world of research methods and techniques, it focuses on the very idea of 'research' and the types of research. The main purpose is to explain what is involved in different types of research and how you can make use of the alternatives available of different techniques of research. You need to basically try and become familiar with different ways of categorising a piece of research. At the same time you need to appreciate that none of the types mentioned is an exclusive type to the total exclusion of another type. In fact, synthesis and spirit of eclecticism® are likely to help you navigate more smoothly through a research process. You need to be an informed researcher and that is why the units of Block 4 are there to bring to you a higher level of sensitivity in matters of research.

12.2 What is Research?

Research refers to a systematic study of one's chosen subject for arriving at both new and valid conclusions. In sociology, we claim to engage in scientific research of social phenomena.

How does a research become scientific? If your study of a subject has followed a method or logic of investigation, you can claim your research was scientific. Scientific research engages in a search into one's chosen subject with the aim of contributing to the body of existing knowledge on that subject. Your production of scientifically reached knowledge has to pass through a process of investigation leading to valid conclusions. Validity of your conclusions would depend largely on the methods you have followed to conduct your research. Validity® would also depend on

how well you have applied those methods. Those evaluating your research would also look at the way your findings have contributed to a theoretical understanding of the subject of your research.

Does the above tell you what is research? Perhaps it does not. It gives you a broad idea of what one means by research and how a research can become scientific. In our statements above we have used several terms (especially 'one's chosen subject', theoretical understanding, and validity). An elaboration of those terms will clarify what is research. So, let us pick up those terms and explain them.

We have mentioned 'one's chosen subject'. This means there is a clear indication of choice in deciding the topic of research. In fact, this is the entry point. How does one select the subject or problem of research?

The choice depends on multiple factors. It may seem a fairly straightforward matter but, at times can become a matter of prolonged debate, doubt and conflict. For example, you may refer to Madan (2004: 191-207), who has described in detail how and why he chose to study his own community, the Pandits of the Kashmir valley. Sjoberg and Nett (1992) in their book on *A Methodology for Social Research* have mentioned that fashions, fads and foibles may affect the choice of topic of many researchers. Some may wish to improve the prevailing conditions of some aspect of life and may decide to work on some socially useful piece of research. Others may like to work on a problem considered important enough for scientific investigation.

So notwithstanding how and why you have chosen a problem to research, you would find it very useful to ask yourself the questions which Bernard (1994: 103) has suggested that all researchers need to ask.

- Does the subject of your research really interest you?
- Is it possible to carry out a scientific inquiry on the topic of your research?
- Do you have enough resources to start and complete your research?
- Are you likely to face any ethical or moral problems by asking your research questions or by using certain methods and techniques of research?
- Is the subject of your research theoretically significant and interesting?

You may find the above questions banal but I feel Bernard's advice is good for those who are not yet experienced researchers. Such questioning helps a research to probe deeper into the reasons of one's selection of a research topic. The second term that we used was 'theoretical understanding'. What is meant by this expression? Theory has to do with abstraction of facts. A fact is an observation that can be empirically verified. If on the basis of observation of empirically verified facts, if you are able to i) construct an abstraction, ii) prepare a conceptual frame that would help you systematise, classify and interrelate the

relevant facts and iii) sum up the facts in the form of empirical and systemic generalisations, we can say, you have gained a theoretical understanding of your chosen subject. Theoretical understanding helps us to sometimes predict logical outcomes of certain combinations of facts. At other times, such theoretical understanding may indicate the gaps that may exist in our knowledge of the subject.

Coming to the point of validity, in brief we may say that validation refers in the first instance to a 'common sense analysis' or stating what one's chosen subject is all about or what is its current status. Regarding further steps in seeking validation of a subject, we would study later in the context of both quantitative and qualitative methods of research. Of course you are not supposed to rely on logical and common sense validation alone because such validation belongs to the category of plausibility only and it can never be definitive. You will need to use a scale to measure validity. This is a matter you will learn later in this course.

We may now proceed to discuss the types of research that you may find in the corpus of sociological literature. But before talking about the types, let us remember to dispel certain notions about sociological researchers.

While giving an example of social work research, Reid (1995: 2040) has pointed out that research is not always what you would call 'scientific'. It may be limited to gathering useful information. Many times such information is very important for planning a certain action and making crucial decisions. Further data collected in such a research work may lead to the construction of a theory at some later stage. You may therefore conclude that there is no need to denigrate research that produces useful information without going into heavy theoretical explanations.

You would, on the other hand, do better to recognise that at times mere collection of facts does not lead to a fuller comprehension of social reality. Therefore data need not be collected for the sake of collecting data alone. For an understanding of the phenomenon you need to be able to build a conceptual and theoretical scheme that would help you to interrelate a larger body of facts and interpret them in a systematic manner.

Further, in order to carry out scientific research, you need to go beyond the time and space of your own research setting and seek a generalisation on the basis of your findings. This attribute of your research would make it applicable to other areas of knowledge.

Finally, you need to recognise that knowledge produced after a long process of research is not just for the sake of producing knowledge. As Wallerstein (1997: 1250) said, production of knowledge is geared to 'the search for the good of society'. At this point, I would suggest that you

go back to the first sentence of the Introduction to Book 1. This will make you see the sense of training yourself in research methodologies and methods of social research.

Let us now delineate the basic types of research after completing the following Reflection and Action 12.1.

Reflection and Action 12.1

Read Madan's (2004: 191-207) article, In Pursuit of Anthropology, and then think about your own interest in deciding to enrol in the Master's Degree programme at IGNOU. Write a note of five hundred words on "Why would I like/ not like to conduct research on a subject of my choice?"

12.3 Types of Research

As already mentioned above, you may come across research that is heavily theoretical while there may be a research specifically conducted for the pragmatic reason of collecting facts to be able to make decisions. You already know that irrespective of the fact that a research is scientific, theoretical or pragmatic, it has to be methodical and make use of established research methods. In fact, this is one of the reasons why you are reading this course. Mere use of research methods would not, however, make your research scientific. It would be scientific when you would deal with concepts, theory or theoretical discourses in the field of your discipline. This is why in Book 1 you read all about of theoretical contributions different schools of thought in sociology to understanding the social reality. In this sense, you would discover that there are hardly any shortcuts in the world of research and there are no alternatives to a long-drawn process of research. But you do certainly have alternative types of research to ponder about before deciding the way you would like to design your research. This is why we talk about types of research.

You can combine with advantage several types of research in your own inquiry. Please do realise that many of them work better in combination through their placement as specific types may give the impression that each type is a distinct entity not compatible with another type. Before going over to the list of types I would like to stress that you need to take each type as a possible candidate for fruitful incorporation in your research. Often, lengthy debates on the merits or demerits of particular types have made inexperienced researchers feel they need to take a stand while deciding to use a particular method of research.

To my mind these debates were useful to the extent they highlighted multiple uses of each type but they were also the source of doubt and conflict in the minds of researchers. Very early during the development of scientific research, there was the debate about inductive and deductive research. Adherents of each type fought over the merits of one over the other (see Unit 1 of Book 1). Then there was the discourse on the value

of theoretical research versus a mere collection of facts. Social scientists began to make distinctions between pure and applied research. The debates ended for many with the realisation that the two elements were not opposed to each other. Both could be profitably used as needed for one's research project (see Box 12.1 on Myrdal's (1944: 1130) advice).

Box 12.1 Myrdal's Advice on Combining Quantitative and Qualitative Researches

The ideal community study should start out from a careful statistical analysis of vital, social, and economic data concerning the individuals and families making up the community being studied. The less measurable data on attitudes, cultural traits, behaviour patterns in which social stratification is expressed, and the 'feeling' of social status or toward social status on the part of members of the various groups, should then be observed and the results integrated into the framework of statistical knowledge.

Let us now look at the list of possible types of research. Similar to the arrangement of Sarantakos (1998: 6-8) into fifteen types of social research, we bring here a list of research types arranged in pairs.

- Basic and applied
- Descriptive and analytical
- Empirical and exploratory
- Quantitative and qualitative
- Explanatory (causal) and longitudinal
- Experimental and evaluative
- Participatory action research

If you look at the name of each type, it would become clear that they represent different aspects of research and it is quite possible for you to mix and match them. Combining different types of research would depend on the purpose of your research. It is not out place to see Box 12.2 for different purposes of one's research.

Box 12.2 Different Purposes of Social Research

One of the purposes may be to understand a phenomenon that has so far been not researched. If researched, it may be based on unauthentic information. A research carried out with the explicit purpose of this nature is generally called exploratory or formulative research.

Another purpose may be to work further on some already known and explained phenomenon. It may involve testing a set of hypotheses in the area of one's chosen subject of research. Research with this purpose is known as descriptive research.

Yet another purpose may be to establish a causal relationship among the variables in a 'laboratory' type of setting. A research with this purpose is given the name of experimental research.

Let us now discuss each pair of the above list in detail. Besides this discussion there is in the three books of MSO 002 each type dealt in detail.

i) Basic (or pure or fundamental) and applied research

You can look at basic research as pure or fundamental research because it concerns the principles or laws or fundamental rules and aims of achieving knowledge for its own sake. It pertains to the quest for knowledge about a phenomenan without concern for its practical use. You can do pure research to verify and remove doubts. If the doubt proves correct, you can modify the concerned principles and laws according to the conclusion and results of pure research. You can argue that there is nothing so practical as a good theory. For instance, developing a theory pertaining to the functioning of group mind (collective behaviour) or group dynamics can serve very useful purposes. You can also use pure research to reject or support existing theories about social phenomena. Sociologists have generally carried out pure research in order to discover laws governing social phenomena. Pure research is quite often the basis of evolving necessary concepts and technical terminology.

While pure research discovers principles and laws, applied research discovers ways of applying them to solve social problems. Applied research focuses on analysing and solving social problems. In sociology, we carry out applied research in the fields of social, semi-social, and socio-psychological problems. Sociologists work on pure research when they seek to find out why crime is committed or how a person becomes a criminal.

If some sociologists try to find out how one can rehabilitate criminals and control their deviant behaviour, you would say that they are engaging in applied research. For instance, sociologists making a study of nature and the extent of drug abuse among truck and auto-rickshaw drivers or among industrial workers are working for pure research. If this is followed by a study of how to reduce drug abuse among truck and auto-rickshaw drivers, it will be applied research.

Besides social problems, you can use applied research for social planning, social legislation, social hygiene, religion, etc. For instance, research in the field of family planning aims at the application of some principles. You can argue that sociology can elevate its importance by emphasising applied research.

ii) Descriptive and analytical research

Descriptive research describes a social situation, social events, social systems, social structures, etc. Its main purpose is to describe the state of affairs as it exists. For instance, a study of drug abuse would cover questions like the extent of drug abuse among college students, the nature of drugs taken, the causes of taking drugs, the sources of drugs, the effects of taking drugs, etc.

In the social sciences we often use the term *ex post facto*© research for descriptive studies. The main characteristic of this type of research is that researchers have no control over the variables; they can report only

what has happened or is happening. Descriptive research uses the survey. It describes accurately and precisely a wide variety of the characteristics of the population in general as well as the population of different regions and communities.

In analytical research, the researcher has to use facts or information already available, and analyse them to make a critical evaluation of the material. Looking beyond the ideas, facts and figures already collected, a social analyst assumes that behind the accumulated data there is something more important and revealing than the facts and figures. The assumption is that carefully collected facts and figures, when related to other variables present in the entire body of data, reveal a significant general meaning, from which you can draw a valid generalisation. The further assumption is that social analysis is a continuous process throughout the entire research undertaking. The function of systematic analysis is to build an intellectual edifice where you place properly sorted and sifted facts and figures in their appropriate settings and consistent relationships, so that it is possible for you to draw a general inference from them.

Facts and figures do not speak for themselves; they are not free and equal. They have many qualifiers© (ifs and buts) of varying complexities, sources, and structures. Facts are never simple. The analysts need to view facts and figures in conjunction with the subjective reactions to them. Social analysis demands a thorough knowledge of one's data. Without penetrating and insightful knowledge, analysis is worthless. The very first step in analytical research is a critical examination of the assembled materials, keeping steadily in mind the purpose of the study and its possible bearing on scientific discovery. Re-reading and re-examining the gathered data stirs the imagination of the analyst and induces a new way of looking at the problem and the data.

One of the tasks in the analysis of data, especially those pertaining to social and personal problems, is the establishment of a cause-and-effect relationship. It is imperative to look for the whole range of causal factors which generally play a significant role in bringing about a complex social situation.

It is time now to complete a quick Reflection and Action exercise to make sure that you can identify descriptive and analytical research. Of course, one needs to realise that even a primarily descriptive study would include some kind of analysis and conversely a highly analytical research would contain some amount of straight description. In this sense, you are not to look for purely descriptive or purely analytical studies. You need to look at the essential character of a piece of research, leaning heavily in one or the other direction in order to label it as descriptive or analytical. As mentioned earlier each type of research has its use in the world of knowledge. So let us complete Reflection and Action 12.2 and then proceed to the discussion of another research type.

Reflection and Action 12.2

Identify the type of research carried out on voting forecast on the basis of a survey conducted by different organisations and TV channels.

What type is the research of a social anthropologist who provides an account of the culture of a tribal society?

Select any two studies as examples of analytical research from those mentioned in the units of Book 1 of MSO 002. Write on a separate sheet of paper answers of the above questions and also for each study the name of the author, title of the book and year, place of publication along with the name of the publishing agency.

iii) Empirical and exploratory research

Empirical research relies on the experiences or observations alone, often without due regard to systems and theory. It is data-based research, coming up with conclusions which are capable of being verified by further observation or experiment. In such a research it is necessary to get first hand facts to have a working hypothesis, and to set up an experimental design. Such research is appropriate when proof is sought that certain variables affect other variables in some way. Evidence gathered through experiments or empirical studies is a powerful support for a given hypothesis.

Generally, exploratory research is qualitative which becomes useful in formulating hypotheses or testing hypotheses and theories. In this research, the assumption is that the researcher has little or no knowledge of the problem or situation under study, or is unfamiliar with the structure of the group under study. See Box 12.3 for an example of a researcher interested in exploring students' unrest in a university campus.

Box 12.3 Example of an Exploratory Type of Research

One interested in understanding the reasons of student unrest will study dissatisfaction of students with the various problems they face, administrators' apathy to these problems, students organising under a leader for demonstration, *gherao*, strike, etc; types of student who become active, the support they seek and get from outside agencies, how widespread the unrest becomes, how it is suppressed by police, how leaders are arrested, and how authorities are pressurised to concede some demands.

Exploratory studies are also appropriate for some persistent phenomena, like deficiencies in the functioning of educational systems, corruption among the political elite, harassment by police, rural poverty, etc. Exploratory studies are quite valuable in the social sciences. They are essential in a researcher breaking new ground.

iv) Quantitative and qualitative research

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. This type of research is based on the methodological principles of positivism© and others to the standards of strict sampling and research design.

Qualitative research presents a non-quantitative analysis or is concerned with a qualitative phenomena, that is a phenomenon relating to or involving quality or kind. For instance, a researcher may want to investigating the reasons for human behaviour, he or she should use techniques such as word association tests, sentence completion tests, story completion test, and similar other projective techniques. Qualitative research is especially important in the behavioural sciences where the aim is to discover the underlying motives of human behaviour. See Box 12.4 for the view that finds no dichotomy between quantitative and qualitative types of research.

Box 12.4 Ramkrishna Mukherjee's View on Quantitative and Qualitative Research

Mukherji and Sengupta (2000: 242) interviewed Ramkrishna Mukherjee on the methodology of social research and Ramkrishna Mukherjee clearly spelt out in the following words the relationship between the two types.

Quality-Quantity is not a dichotomy. There is no 'either/ or' between them. Quality refers to only 'distances' in variations, which are not known to us and, therefore, cannot be measured. Our job is to find out what are these 'distances' and how to measure them. .... This distance is the variation between entities we are concerned with. It may be individuals; it may be anything.

You will read in more detail about the two types of research while reading Blocks 5 and Block 6 in Book 2 and Block 7 in Book 3. It may be worth mentioning that you can distinguish the two types of research in terms of their technical and epistemological levels. In terms of the technical level, both types offer you a choice of alternative methods. You can select either or both as per their relevance for your research. At the technical level, there is not much of a dichotomy between the two types. But at the level of epistemology, the two types of research address quite different ways of looking at knowledge about social reality (see Bryman 1988: 50). Generally, positivists, who use surveys and experimental methods, carry out quantitative research. Those who critique positivist epistemology carry out qualitative research. This is the reason why there exists the notion of a dichotomy between the two types of research. At the level of technique you can happily agree with Ramkrishna Mukherjee and not treat them as dichotomous.

v) Explanatory (or causal) and longitudinal research

Explanatory research explains the causes of social phenomena. It aims to establish a relationship between variables, i.e., how one is the cause of the other, or how when one variable occurs the other will also occur. For instance, explaining the relationship between broken families and juvenile delinquency, or between drug abuse and the lack of family control, or between a students' strike in a college and the apathy to solving students' grievances.

Explanatory (or causal) research is mainly concerned with causes, or the

'why' factor, about a phenomenon. It does not involve comparison and the factors of change. For instance, research on violence against women would like to answer the question why men commit violence. Then, it is an example of explanatory research. The hypothesis in an explanatory research expresses the relationship between two (or more) variables, and the research design focuses on ascertaining the 'why' aspect of the correlationship. The correlationship studies should not be confused with causal studies, as they are not synonymous. Two variables in a hypothesis may be related to each other either positively or negatively but may not have a causal relationship.

Longitudinal research involves the study of a problem or the same body of phenomena over a period of time, for example, prevalence of AIDS among males and females in India in 1979, 1989, and 1999. Such studies indicate the trend. The research can also be cross-sectional. This study covers a broad range of phenomena at a single point in time.

vi) Experimental and evaluative research

Experiments are, theoretically, the purest way of dealing with the problem of cause and effect. Therefore, the experiment is the most sophisticated way of getting at the problems of explanation. Ideally, in this type of research the researcher would like to show that 'X' causes 'Y'. In order to show that 'X' causes 'Y' the researcher will have to demonstrate that 'X' was both a necessary and a sufficient cause of 'Y'. i.e. the researcher will have to show that 'X' must occur in order for 'Y' to follow, and that 'Y' is the result of 'X', or nothing else.

Controlled experiments involve the manipulation of circumstances. The researcher needs to identify factors which are significant and then introduce them to or exclude them from the situation so that their effect can be observed.

The identification of causal factors, the introduction or exclusion of factors to or from the situation enables the researcher to pinpoint the factors that actually cause the observed outcome to occur.

Observation and measurement: Experiments rely on precise and detailed observation of outcomes and changes that occur following the introduction or exclusion of potentially relevant factors. They also involve close attention to the measurement of what is observed.

Controlled Experiment Research may be in a laboratory settings or in field settings. Laboratory experiments are usually of short duration and involve close control of variables to isolate causal factors. They involve meticulous observation and measurement.

Such a method involve a uniform procedure and allow the researcher to measure a specific trait. But laboratory experiments, at the same time, do not allow the researcher to study things in natural settings. They can be expensive and have restricted applicability. It is difficult to assess the extent to which the test results reflect the respondent's experience of

the test situation itself rather than the specific ability or aptitude under investigation. Lab setting may produce an artificial environment, which may affect the test results, and data generated under artificial setting may seem shaped up.

Another kind of experimental research involves an experiment carried out in natural settings. In studies like levels of income of individuals, or the issue of poverty, the level of smoking in office premises, etc., the researcher cannot manipulate circumstances. It is neither feasible nor ethical to impose controls in such studies. Therefore, they are to be studied in their natural environment. Such studies are also of longer duration and expensive too.

To tackle the situation some social scientists have resorted to a quasi-experimental approach. In this case researchers are on the lookout for 'naturally occurring experiments', situations in which they can see the possibility of observing and measuring the impact of isolated variables through circumstances as they happen, without imposing artificial control. For example, displacement of people as a consequence of a mining project could be called a 'naturally occurring experiment'.

Social workers have become increasingly involved in evaluative research. The essence of evaluative research can be reduced to the following three basic questions.

How effective is the program (or agency, procedure, or administrative structure)?

How efficient is the program? This generates the question of cost benefit or cost effectiveness of the program.

Should the activity continue? Is the program effective or efficient? If not, is it right to continue the program? Also, researcher should not ignore the points like, is the program sound on moral or legal grounds? A competent evaluator may not ignore the value problems presented (see Mark and Henry 2004).

vii) Participatory action research

From its beginning, action research had its involvement with practical issues, the kind of issues and problems, concerns and needs that arise as a routine in the real world. This practical orientation remained a defining characteristic of action research (see Gustavsen 2003). There are the following four defining characteristics of action research.

Practical: It is aimed at dealing with real world problems and issues, typically at work and in organisational settings.

Change: Both as a way of dealing with practical problems and as a means of discovering more about change in social phenomena, is regarded as an integral part of research.

Cyclical process: Research involves a feedback loop in which initial findings generate possibilities for change, which are then implemented and

evaluated as a prelude to further investigation.

Participation: Practitioners are the crucial people in the research process. Their participation is active not passive.

Within itself, action research includes two stages. In the first stage the research is carried out and in the second stage practitioners apply knowledge generated from research. The two processes of research and action are integrated. But this integration of research with practice limits the feasibility of exercising control over the factors of relevance to research. The setting for research generally does not allow the variables to be manipulated or controls to be put in place, because research is conducted not alongside routine activity but actually as part of that activity (see Chandler and Torbert 2003).

12.4 Conclusion

Unit 12 has explained what is research and with what sort of purpose does one carry out a piece of investigation into the nature of the social reality. The list of various types of research is simply to provide you familiarity with different labels that we sometimes attach to sociologists' work. In real life, it is not all that easy to put a research into a particular slot. The reason for listing of different types of research in Unit 12 is merely to indicate that often researchers incline to focus on one or the other type. Their inclinations help us to evaluate their contributions to the corpus of sociological inquiry about social phenomena.

In a similar vein, we will discuss the subject of research methods and research design before embarking on particular ways of carrying out sociological research.

Further Reading

Mukherji, P. N. 2000. *Methodology in Social Research; Dilemmas and Perspectives*. Sage Publications: New Delhi

Srivastava, Vinay Kumar (ed.) 2004. *Methodology and Fieldwork*. Oxford University Press: New Delhi

Unit 13

Methods of Research

Contents

13.1 Introduction
13.2 Centrality of Research Methods in Social Sciences
13.3 Interface between Methodology and Methods
13.4 Elements of Research Methodology
13.5 Types of Data Used in Social Research
13.6 Research Methods
13.7 Conclusion

Learning Objectives



It is expected that after reading Unit 13 you would be able to

- ❖ Appreciate the importance of research methods in the social sciences
- ❖ Clarify the relationship between methodology and methods
- ❖ State the elements of research methodology and types of data generally used in social research
- ❖ Describe the various research methods.

13.1 Introduction

Learning about research methods would help you find out how we get to know what we take as facts. Lack of adequate nutrition makes you suffer from malnutrition. Polluted water causes jaundice. Regular exercises keep one fit and free from common diseases. How do you come to these facts? Some researchers in some places must have carried out studies to find each of the above facts.

When you ask how a particular researcher has gone about making a study, you are basically inquiring about the researcher's methods. There are some common ways of carrying out one's research and Unit 13 is going to talk about such methods. It will also describe the various steps in the research process. The unit will also once again clarify the difference between methodology and method and explain the subtle relationship between the two terms. Understanding the ways of systematic research is to prepare you to undertake your own mini research project. Please note that the project will comprise one of your assignments.

13.2 Centrality of Research Methods in Social Sciences

In the social sciences, the identity of the disciplines depends largely on the methods its practitioners use. In other words, you cannot ignore the

centrality of methods in the social sciences. Most of social science disciplines borrowed the methods from the natural sciences, though they study matters quite different from matters in the natural sciences. As a result, the social sciences are continuously engaged in resolving the contradiction between the materials pertaining to social phenomena and methods belonging to the study of natural phenomena. As mentioned in the introduction to Block 4, the methods refer to technical rules that define procedures for collection and analysis of data. If there are various methods of data collection, there are also several methods of data analysis, such as statistical inference, sampling and new forms of computer-based qualitative data analysis. There are also methods of research inquiry such as the formulation of the research problem, methods of constructing hypothesis, concepts, theories and propositions.

If understood in this frame, methods lay down the procedure for generation of reliable and objective knowledge. Researchers are not free to formulate a questionnaire, conduct an interview or carry out participant observation the way they like. They need to follow definite and well-accepted procedures to ensure that the knowledge generated methods turns out to be objective, authentic and reliable.

13.3 Interface between Methodology and Methods

Once more to clarify, we draw your attention to the fact that methodology refers to the broad theoretical and philosophical frame into which the procedural rules fit. The study of the interface between methods and methodology is called the 'philosophy of social research' (see Hughes 1990). It explores the manner in which the broad philosophical and methodological orientations validate and authenticate the procedural rules for collection and analysis of data. According to Brewer (2000) the causal relationship could be stated in the following manner.

The success of a research pursuit is largely determined by the methodology on which it is based. You already know that research methodology is a broad frame of the research process; it elucidates the theoretical orientation with which the research process is to be carried out that guides the choice of methods and techniques to be used. Sociologists like to believe that what gives social research its scientific flavour is the inductive approach that helps the researcher to arrive at broad generalisations.

You may be wondering why we are discussing methodology while Unit 13 is on methods of research. Hope the above discussion has clarified that it is necessary to be clear about one's methodology in order to arrive at procedural rules or methods of one's research. This is why we are now going to discuss basic elements of methodology, which in turn help us to decide the particular methods to be used.

Before moving to Section 13.4 it is a good idea to complete Reflection and Action 13.1.

Reflection and Action 13.1

Read the Introduction to Book 1 and 2 and work out how theory and research are linked. Discuss what each contributes to the other. Then identify a topic of your interest and specify the range of social phenomena this topic will address. In Reflection and Action 13.2 you will continue this exercise.

13.4 Elements of Research Methodology

The basic elements that build research methodology are

i) Concepts
ii) Propositions or Hypotheses
iii) Theories.

The three elements provide the scaffolding to reach a research methodology. All three elements are related to each other in a cyclical fashion. While you can define a concept by using a theory, the concepts in turn shape the content of theories. Let us now acquaint ourselves with each of the three elements.

Concepts: Concepts are the building blocks of social research. You can define a concept as a short hand representation of a variety of facts. It is the significant symbol/ component of social scientific language. All concepts are essentially the abstractions of reality. A reality has several dimensions; hence a concept can convey several meanings and impressions. The concepts are defined according to the theoretical orientation of the researcher and bring coherence into the abstraction of the phenomenon under study. The concepts then form the bases of the theories (see Box 13.1 for defining the term 'concept')

Box 13.1 Babbie's (1989: 126) Definition of the term 'Concept'

A concept is "a mental image we use as summary device for bringing together observations and experiences that seem to have nothing in common {...} they do not exist in the real world, so they can't be measured directly".

Babbie (1989: 126) has further explained the word 'conceptualisation' in the following words,

"Conceptualisation is the process of specifying the vague mental imagery of our concepts (by) sorting out the kinds of observation and measurements that will be appropriate for our research." (For measuring a concept you need to translate the concept into measurable indicators.)

Propositions/ Hypotheses: Propositions are the statements of interrelationships among concepts. The definitions of particular concepts as subjects of research involve explicit or implicit contrast between the concepts under consideration and the set of all other possible subjects

chosen from the same universe. For instance, while inquiring into the domain of human groups with special reference to peasants, the term peasant is defined as a type of person or community having particular characteristics that contrast with urban dwellers, tribals, etc. I suggest that you look once again at Unit 3 of Book 1 to learn more about hypotheses.

Theories: You can understand theories as the systems of concepts and propositions that explain the relationships and underlying principles characterising a phenomenon. There could be "grand range" theories, which attempt to fit together in logical pattern vast areas of human behaviour. There could also be a theoretical system with a modest scope involving a small number of concepts and propositions. Theories differ with regard to their effectiveness as the sources of propositions that can be tested by empirical research. Hence, you cannot say that a theory has been "proved". However, successful verification of propositions or hypotheses always has implications for the theoretical system to which it relates. Each such verification strengthens the theory.

It is time now to complete Reflection and Action 13.2.

Reflection and Action 13.2 (continuation of Reflection and Action 13.1)

Identify and specify the major concepts and variables, relating to your research topic. Derive at least one specific testable hypothesis. Be sure your hypothesis reflects a specific relationship between two variables.

13.5 Types of Data Used in Social Research

Before moving on to the various methods used in social research, let us understand the kinds of data that are used in social research. One is primary data, which are collected by the researcher himself/herself. The other is secondary data, which are collected from sources such as libraries, etc. When the data mainly deal with numbers and tables and require statistical analysis they are called quantitative data whereas if the data are descriptive and require sociological/anthropological analysis they are called the qualitative data.

Let us now begin with the discussion of prevailing methods of social research.

13.6 Research Methods

We have already discussed the meaning of the term method and distinguished it from methodology. This should allow you to remain sensitive to a different connotation of the term 'method'. You may come across the term in the sense of its epistemological reference and you may also come across the term in the context of its use as a tool of research. Our discussion of the following methods refers to both shades of meaning

but it is more in the context of their uses as tools in research. Their discussion pertains to both the ways of collecting and analysing data. You may also note that methods specifically relating to quantitative and qualitative procedures (sampling, survey, intensive fieldwork, participant observation and case-study etc) will be elaborated at length in Block 5 and Block 6 of Book 2 and Block 7 of Book 3. Therefore, they have not been included here for our general discussion of research methods.

Evolutionary method

We have learnt while understanding the emergence of empiricism in social research that the earlier social scientists emulated the biological model in the study of society. Darwin's theory of evolution found parallels in the social sciences. It was presumed that societies go through the stages of transformation from simple to complex forms. Each change by itself results in minor modifications in the phenomenon but the cumulative effect of changes over a long period is the emergence of new, usually more complex, forms. It studies the cumulative effect of a series of changes by analysing how each change brings modification.

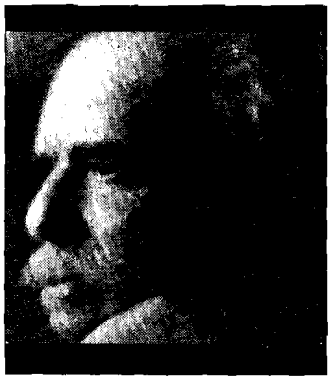


Charles Darwin
(1809-1882)

Several sociologists opposed this method and called the method a tool to build historical descriptions, which sounded artificial and superficial. But at the same time one comes to know systematically about the altered conditions of an institution through a long period of time. The method allows a study of social change.

Comparative method

This is the oldest method in the social sciences used to generate and analyse both kinds of data, secondary and primary. Positivists like Auguste Comte (1830-1892) called it a reliable and scientific method of inquiry. The evolutionists and diffusionists used it to explain the similarity of cultural traits and the 'progress' of societies. It was a simple exercise to break up cultural wholes into traits and compare them to evolve theories of diffusion and evolution. Franz Boas (1940) who vehemently criticised the 'armchair' theorists and came up with the idea of cultural relativism, which accepts each culture as a unique entity and rejects the idea of comparison of traits across cultures. Boas emphasised the relevance of historical data and propounded the idea of studying cultures in the historical context. This led to the emergence of cross-cultural studies and attempts were

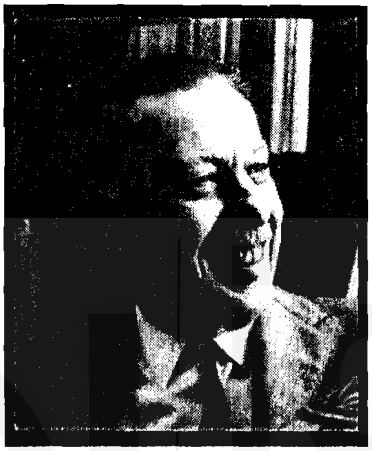


Franz Boas
(1858-1942)

made to analyse the universal categories in each culture like kinship, family marriage, religion, etc to understand the similarities of human societies all over the world. Cross-cultural comparisons are the basis of the structuralism in anthropology, especially of Levi-Strauss (1963).

Boas (1940) pointed out the limitations of the comparative method. He recommended a modified use of comparison within a small well-defined geographical area. He called this method 'historical method'.

G.P. Murdock (1940) uses statistical techniques to give a new dimension to his comparison but he prefers to call it a cross-cultural survey. According to him, in order to understand what precisely the comparative method should be, we must bear in mind the kind of problems to the solution of which it is directed. These are of two kinds, which we can distinguish as synchronic and diachronic. In synchronic study, we are concerned only with a culture as it is at any given moment of its history. The ultimate aim may be to define as precisely as possible the conditions to which any culture must conform if it is to exist at all. We are concerned with the nature of culture and of social life along with the discovery of what is universal beneath the multitudinous differences that our data present. Hence we need to compare as many and as diverse types of culture as we possibly can.



G P Murdock
(1897-1985)

In a diachronic study of culture, on the other hand, we are concerned with the ways in which culture changes, and seek to discover the general laws of the process of change. To study how the culture changes, we have to first determine what culture really is and how it works.

Thus, the study of synchronic problems must necessarily to some extent precede the study of diachronic problems. Fred Eggan (1954) states his own preference for the utilisation of the comparative method on a smaller scale and with as much control over the frame of comparison as possible. Firstly, it is natural to utilise regions of relatively homogenous culture or work within social or cultural types and further to control the ecological factors in so far as it is possible to do so. Secondly, it is important to control the historical framework within which comparison takes place. Eggan (1954) suggests the method of controlled comparison. Oscar Lewis (1955), on the other hand, holds that there are only comparisons in anthropology and no comparative method.



Oscar Lewis
(1914-1970)

With time, the comparative method has undergone a tremendous change. Earlier scholars used this method to arrive at general laws about society. But soon the realisation dawned that arriving at general laws was not possible because of the complexity and diversity of social phenomena across societies. By 1960 onwards the main aim of comparative method shifted from the formulation of universally valid generalisations to the production of accounts of specific cultures. This emphasis on ethnographic specificity has produced data which is qualitatively different from that produced by earlier studies.

The cross-cultural studies fall into two categories: (i) Idiographic studies, which focus on particularistic details located in time and space and (ii) nomothetic studies that focus on law-like generalisations.

Let us now discus the historical method.

Historical method

This method recognises the uniqueness and dynamic nature of societies and cultures. The historical information pertaining to an entity (which could be a society, an institution or any phenomenon) reveals a great deal about the nature of its social dynamism. The data that doesn't take historical dimension into account gives the impression of timelessness.

The historical method collects facts by going to the past in different periods. The sources of information include written records, newspapers, diaries, letters, travellers' accounts, etc. Social researchers generally confine themselves to three major sources of historical information.

a) Documents and various historical sources to which historians have access
b) Materials of cultural history and of analytical history and
c) Personal sources of authentic observers and witnesses.

When, how and under what circumstances to use any or all these sources depends upon the discretion of researchers' interests, scope of their studies, and availability of sources. You can make direct use of documents when historians have not analysed the events that they depict and others have not yet incorporated them into the writings of the broader cultural historical settings. You can also use them to supply a missing link in our knowledge of a particular social situation.

When historical documents depict events not of generations but of centuries past, it is generally useful for social researchers to utilise the existing secondary data, which may be interpretations or analyses of history. But there are some of the following limitations to this method.

a) Historians cannot write history life-size.
b) Not all happenings in time and space can be known at the time of writing.
c) Personal biases and subjective interpretations enter unconsciously.

At the same time historical data may be regarded as reliable

and adequate for social research

a) When you present historical documents as complexes of social forces.

b) When social phenomena meaningfully depict intricate social processes and sets of inter-relationships (psychological, economic, educational, cultural, religious) contribute to a unified whole, a configuration or complex pattern.

Moreover the documents which you may study, may be personal documents like biographies, diaries, letters, and memoirs or may be public documents like magazines and newspapers, and other published data.

Let us complete Reflection and Action 13.3.

Reflection and Action 13.3

After going through the three research methods discussed in Section 13.6 of Unit 13, why a sociologist (or a social scientist) would use an evolutionary skilled method, a comparative method, and an historical method. Select a research topic and show how this topic would be addressed in terms of each of the three methods of research.

Personal documents

These include all the published and unpublished information documented by individuals for different purposes. Personal documents are not written in a scientific style. They generally represent some ideas, values and feelings, etc. In spite of being subjective and unscientific, personal documents have been of value in social research. They provide information about contemporary social circumstances, systems, customs, ways of life, etc. You may come across the following types of personal documents.

Biographies: Some great political leaders, social reformers and eminent persons write their autobiographies. These provide useful information concerning social, political, religious and cultural conditions, and the incidents of their time. Whatever the type of information biographies provide a few valid and reliable pieces of information. However, the authors might have tried to exaggerate or underrate incidents and their feelings intentionally. They may have deliberately concealed facts, which may show their personality in a favourable or unfavourable perspectives.

Diaries: Diaries are written with different intentions. Some persons write diaries to remember important incidents of their life. Some others review their life. Others review their life from time to time and not in diaries.

The information contained in a diary could be very useful in social research. Diaries are used as a technique of sociological research mainly in literate societies where it is not always possible to closely observe interaction. You may urge your respondents to write their interactions in diaries. For example, Cubitt (1973) used this technique on a sample of couples

for a period of one week and found that diaries generated useful data but not many respondents were willing to write diaries for not more than a week.

Most diary writers have no intention to publish them. Generally it is expected that information recorded in a diary will be reliable. Certain limitations of diaries are

a) As diary writing is mainly personal, therefore it does not include detailed and complete description of incidents but information in a sketchy and rudimentary form. As a rule, a diary does not record the context in which an incident has taken place. This makes it difficult to interpret incidents and understand their real meaning.

b) Diaries are written irregularly and thus lack connection in information. It is very difficult to connect different incidents and feelings described in them.

Letters: Letters are the medium of expression of feelings, likes and dislikes, plans, attitudes, desires, emotions, ambitions, and also important incidents of life. They tell about interrelationships such as friendship, love and marital affairs, tensions, etc. Some notable limitations of letters are:

a) It is difficult to collect private letters.
b) Letters do not provide detailed and complete description of incidents.

Memoirs: Some persons are interested in writing memoirs of their travels, excavations, explorations etc. Such memoirs provide useful information in social research.

Public or Official Documents

You may collect public documents of the following types from some government or non-government institution.

Records - Most government and non-government departments preserve so many types of records consisting of important information and are important sources of information for social research.

Published data- You may find several sources of this kind of data, for instance periodical surveys concerning population, rate of mortality, birth rate, marriage and divorce. Such published documents are very useful.

Journals and Magazines - These are important public documents including information on various aspects, which can be utilized in social research. This source of information is quite reliable.

Newspapers - The published news, discussions on contemporary issues, report of meetings, and conferences, essays and articles, letters to editors are good sources of information and have a good deal of reliability.

The collection of primary data in empirical situation involves one of the

two kinds of methods depending on the nature of data required. These are Survey method and Fieldwork method. As noted earlier, we will discuss these methods in detail in other blocks of MSO 002.

13.7 Conclusion

Unit 13 has provided the prospective researcher an elementary introduction to methods commonly used in social research. Research is needed almost everywhere and therefore it is a good idea to learn research methods, which help us appreciate how we come to know what we take to be facts. Someone somewhere makes a study and offers the world his or her findings on the subject of research. For accuracy, reliability and better usability of your research you would employ scientific methods. We have discussed elements of methodology that provide us with an overall frame for conducting research and selecting appropriate tools for going through the research procedure. We discussed some of the commonly employed social research methods while for other methods we will go to units in Block 5 and Block 6 of Book 2 and in Block 7 of Book 3 of MSO 02.

Further Reading

Allen G and G. Skinner 1991. *Handbook for Research Students in Social Sciences.* Falmer Press: London

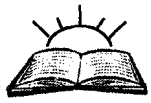
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Unit 14

Elements of Research Design

Contents

14.1 Introduction
14.2 Structuring the Research Process
14.3 Conclusion



Learning Objectives

It is expected that after reading Unit 14, you would be able to prepare a research design of your own mini research project, which would include the following details.

- The research problem that you have decided to work on
- The choice of the field site where you would carry out your research
- The estimated time and cost of the research
- Review of already published material relating to your research topic
- The hypothesis or hypotheses you have set out to test
- Theoretical orientation of your research
- The universe and unit of study of the research and methods of data collection
- Interpreting the data and writing the research findings.

14.1 Introduction

Research design is a kind of blueprint that you prepare before actually carrying out research. It is a systematically prepared outline stating the manner in which you plan to carry out your research. You may like to contemplate your research in terms of two facets, namely the empirical facet and the analytical facet. The two facets remain in your mind together while in practical terms you may plan your research in terms of a phase of data collection and another phase of analysing the data. Theoretical orientation and conceptual models in your mind help you decide the kind of data you would collect and to some extent also how you would collect them. Later, while analysing your data, again your theoretical and conceptual understanding of social reality in general will guide you to classify the data and to recognise the pattern in order to explain and present your findings.

Research is an ongoing process consisting of a series of steps, beginning with your identifying various concepts related to your research theme. Once begun, it continues through a set of regulated steps to its conclusion. Unit 14 is about the steps that you state in your research design. We are going to discuss each of the ten broad steps that generally constitute the basic elements of sociological researches. For your assignment of carrying out a mini research project, you may prepare a research design

14.2 Structuring the Research Process

The structuring of the research process is an essential part of science. However this does not mean that these steps are always in a sequence. In fact, the various phases of research overlap. At times the first step determines the nature of the last step . The steps involved are not mutually exclusive, nor they are separate and distinct. Figure 14.1depicts the broad steps researchers usually take in the process.

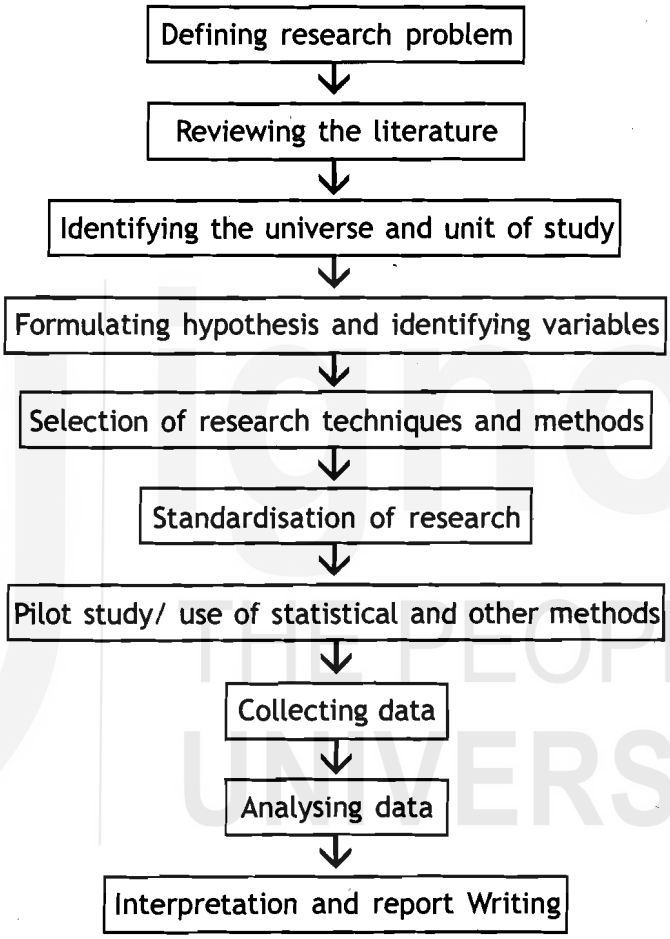


Figure 14.1 Ten Steps in Research Design

Research design is the strategic plan of the project that sets out the broad structure of the research. See Box 14.1 for a brief mention of functions and purposes of preparing a research design.

Box 14.1 Function and Purpose of Research Design

Black and Champion (1976: 76-77) have pointed out the following three functions of research design.

- A research design provides a blueprint for operationalising the research activity.
- It defines the limit and scope of the research.
- It provides an opportunity to the researcher to foresee possible areas of problems in the process carrying out the research.

Manheim (1977: 142) identified the following five purposes of preparing a research design.

- To gather sufficient evidence to support one's hypothesis and to disprove alternative hypotheses.
- To carry out a research that can be repeated in terms of its subject matter and research procedure. In other words, it does not pertain only to unique situation that has no relevance to society at large.
- To be able to work out correlations among variables in a manner that produces interrelated propositions.
- To make out the need for a pilot study in order to carry out the future plans of a full-fledged research project.
- To be able to economise on time and resources by selecting appropriate techniques of data collection.

A highly standardised quantitative research strictly follows the research design while qualitative research is flexible and amendments to the design are possible. Nevertheless, it is always a good idea to formulate a research design. A research design needs to take into account the following considerations, which entail all the steps mentioned in Figure 14.1.

Defining your research problem

In the research process, the first step is to select and clearly define the problem to be researched. You need to find the problem and formulate it so that it can be subjected to research. A research problem in general refers to some enquiry, which a researcher undertakes in the context of either a theoretical or practical situation and wants to obtain an explanation of the same.

The formulation of a general topic into specific research problems constitutes the first step in a scientific inquiry. Essentially two steps are involved in formulating the research problems, that is, understanding the problems thoroughly and rephrasing it into meaningful terms from the analytical point of view. You need to select the subject that is familiar and feasible so that research material or sources of research are within your reach. It is better to select the research problem before a preliminary study of the existing literature. Formulating or defining a research problem is an important step in the research process and a clearly stated problem is research half done.

You need to clearly state the research questions in the light of the topic of research and the theoretical foundations on which it rests. Next, you need to spell out the aims and objectives as per the requirements of your research questions. This gives the research process a well-defined focus and direction. Unless one has a clear idea of the objectives, the course of the research will not be smooth and the data will not have the desired consistency because it is possible for you to approach a topic from the viewpoint of different perspectives, each addressing a different set of issues. For instance, research on the sociology of development can have many research questions like women's role in development, the role of caste and kinship in development, or social consequences of

development on family and community life of people. While preparing a research design, demarcate the focus of research by jotting down the outline and features of the topic and the aims and objectives of research.

Choice of field site(s)

Embarking on a research, give as much emphasis to the area of research as the topic. To some extent, the choice of the area determines the success of your research. The relevance of a research topic depends on its usefulness to the problems of the area either in terms of a practical purpose or obtaining a theoretical understanding of the epistemological issues. For instance, a study on communal relations cannot be carried out in a tribal village. In such a study, you would need to observe the interaction between different religious groups and therefore you would choose an area inhabited by people of several religious communities. It is desirable to have two or three sub-areas in mind within the broad area. For instance, sometimes you may encounter some unforeseen and unmanageable problems at the district level or the village level and then you would need to find an alternative to fall back upon. You should first spell out your choice of field site(s) and then start gathering information on it. This would help you gain an understanding of the geographical and socio-political conditions of the area, which would have a bearing on the collection of data. This would help you frame your research strategies and questions in a manner suited to the area and its people.

Consideration of time and resources

You need to be fully aware of the limits of your resources and also clearly define the time frame while designing your research. Unless you draw up a schedule of the different steps of your research, it is likely to become a long drawn process, which is bad for both quality and relevance. Imagine researches on cholera epidemics taking years to complete. The delay would mean poor quality research and an unchecked death rate. We also know that unless you get liberal time your research would fail because you cannot subject social reality to overnight machine tests in the laboratory to obtain quick results. You need to evaluate the time requirement in a realistic manner and plan the strategy accordingly. Careful planning and sticking to a time schedule will help you use your resources effectively and complete the research in time. Besides, you should be aware of the limitations of your resources and plan the strategy in a realistic and cost effective manner. If the resources are exhausted midway, it will be a severe blow to research. If an agency is funding the research, your credibility is at stake. Hence, you need to clearly state in your research design the time and resources that you have for research.

You need also to foresee and note down the effects of your resource constraints on the research process. After identifying the effects you would develop strategies to counter those you can possibly do. The account of those, which cannot be managed, will help future researchers to be familiar with them and deal with them in their projects.

Reviewing secondary material

The purpose of reviewing the existing literature on your research theme is to help you assess the feasibility of the project but also to formulate an effective methodology. You would need to consult academic journals, conference proceedings, government reports, books, etc (see Box 14.2).

> **Box 14.2 The Use of Computer in Literature Searching**
>
> For the purpsoe of making use of the Internet facilities to search related literature, you need to read Unit 32 in Block 8 of Book 3. If your research topic is precisely defined, the search can be a very fast and efficient way of obtaining relevant references in a number of bibliographic tools.

You may review two types of literature, literature concerning the concepts and theories, and the empirical literature consisting of studies made earlier. You may come across even such studies that contain both theoretical as well as substantive aspects of your research. The outcome of the review will be that you will know about available data and other materials on the theme of your research. A more sophisticated and clearer statement of specific research questions is likely to emerge after the literature review.

When researchers prepare a research design they draw an outline of the entire research process. They need to have a clear picture of the nature of data that would help tackle the research questions. For instance, researchers decide in advance how many case studies would help them draw meaningful conclusions or the number of life histories that they need to collect and of which categories of persons. A lot of hard work and insightful thinking goes into the process. Researchers review the past studies on their topics and work upon their research questions to arrive at a realistic research design.

Scheduling the time and events to observe in the field forms an important component of your research design. This provides you a sense of direction while collecting data. This does not imply that you have to strictly follow your schedule regardless of the situation in the field. The actual field conditions do guide you and correspondingly your research design may face unanticipated changes. Yet, you cannot just land up in the field unprepared and bewildered and hence you need to plan out the various stages and strategies of research. At the same time you have to be ready to make adjustments according to the field exigencies.

Hypothesis

After extensive literature survey, you need to state in clear terms the working hypothesis or hypotheses. The hypothesis is a tentative assumption made in order to test its logical or empirical consequences. You may define a hypothesis as a proposition or a set of propositions set forth as an explanation for the occurrence of some specified phenomena either asserted merely as a provisional conjecture to guide some

investigation or accepted as highly probable in the light of established facts. A hypothesis may seem contrary to the real situation. It may prove to be correct or incorrect. In any event, it leads to an empirical test. Your hypothesis needs to be clear and precise and capable of being tested. It is to be limited in scope and consistent with known or established facts and should be amenable to testing within the stipulated time. It needs to explain what it claims to explain and should have empirical reference.

A hypothesis may have variables and it may be looking for the nature of the relationship between the variables. The variables are empirical properties that take two or more values. For the purpose of research, you need to make a distinction between dependent and independent variables. The variables that you wish to explain are regarded as dependent variables (or criterion variables). The other variable expected to explain the change in the dependent variable is referred to as an independent variable (or predictor variable). The dependent variable is the expected outcome of the independent variable and independent variables produce dependent variables.

Variables can have three types of relationships among them. A positive relationship is one where an increase in one variable leads to an increase in the other. A negative relationship is one where an increase in one variable leads to a decrease in the other. Finally, a zero relationship is one which shows no significant relationship between two variables. Such a distinction between dependent and independent variables is analytical and relates only to the research purpose.

It needs to be mentioned that the formulation of hypothesis is not always a part of the research process. You may carry out exploratory research when you do not have sufficient knowledge of the situation to prepare a hypothesis.

Theoretical orientation

Your research design needs to clearly spell out the data collection methods to be employed. Your methodological and philosophical orientations govern your choice of methods. Your research design would elucidate the methodological and theoretical basis of research and help you identify appropriate methods and techniques of data collection. For instance, if you have positivistic orientation, you would rely on observational method because for you social reality would be an observable entity. On the other hand if you adopt a phenomenological model, you would employ various kinds of interviews to unravel the logico-mathematical model of culture. A researcher conforming to the post-modernist approach would view social reality as multidimensional and record multiple voices and interpretations. An action research with limited time resources would employ triangulation© (comprising multiple methods and multiple investigators), and focus group discussions. You have to carefully choose from the vast repertoire of sociological/ anthropological methods, the

ones that suit your research purpose most.

Universe and unit of study

Before starting with data collection you have to identify the universe and the unit of study. The identification of universe implies demarcation of the physical area and social unit of study. The universe consists of the population within a well-defined area where the study is to be conducted. However, such a group is usually too large and not possible to be covered by a single investigator. Therefore, a smaller and more manageable group may be selected by sampling. The outlines of the universe and its attributes may be delineated more clearly by a taking a census and then making the choice of the group(s) to work on. Within the broad universe further specification of the possible units that could be studied makes up the actual or effective universe. The group(s) selected as focus of study is called the unit of study.

Pilot study

The pilot study is the leading study in your research area. The pilot study leads the researcher to the full-length investigation depending on the size of the population and the amount of time. In other words, a pilot study is an exploratory study done before the actual work starts in the field. It is a pre-testing of your research methods and techniques in order to perfect them. Pilot study will ensure that right questions have been put in the questionnaires for making the fieldwork fruitful. It makes you aware of the difficulties beforehand and provides you an opportunity of modifying your techniques to suit field conditions. Pilot study depends upon the size of the population, the time available and the availability of funds.

Sampling

A universe is often too large for an individual to work upon. A sample is the smaller representation of a larger whole. Sampling allows the researcher to work scientifically and saves time. Analysing large quantities of material is wasteful and an intensive analysis of fewer cases is economical. You need to be cautious and careful while sampling. As explained earlier, the universe refers to a defined population size. Such a universe may be further divided depending on the specifications required. This is known as stature or subpopulation. A stature is a divisible category which depends upon the kind of problem in which one is interested. A sampling frame includes all the elements of a population from which the sample is drawn. The determination of an error while sampling, statistically or qualitatively is known as sampling error. The sample must be a true representative of the universe, as well as being adequate in size (for different kinds of sampling see Units in Blocks 5 and 6 of Book 2).

Data collection

After obtaining some idea and understanding your field and working out your methods and techniques of data collection, you may plan how to

access the field. Quite often social research requires the study of the 'other' community and researchers need to make extensive preparations to gain entry into the society under study. One needs to plan who would facilitate access and how one would contact such persons.

It is also possible to study one's own society. Some scholars (for example see Madan 1975) may not adhere to the idea of studying the 'other' community only. In Box 14.3 we bring you an excerpt from Madan (2004: 203), who 'questioned the requirement of the personal study of an alien culture on the part of every anthropologist'.

Box 14.3 On Studying One's Own Community

Instead, I emphasised the importance of bridging the gap, or conversely, creating it, between the observer and the observed. I described fieldwork as the feat of 'living intimately with strangers' (Madan 1975). I might have added: 'or strangely with intimates', which was what I had done during my fieldwork among the Pandits of rural Kashmir. The anthropologist studying his own culture I wrote, 'is an insider who takes up the posture of an outsider, by virtue of his training as an anthropologist or a sociologist, and looks at his own culture, hoping to be surprised. If he is, only then may he achieve new understandings' (Madan 1975: 149)

In addition to the question of studying the 'other' or your own community, you need to be clear in mind whether you wish to keep the purpose of research overt or covert. While in covert research, the research remains disguised and the researcher does not bother about convincing the informants, the overt research implies the challenge of convincing the respondents and winning over their trust. You have to adopt a meaningful role in the society under study and be careful about the sensitivities of your informants. Although the access and role of the researcher are negotiated and renegotiated in the field according to the circumstances, thoughtful planning gives you an edge to start the research process with adequate preparation. This is important because firstly, if you identify the right contact persons or the 'gatekeepers' (the prominent persons of the community who have power to grant or deny access to the field) beforehand your entry to the field would not be time consuming and cumbersome. Prior interaction with the 'gatekeepers' would also help you adopt a suitable role in the field. Secondly, if you are already convinced whether to keep your research purpose overt or covert, you can effectively negotiate your access to the field.

There are several ways of collecting your data. Primary data are those, which you as the researcher collect yourself. You consult secondary data from reference sources like the library etc.

Primary data can be collected either through experiment or through survey. There are two main techniques of data collection, namely, intensive fieldwork methods and survey methods. Intensive fieldwork methods include observation, interview, case study, genealogy etc. You

can use one or more methods to collect the data, taking into consideration the nature of investigation, objectives and scope of inquiry, financial resources and time available and degree of accuracy. The data to be collected would need to be adequate and dependable.

Analysis and report writing

After data collection, you would turn to their analysis. Analysis requires a number of closely related operations such as establishing categories and their application to raw data through coding, tabulation so that you can draw statistical inferences. For coding and tabulation of coded symbols, you need to carefully read the units in Blocks 5 and 6 of Book 2 and Blocks 7 and 8 of Book 3. Tabulation is a part of the technical procedure wherein you are able to put your classified data in the form of tables (see Box 14.4).

Box 14.4 Classifying and Coding the Data

Classifications facilitate rapid, accurate and comprehensive searches of stored field material, but a poor classification or careless retrieval may be wrose than having none at all. In connection with this, particular attention should be paid to classifications which separate data which are otherwise related. For example, if "name-giving ceremonies" are indexed only under RITUAL, a search intended to assemble all data on KINSHIP may fall short of the mark.

Notes must, in the first instance, be coded so that they can be subsequently located in a mass of material. You will probably wish to refer back to earlier notes quite frequently in the field, to check up on certain matters and test informal hypotheses. At the very least, all sheets should be numbered sequentially.

You need to clearly delineate the form of analysis you wish to eventually adopt. Although often the nature of data collected by you determines the nature of analysis, yet at the stage of opting for certain methods of data collection you would have some idea of the analytical tools you are likely to employ. If you plan to adopt certain computer packages you would need to collect data keeping that in mind. While analysis may depend on the nature of data, you need to be careful to avoid the reverse situation, that is, the pre-determined mode of analysis solely determines the methods of data collection. You may face getting a one-sided picture of the social reality if you were to adopt computer-based methods only, because computer packages offer analysis of a particular dimensions of reality while social research requires as broad a picture of reality as possible. You would be better off collecting data covering as many dimensions of reality as possible. In any case, you need to be quite clear about the mode of analysis to employ to interpret the data collected. Your research design is meant to reflect your theoretical orientation. In this way, you are actually planning every stage of research, from identifying the topic of research and method of data collection to report writing.

Your research design would be complete if you spell out the manner in

which you would present the results of the research. It is an equally important step because you would need to keep in mind the ethics of representation, especially if the research deals with sensitive issues. While you seek to unravel social reality, you cannot play with the privacy of the people who are more than just the subjects of research. It is your responsibility to do justice both to the research and to the people. There is a practice of presenting data with pseudonyms and modification of identities, events and location. You need to always elucidate in your research design the manner in which you would report the results. Presentation of research findings for publication implies their distribution among the public, including those you studied. This is the point when you achieve the aim of making a contribution to the general body of literature related to the subject of your research.

14.3 Conclusion

Unit 14 has enumerated the various steps for undertaking a sociological research with the aim of preparing you to carry out one such research. This will be a practical exercise for you to complete as a compulsory requirement of completing MSO 002. You will need to prepare a research design before actually carrying out your mini research project. The Reflection and Action exercise for Unit 14 is that you prepare a research design for your proposed research. You may of course modify it as you come to learn in more detail about the various steps needed in the research process.

Reflection and Action 14.1

Prepare a research design of your proposed research after selecting (tentatively) a topic of your interest. The research design needs to incorporate all the steps shown in Figure 14 1.

Further Reading

Singleton, Jr Royce A. and Bruce C. Straits 1999. *Approaches to Social Research*. Oxford University Press: New York

Sarantakos, S.1998 (first published in 1993). *Social Research*. Macmillan: London

Unit 15

Sampling Methods and Estimation of Sample Size

Contents

15.1 Introduction
15.2 Sampling
15.3 Classification of Sampling Methods
15.4 Sample Size
15.5 Conclusion

Learning Objectives

It is expected that after reading Unit 12 you would be able to

- ❖ Define what is sampling
- ❖ Classify sampling methods
- ❖ Calculate sample size.

15.1 Introduction

Unit 15 deals with the procedure of sampling© that helps you arrive at a subset of the universe of your research. It discusses the various methods of sampling and tells you how to work out a sample size. You will again read about sampling in Block 6. This is a subject you will need to master carefully as no matter what type of research you wish to carry out, you will need to apply your skill of the craft of sampling.

15.2 Sampling

A sample is a subset of the population that represents the entire group. When the population (or universe) is too large for the researcher to survey all its members because of its cost, the number of personnel to be employed, or the time constraint, a small carefully chosen sample is extracted to represent the whole (see Figure 15.1). The sample, as drawn in Figure 15.1, is expected to reflect the characteristics of the population.

A well selected sample may provide superior results. For example, in a research where well-trained interviewers are required, it may be possible to get a few trained interviewers to collect a sample rather than to get many trained interviewers to investigate the entire population. The trained interviewers may gather better quality information than non-trained or less trained interviewers. By contrast, if the population is sufficiently small, the entire population should be studied. When data are gathered on each and every member of the population, the study is known as a census study. The researcher is expected to clearly define the target population.

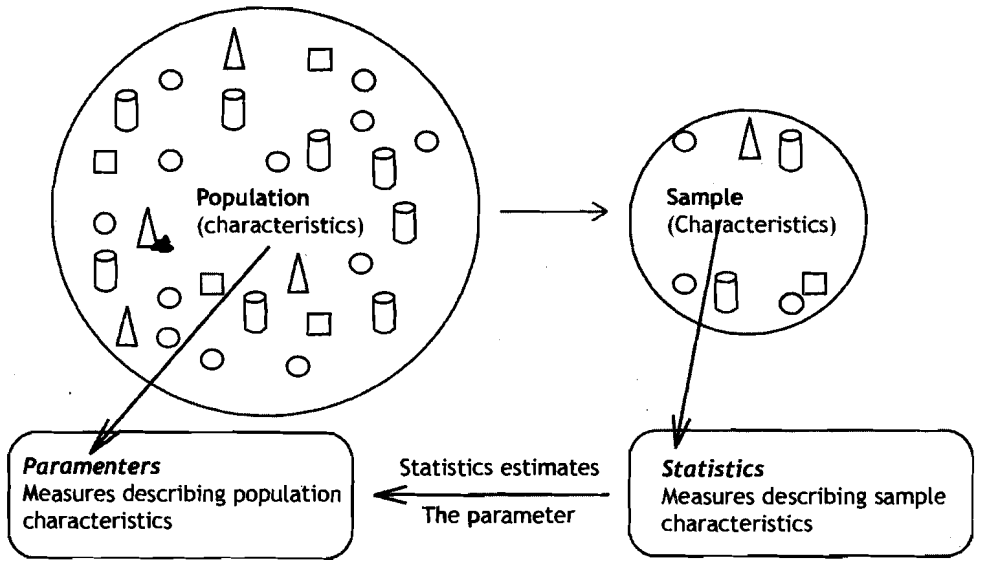


Figure 15.1

Relationship between Population, Parameter, Sample and Statistics

A population may be defined as an aggregate of individuals possessing a common trait or traits. There are two important factors: first that a population is the complete group about which knowledge is sought, and second each and every individual has some certain specified attribute or attributes.

Let us now complete Reflection and Action 15.1.

Reflection and Action 15.1

Work out the relationship between population, parameter, sample and statistics to reflect the characteristics of the population of the unit of your research project.

15.3 Classification of Sampling Methods

Sampling methods are classified into Probability or Non-probability. If the purpose of research is to draw conclusions or make predictions affecting the population as a whole (as most research usually is), then one must use probability sampling. But, if one is only interested in exploring how a small group, perhaps even a representative group, is doing for purposes of illustration or explanation, then one may use non-probability sampling.

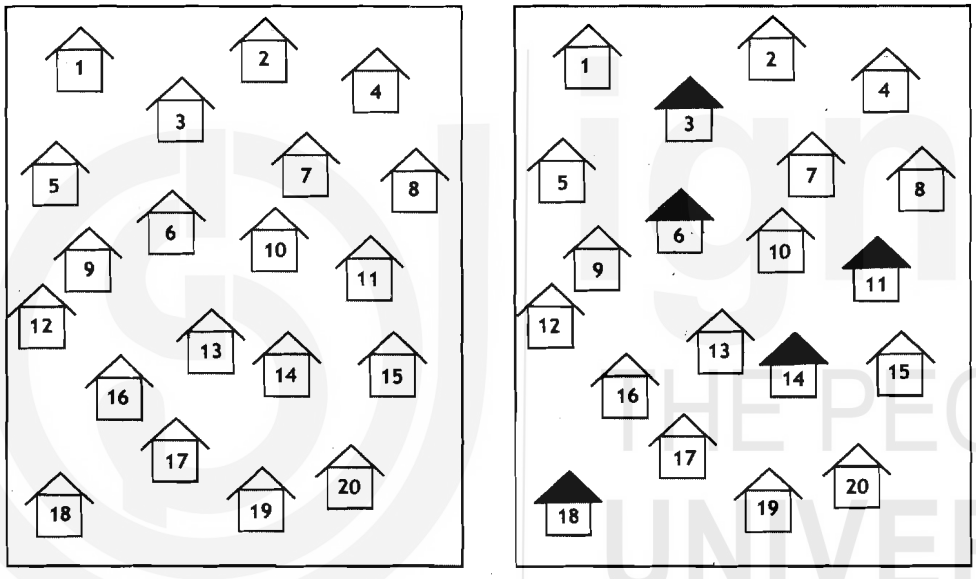
Let us first discuss probability sampling.

(A) Probability Sampling

In probability samples, each member of the population has a known non-zero probability of being selected. The key point behind all probabilistic sampling approaches is random selection. The advantage of probability sampling is that sampling error can be calculated, which is the degree to which a sample might differ from the population. Probability methods include random sampling, systematic sampling, and stratified sampling.

We shall discuss each of them.

a) **Random sampling** is the purest form of probability sampling. Each member of the population has an equal and known chance of being selected. The prerequisite for a random sample is that each and every item of the universe has to be identified. Random selection is effective in a clearly defined population that is relatively small and self-contained. When the population is large, it is often difficult or impossible to identify its each and every member, so the assemblage of available subjects becomes biased. One obtains a list of all residents or the voters list or telephone directory, and then selects a sample using a sequence of numbers from a random numbers table. Random numbers can also be created in numerous computer softwares. See Figure 15.2 that illustrates the selection of sample using random number table.



Population

Simple Random Sample drawn
(dark colour)
using Random number table

Figure 15.2 Population Simple Random Sample drawn (dark colour) using Random Number Table

Source: Fisher, R. A. and F. Yates 1982. Statistical Tables. Longman: New York

b) **Systematic sampling** is also called an "N^{th}-name selection" technique. After the required sample size has been calculated, every N^{th} record is selected from a list of population members. As long as the list does not contain any hidden order, this sampling method is as good as the random sampling method. Its only advantage over the random sampling technique is simplicity. Systematic sampling is frequently used to select a specified number of records from a computer file. In Figure 15.3 you can find elucidation of the systematic random sampling method. The first number (2) has been selected by random number, followed by the selection of every 5^{th} item in the series.

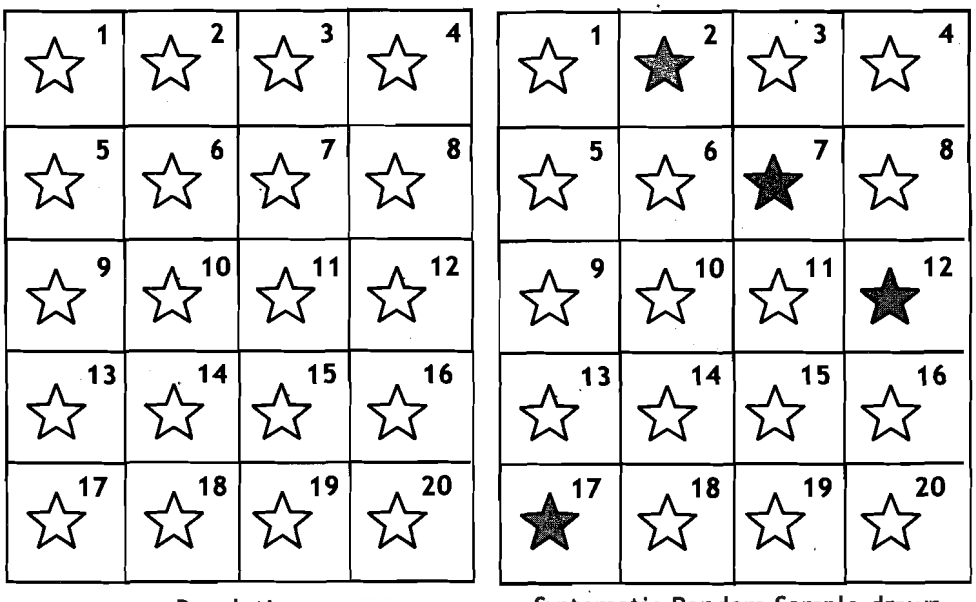


Figure 15.3 Systematic Random Sampling Method

c) **Stratified sampling** is a commonly used probability method that is superior to random sampling because it reduces the sampling error. A stratum is a subset of the population that shares at least one common characteristic. Examples of strata might be males and females, or managers and non-managers. The researcher first identifies the relevant strata and their actual representation in the population. Random sampling is then used to select a 'sufficient' number of subjects from each stratum. 'Sufficient' refers to a sample size large enough for the researcher to be reasonably confident that the stratum represents the population. Stratified sampling is most successful when (i) the within variance of each stratum is less than the overall variance of the population; (ii) when the strata in the population are of unequal size or have unequal incidence; and (iii) when sampling is cheaper in the strata. Figure 15.4 shows stratified random sampling method. Samples from the three strata have been extracted in proportion to their numbers.

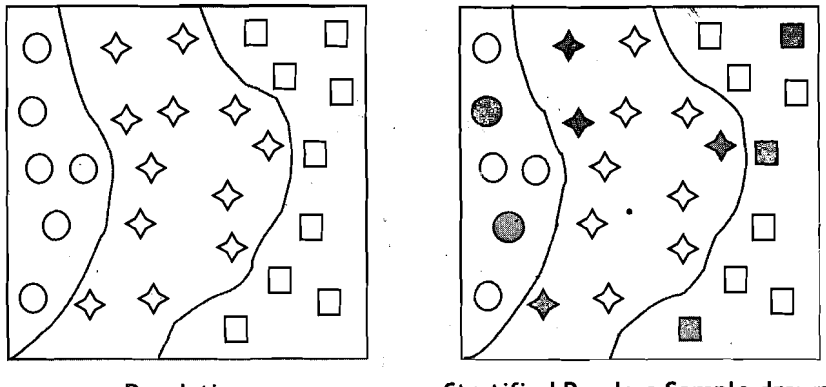


Figure 15.4 Stratified Random Sampling Method

d) **Cluster random sampling** is useful when the population is dispersed across a wide geographic region. This method allows one to divide the population into clusters and then select the clusters at random. Thereafter one can either study all the members of the selected clusters or again take random (simple or systematic) samples of these sampled clusters. If the latter system is followed, it is called multi-stage sampling. This method, for example, could be effective to study a tribal group or a community that is dispersed. The villages could be used as clusters and can be randomly selected. Figure 15.5 shows that five blocks (2, 7, 10 and 14) out of sixteen have been selected by random number. Each block contains a series of samples, as illustrated.

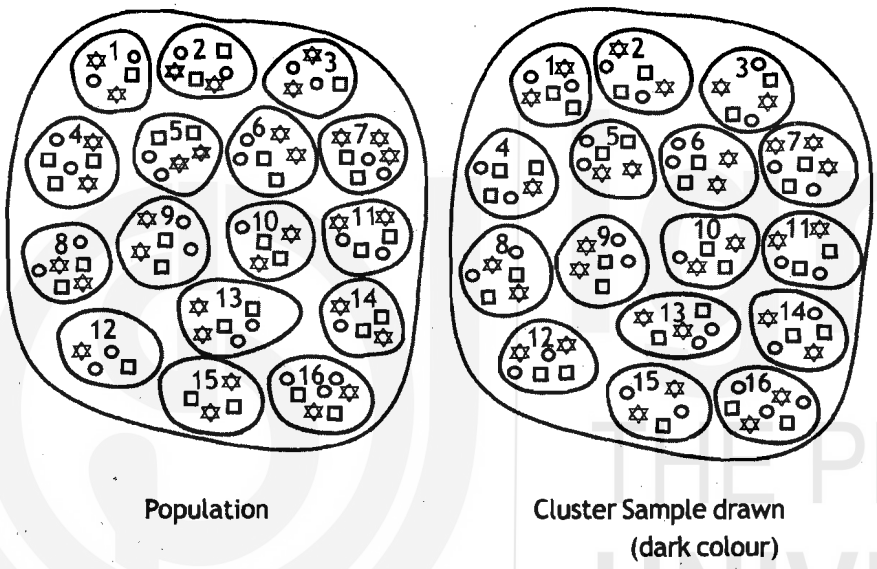


Figure 15.5 Cluster Random Sampling Method

Reflection and Action 15.2

Following the figures in the text, make figures based on the population pertaining to your research project that you selected while computing R & A 13.1 & 13.2 to show

i) population simple random sample drawn in dark colour, using random number table

ii) systematic random sampling method

iii) stratified random sampling method

iv) cluster random sampling method

(B) Non-probability Sampling

In non-probability sampling, members are selected from the population in some non-random manner. In this method, the degree to which the sample differs from the population remains unknown. Non-probability methods include Convenience sampling, Judgment sampling, Quota sampling and Snowball sampling. Let us now discuss each of the non-probability sampling methods.

a) **Convenience sampling** is used in exploratory research where the investigator is interested in getting an inexpensive approximation of the fact. As the name implies, the sample is selected because it is convenient. Also called haphazard or accidental, this method is based on using people who are a captive audience, just happen to be walking by, or show a special interest in research. The use of volunteers is an example of convenience sampling. This method is often used during preliminary research efforts to get a gross estimate of the results, without incurring the cost or time required to select a random sample.

b) **Judgment sampling** is a common non-probability method. The researcher selects the sample based on judgment. This is usually an extension of convenience sampling. For example, a researcher may decide to draw the entire sample from one 'representative' village, even though the population may be distributed over a number of villages. When using this method, the researcher 'feels' that the chosen sample is representative of the entire population.

c) **Purposive sampling**, much similar to judgment sampling, is where the researcher targets a group of people believed to be typical or average, or a group specially picked for some unique purpose. The researcher never knows if the sample is representative of the population, and this method is largely limited to exploratory research.

d) **Quota sampling** is the non-probability equivalent of stratified sampling. Like stratified sampling, the researcher first identifies the strata and their proportions in the population. Then convenience or judgment sampling is used to select the required number of subjects from each stratum. The researcher resorts to haphazard or accidental sampling, and makes no effort to contact people who are difficult to reach. This differs from stratified sampling, where the strata are filled by random sampling.

e) **Snowball sampling** is a special non-probability method used when the desired sample characteristic is rare. It may be extremely difficult or cost prohibitive to locate respondents in these situations. Snowball sampling relies on referrals from initial subjects to generate additional subjects. In other words, snowball sampling comprises identification of respondents who in turn refer researches to other respondents. This technique provides a means to access relatively invisible and vulnerable social groups. While this technique can dramatically lower the search costs, it comes at the expense of introducing bias because the technique itself reduces the likelihood that the sample will represent a good cross-section of the population. For example, an investigator finds a rare genetic trait in a person, and starts tracing his pedigree to understand the origin, inheritance and etiology of the disease.

You may have heard that only quantitative researches require sampling. The fact is that qualitative researches use sampling procedures (see Box 15.1).

Box 15.1 Use of Sampling in Qualitative Research

As Berger (1989) and Sarantkos have pointed out , it is fairly common for qualitative researches to use sampling procedures in the following manner.

i) Sampling is relatively small, dealing with typical cases.
ii) Use of flexible samples in size not requiring statistical calculations
iii) Use of purposive sampling dealing with non-probability
iv) Use of sampling to achieve suitability rather than representativeness
v) Sampling occurs while the research is in progress, rather than selecting a sample before starting it.

We would now focus on the procedure of calculating the sample size.

15.4 Sample Size

A prudent choice of the sample size for a particular survey involves many considerations, among which are the resources in manpower, cost per sample units and funds available, the number and type of parameters to be estimated. Obviously, these specifics will vary from one survey to another. All the same, a framework can be constructed within which general and viable decisions with respect to sample size can be taken. Sampling theory aids in arriving at good estimates of the sample size. The standard error here too provides the key.

Apart from the size of the universe the sample size may depend on the following conditions.

i) The confidence limit set up for estimation;
ii) The heterogeneity of the population; and
iii) Frequency/ proportion of the trait/ attribute to be examined.

The estimation of sample size also differs according to the purpose or the parameter under investigation. For example, whether sample size is being estimated for calculating mean, or proportion, or for comparing means. For illustration, let us consider, in Box 15.2 and Box 15.3 , two cases, namely, the estimation of the mean of a normally distributed variable and the estimation of a proportion. In these cases there are two assumptions, first that sampling is simple, random and without replacement, and second, the population sampled is infinitely large.

Box 15.2 Case One

The sample size when estimating mean

It is known that the standard error of mean can be calculated from the following formula.

$SE_x = ó / vn$ 1

Where SE_x is the standard error of mean, ó is the standard deviation, and n is the sample size. Thus one can calculate sample size (n) using the following equation derived from equation 1.

$n = (ó / SE_x)^2$ 2

Sample size can be calculated using the following steps.

Step 1: One requires the standard deviation of the universe, which is unknown. A rough estimate of this measure, however, is sufficient for suggesting sample size.

a) In many instances, the experience with similar problems will be a good guide for making this estimate of the standard deviation.

b) In other instances, an exploratory sample study on a small scale may be conducted in order to arrive at an estimate of ó.

c) To estimate the standard deviation of the universe, the range of the values in the universe may be estimated and used as a guide. It is known that in normal distribution the range is about six times the standard deviation. For practical purposes, an estimate of somewhere around one-fifth of the estimated range is often used.

Suppose the range is roughly 300; that is, the difference between the lowest value in the universe and its highest value is 300. One-fifth of this rough estimate is 60. Therefore, one may take 60 as a rough approximation of ó.

Step 2: It must be decided how precise one wants the future sampling estimate to be. Thus, one may state that the estimate of the true mean is sufficiently precise if confidence limits of 12 are attached to it. Such an answer might be practicable for this particular problem.

Step 3: In this step the researcher has to decide the confidence limit. He may wish to be almost certain or be satisfied with, say, a 95% degree of confidence, that the specified limits will contain the true mean. The degree of confidence decided upon makes it possible to translate the interval decided upon in step 2 into standard error. If one is to be practically certain that true mean will lie within the interval of ±12 around the sample mean then the interval of ±12 becomes ± 3 SE_x. Therefore, $SE_x = 4$. If, on the other hand, one is willing to settle for a 95% degree of confidence, then ±12 becomes ± 2 SE_x and $SE_x = 6$.

Using equation 2, the sample size for the above example will be

1) **Case 1-**
At the level of practical certainty:
Sample size (n) = $(60 / 4)^2 = 15^2 = 225$

2) **Case 2-**
At the level of 95% confidence limit:
Sample size (n) = $(60 / 6)^2 = 10^2 = 100$
(In case 1 $SE_x = 4$, whereas in case 2 $SE_x = 6$)

Thus, in the above example, the sample size should be somewhere around 225 if one wishes to be practically certain that true mean will lie within an interval of ±12; but the sample need contain only 100

items if one settles for a 95% degree of confidence that true mean will lie within an interval of ±12.

Sometimes the acceptable difference between the sample and its true mean is expressed in percentage (say 3%) rather than absolute (as for example, ±12 in step 2 of the above example). Suppose the expected mean is around 500 then the acceptable interval would be ±15. But this necessitates an approximate knowledge of the expected mean.

Box 15.3 Case Two

Sample size when sampling for proportion

Consider the estimation of the proportion of individuals in a population with some particular attribute, for example those who own tractors for agriculture. This proportion, though not precisely known to the investigator, is generally known to him to an order of magnitude at least; that is to say, he will often know that owning tractors is quite rare (say, less than 3 in 1,000 persons), somewhat infrequent (3 in 100 to 3 in 1,000 persons), fairly common (3 in 10 to 3 in 100), or very common (more than 3 in 10). If owning tractors is known to be more infrequent than 3 in 100, a simple random sampling would invariably be much too inefficient and the other sampling methods appropriate to the estimation of rare events should be used. To assume random sampling amounts to assuming that the investigator's interest centers on only those attributes whose frequencies are at least 3 in 100. Even within these limits it is clear that if the population proportion is to be known exactly, the entire population must be examined. This is impracticable and generally unnecessary, for the investigator usually does not require this degree of exactness. His requirements are related, of course, to the use to which the estimate (or estimates) is to be put, and thus may vary from one investigator to another and with the proportion itself.

It is known that the standard error of a proportion can be calculated from the following formula.

$SE_p = v\ (PQ / n)$ 3

$SE_p^2 = PQ / n$ 4

Where, SE_p is the standard error of proportion, P is the proportion of an attribute in a population and Q is = 1 - P, and n is the sample size. Thus one can calculate sample size (n) using the following equation derived from equation 4.

$n = PQ / SE_p^2$ 5

Sample size can be calculated using the following steps:

Step 1: One requires an estimate of P, from which Q follows (Q = 1 - P), which is, of course, unknown. A rough estimate of this measure, however, is sufficient for suggesting sample size.

1) In many instances, experience with similar problems will be a good guide for making this estimate of the proportion.

2) In other instances, an exploratory sample study on a small scale may be conducted in order to arrive at an estimate of proportion.

If, however, neither of these two approaches is possible, then one can conservatively assume that P = 50% which leads to a larger sample size than any other value of P. This is because in a 50% - 50% break-up, the numerator (PQ) in the formula in equation 5 ($n = PQ / SE_p^2$), is the largest. However, for the following example, let us consider that P = 30% or 0.3.

Step 2: It must be decided upon how precise one wants the sampling estimate to be. The researcher may consider an interval of, say, ± 6% around a sample proportion as satisfactory in this situation.

Step 3: In this step the researcher has to decide the confidence limit. He may wish to be almost certain or be satisfied with, say, a 95% degree of confidence, that the specified limits will contain the true mean. In the former case, ± 6% will be equal to ± 3 SE_p and consequently SE_p =± 2%, whereas in the latter case, ± 6% will be equal to ± 2 SE_p and SE_p =± 3%.

Using equation 4, the sample size for the above example will be

1) Case 1 -
At the level of practical certainty:
Sample size (n) = $(0.3*0.7) / (0.02)^2 = 0.21 / 0.0004 = 525$

2) Case 2 -
At the level of 95% confidence limit:
Sample size (n) = $(0.3*0.7) / (0.03)^2 = 0.21 / 0.0009 = 233$
(P = 30% or 0.3; in case 1 SE_p = .02, whereas in case 2 SE_p = .03)

The use of a formula to obtain an estimate of sample size does not give us more than a rough approximation. In practice it is advisable to take the sample-size estimate as a bare minimum, to be increased for safety.

Let us now complete the Reflection and Action 15.3.

Reflection and Action 15.3

Suppose in your research project you wish to estimate sample size for calculating mean and the assumption is that sampling is simple and the population sampled is infinitely large. Further, you are in the stage of taking the three steps as elaborated in Case One given in the text, the exercise for you is to work out in detail each step and write it down in the fashion given just after Box 15.2.

15.5 Conclusion

Unit 15 discussed the important subject of sampling and provided you with relevant information on different methods of sampling. Further, it brought to you the skills of calculating the sample size.

You may like to keep in mind what Mitchell (1984: 239) said about sampling theory in statistics that it "devotes itself to providing numerical

estimates of the likelihood that the population values be within some defined range of that established from the sample - provided that the sample has been chosen in such a way as to meet the mathematical conditions to justify the computation of the probabilities concerned." Further he clarified about another type of inference that is derived while using quantitative data to support theoretical interpretation and said, "The sophistication and elaboration for choosing a 'representative' sample in this restricted sense has overshadowed the other kind of inference involved when analytical statements are made from associations uncovered in a statistical sample. This is the inference that the theoretical relationship among conceptually defined elements in the sample will also apply in the parent population. The basis of an inference of this sort is the cogency of the theoretical argument linking the elements in an intelligible way rather than the statistical representativeness of the sample."

Further Reading

Burgess, R.G. (ed) 1982. *Field Research: A Sourcebook and Field Manual.* (Contemporary Social Research 4). George Allen and Unwin: London (Read page 76 onward fro discussions of random and non-random sampling)

Denizen, N.K. (ed.) 1970. *Sociological Methods: A Sourcebook.* Butterworths: London (Read page 81 onward for useful information on sampling techniques).

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Unit 16

Measures of Central Tendency

Contents

16.1 Introduction
16.2 Mean
16.3 Median
16.4 Mode
16.5 Relationship between Mean, Mode and Median
16.6 Choosing a Measure of Central Tendency
16.7 Conclusion



Learning Objectives

It is expected that after reading Unit 16 you would be able to

- Understand the procedure of arriving at measures of central tendency of the data collected
- Work out the ways of finding out mean, mode and median measures of central tendency
- Decide which of the three measures is more appropriate in the case of your data.

16.1 Introduction

After dealing with the skills of sampling techniques for studying large complex social groups, we would now discuss the matter of measuring central tendenc and its application.

Unit 16 deals with the basic measures of central tendency and their application for those of you who may lack a strong background in mathematics. In doing so, complex mathematical derivations of formulae have been omitted. Besides a minimal number of essential 'shorthand' mathematical symbols, and familiar examples drawn from social science data are presented in a non-mathematical form.

16.2 Mean

Mean[@] is the most common and widely used measure of central tendency. Each observation in a population may be referred to as X_i (read "X sub i") value. Thus, one observation might be denoted as X_1, another as X_2, a third as X_3, and so on. The subscript i might be any integer value up through *N*, the total number of X_i values in the population. The mean of the population is denoted by the Greek letter μ (lower case mu).

Calculating the mean from ungrouped data

Mean *(M)* is the most familiar and useful measure used to describe the central tendency average of a distribution of scores for any group of individuals, objects or events. It is computed by dividing the sum of the

scores by the total number of scores.

$M = \Sigma X_i / N$ 1

Where, M is the mean (sample), X_i are the scores, *N* is the total number of scores and Σ is 'the sum of'. See Box 16.1 and Box 16.2 for examples 1 and 2.

Box 16.1

Example 1: The Number of Cattle Owned by Members of a Community is Recorded Below.

12, 11, 13, 20, 16, 18, 19, 17, 22 and 23

$\Sigma X_i = 12 + 11 + 13 + 20 + 16 + 18 + 19 + 17 + 22 + 23 = 170$

$N = 10$

$M = \Sigma X_i / N$; $M = 170 / 10 = 17$

The mean is the balance point in a distribution such that if you subtract each value in the distribution from the mean and add all these deviation scores, the result will be zero.

Calculating mean from grouped data

Calculation of mean from grouped data is slightly different from calculation from ungrouped data.

$M = \Sigma F_i * X_i / \Sigma F_i$ 2

where, M is the mean, X_i are the midpoint of class intervals, F_i are the number of cases in various intervals, ΣF_i is the total number of scores or sum of frequencies of various intervals.

Box 16.2

Example 2: Following is the frequency (8, 9, 12, 9, 7, and 5) of households in a community owning numbers of chickens, arranged in six groups (1-3, 4-6, 7-9, 10-12, 13-16 and 16-18).

Number of Chickens	Mid-Point of the Interval (X_i)	Frequency: Number of Households (F_i)	$F_i * X_i$
1 -3	2	8	16
4 - 6	5	9	45
7 - 9	8	12	96
10 - 12	11	9	99
13 - 16	14	7	98
16 - 18	17	5	22
		50	376

$\Sigma F_i * X_i = 376$ $\Sigma F_i = 50$

$M = \Sigma F_i * X_i / \Sigma F_i = 376 / 50 = 7.52$

A short method of calculating mean from grouped data

There is a shorter way of calculating mean from grouped data, which saves time and labour in computation, particularly when one has to deal with a large number of cases. It involves the assumption of mean and making a guess at identifying the interval in which the mean probably falls (generally among the central groups of intervals). A different guess of the interval alters calculations, but not the mean.

$$\text{Mean } (M) = AM + ((\Sigma F_i * D_i \,/\, \Sigma F_i)) * i \qquad \ldots\ldots\ldots 3$$

Also,

$$D_i = (AM - X_i) \,/\, i \qquad \ldots\ldots\ldots 4$$

Where, M is the mean, AM = Assumed mean, X_i are the midpoint of class intervals, F_i are the number of cases in various intervals, Σ is the symbol of sum total, D_i are the deviations of the midpoints of the various classes from the midpoints of the class having the assumed mean divided by the size of the class interval (equation 4) and i is the size of the class intervals. See Box 16.3 for example 3.

Box 16.3 Example 3: Marital Distance (the distance between the villages of the spouse)

The marital distance was investigated in a community. Following was the frequency (88, 93, 72, 97, 79, and 54) when the data were arranged in six groups according to marital distance (25 - 30, 30 - 35, 35 - 40, 40 - 45, 45 - 50, 50 -55). Let us find the mean marital distance.

Marital Distance (km)	Frequency (F_i):	Mid-Point of the Interval (X_i)	$D_i = (AM - X_i)/ i$	$F_i * D_i$
25 -30	88	27.5	+3	264
30 -35	93	32.5	+2	186
35 -40	72	37.5	+1	72
40 -45	97	AM=42.5	0	0
45 -50	79	47.5	-1	-79
50 -55	54	52.5	-2	-108
	483			335

$AM = 42.5 \qquad \Sigma F_i = 483 \qquad \Sigma F_i * D_i = 335 \qquad i = 5\ (30\text{-}25)$

$$\text{Mean } (M) = AM + ((\Sigma F_i * D_i \,/\, \Sigma F_i)) * i$$

$$= 42.5 + (335/\ 483) * 5 = 42.5 + 3.468 = 45.968$$

After the three examples for calculating mean for ungrouped and grouped data, we would now discuss the technique of finding the Median.

16.3 Median

Median[@] is the score that divides the distribution into halves; half of the scores are above the median and the other half are below it when the data are arranged in a numerical order. Median is also referred to as the score at the 50th percentile in the distribution.

Calculating median from ungrouped data

- ❖ Arrange the series in numerical order (ascending or descending).
- ❖ Find the median location of *N* numbers by the formula (*N* + 1) / 2. When N is an odd number, for example 7 then the value of the 4th item ((7+1)/2 = 4) is the median. For example in the following ordered distribution the value of 4th item, i.e. 9 is the median.

  2, 5, 8, 9, 12, 16, 16
- ❖ Whereas, when N is an even number, say 12 then the median is half-way between the 6th and 7th items ((12+1)/2 = 6.5).

See Box 16.4 for examples 4 and 5.

Box 16.4 Example 4: Finding the Median

When N is an odd number: Find the median in the distribution of numbers: 1, 13, 8, 3, 4, 11, and 7.
The median location is (*N* + 1) / 2 or (7 + 1) / 2 = 4.
The ordered distribution is: 1, 3, 4, 7, 8, 11 and 13.
The value of 4th item in the distribution is 7 and thus median is 7.

Example 5: ***When N is an even number:***

Find the median in the distribution of numbers: 1, 8, 3, 13, 11, and 7.
The median location is (6 + 1) / 2 = 3.5.
The ordered distribution is 1, 3, 7, 8, 11 and 13.
The halfway value between the 3rd and 4th item is 7.5 ((7+8) / 2), and thus median is 7.5.

Calculating median from grouped data

Finding the median score in the frequency distribution below involves five steps.

Step 1: Divide the total number (N or ΣF_i) by two.

Step 2: Start at the low end of the frequency distribution and sum the scores in each interval until the interval containing the median is reached (C. F.).

Step 3: Subtract the sum obtained in step two above from the number necessary (calculated at step 1) to reach the median (N/2 - C. F.).

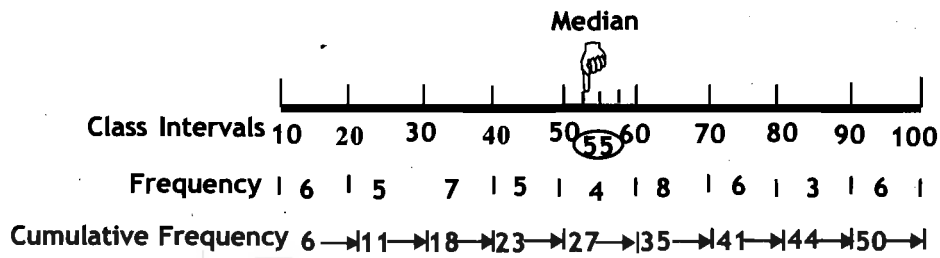
Step 4: Now calculate the proportion of the median interval that must be added to its lower limit in order to reach the median score. This is done by dividing the number obtained in step 3 above by the number of scores (f) in the median interval and then multiplying by the size of the class interval (i), i.e. [(N /2 - C.F.) / f] *i.

Step 5: Finally, add the number obtained in step 4 above to the exact lower limit of the median interval.

$$\text{Median} = L + [(N/2 - \text{C.F.}) / f] * i$$

Where, L = the exact lower limit of the median interval, N = the total number of scores; C.F. = the sum of the scores in the intervals below the median interval, f = the number of scores in the median interval; i = the size of the class interval.

Graphical representation of calculating the median from grouped data



See Box 16.5 for example 6 for finding the media for grouped data.

Box 16.5 Example 6: Find the Median of the following distribution

Class Interval	18-21	21-24	24-27	27-30	30-33	33-36	36-39	39-42	42-45	45-48	48-51
Frequency											

Class Interval	Frequency	Cumulative Frequency
18-21	1	1
21-24	2	3
24-27	3	6
27-30	6	12
30-33	7	19
33-36	8	27
36-39	8	35
39-42	6	41
42-45	4	45
45-48	3	48
48-51	2	50
Total	$\Sigma F_i = 50$	

$$\text{Median} = L + [(N/2 - \text{C.F.}) / f] * i$$

N or $?F_i / 2 = 50/2 = 25$

Lower limit of the median class (L) = 33

Cumulative frequency of the class preceding the median class (C.F.) = 19

Cumulative frequency of the class preceding the median class (C.F.) = 19
Frequency of the median class (f) = 8
Size of the class interval = 3
Median = 33 + [(25-19) / 8)] *3 = 33 + 2.25 = 35.25
Let us now complete Reflection and Action 16.1 for checking if the calculation methods have now become clearer and easier to perform.

After the Reflection and Action 16.1, you would learn about calculating mode from ungrouped and grouped data.

Reflection and Action 16.1

Following the examples given in the text for calculating the mean and median for ungrouped and grouped data and the short method of calculating mean of grouped data, provide your own examples of each of the five calculations in the manner similar to examples in the text. This exercise would provide you an opportunity of practicing such calculations. These calculation exercises would come in handy while you would carry out your own mini research project.

16.4 Mode

Mode[◎] of a distribution is simply defined as the most frequent or common score in the distribution. Mode is the point (or value) of X that corresponds to the highest point on the distribution. If the highest frequency is shared by more than one value, the distribution is said to be **multimodal**. It is not uncommon to see distributions that are bimodal reflecting peaks in scoring at two different points in the distribution.

Calculating mode from ungrouped data

The most frequent data in the series is the mode. It can be determined by viewing the series (if the series is small) or looking at the frequency distribution (if the series is large). See Box 16.6 for example 7.

Box 16.6 Example 7: Find the Mode of the following Distribution.

Serial number of family	1	2	3	4	5	6	7	8	9	10
Number of Children	1	2	3	4	3	3	2	1	2	3

In the above example 3 occurs the maximum number of times (4 times), and hence 3 is the mode of the distribution.

Calculating mode from grouped data

Mode of the grouped data can be calculated using the following steps:

Step 1: Identify the modal class (class with maximum frequency) by inspection or analysis.

Step 2: Apply the following formula

Mode = $L + [(f_m - f_1) / (f_m - f_1) + (f_m - f_2)] * i$

Or

Mode = $L + [(f_m - f_1) / (2f_m - f_1 - f_2)] * i$

Where, L = the exact lower limit of the modal interval, f_m = frequency of the modal class, f_1 = frequency of the class preceding modal class, f_2 = frequency of the class succeeding modal class, i = the size of the class interval.

You can find the graphical representation of mode in grouped data in Figure 16.1.

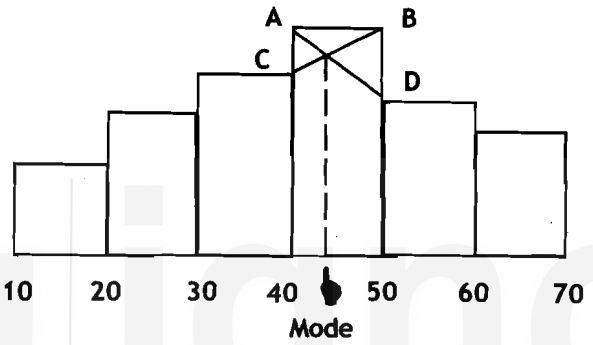


Figure 16.1 Graphical Representation of Mode in Grouped Data

The sample mode is the best estimate of population mode. When one samples a symmetrical unimodal population, mode is an unbiased and consistent estimate of mean and median, but it is relatively inefficient and should not be so used. As a measure of central tendency, mode is affected by skewness less than is mean or median, but it is affected by sampling more than these other two measures. Mode, but neither median nor mean, may be used for data on nominal, as well as the ordinal, interval, and ratio scales of measurement. Mode is not used often in social or biological researches, although it is often interesting to report the number of modes detected in a population, if there are more than one. See Box 16.7 for example 8.

Box 16.7 Example 8: Find the Modal Income on the Basis of the Following Data.

Income (in Thousands)	5 - 10	10 - 16	16 - 20	20 - 25	25 - 30	30 -35
No. of Households	8	16	29	22	14	12

Income (in Thousands)	No. of Households
5 - 10	8
10 - 15	15 f_1
Modal Class 15 - 20	29 f_m
20 - 25	22 f_2
25 - 30	14
30 - 35	12

Mode lies in the (16 - 20) having the maximum frequency (29)
Lower limit of the modal class = 16
Frequency of the modal class (f_m) = **29**
Frequency of the class preceding modal class (f_1) = 16
Frequency of the class succeeding modal class (f_2) = 22
Size of the class interval = 5
Mode = $L + [(f_m - f_1) / (2f_m - f_1 - f_2)] * i$
Mode = 16 + [(29 - 16) / (2*29 - 16 - 22)] *5 = 16 + (14 / 21) * 5 = 16 + 3.33 = 18.33
The modal income is 18.33 thousands.

After learnign about mean, median and mode, we will discuss in Section 16.5 the relationship among the three measures of central tendency. But before going on to Section 16.5, let us complete Reflection and Action 16.2.

Reflection and Action 16.2

Make a graphical representation of mode in grouped data of your choice along the lines of Figure 16.1. You may then use similar type of graphic representation of grouped data in your own mini research project.

16.5 Relationship between mean, mode and median

Mean, mode and median (the three measures of central tendency) are related to each other and can be calculated using the following equation.

Mode = 3 * Median - 2 * Mean

The values of mean, mode and median are the same when the frequency is normally distributed, but their values differ when the frequency is positively or negatively skewed.

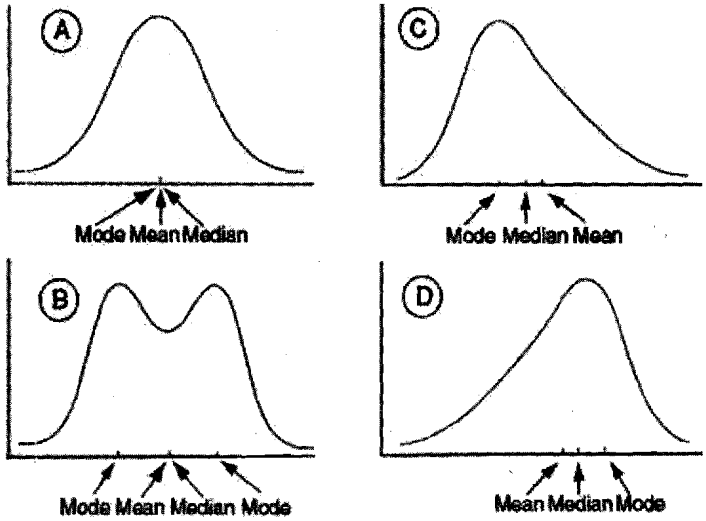


Fig. 16.2: Relationship of Mean, Mode and Median in various Types of Frequency Distributions

Fig. 16.2 shows the relationship of mean, mode and median in various types of frequency distributions: (A) Normal distribution (B) Bimodal distribution (C) Positively skewed distribution (D) Negatively skewed distribution. Values of the variables are along x axis and the frequencies are along y axis.

After learning about the relationship among the three measure of central tendency, let us find out how to decide which of the three to choose for one's research.

16.6 Choosing a measure of central tendency

Sometimes the researcher has to decide which of the three measures of central tendency to use. The following advice may be of help.

Mean is doubtless the most commonly used measure of central tendency. It is the only one of the three measures which uses all the information available in a set of data, that is to say, it reflects the value of each score in a distribution. It has the decided advantage of being capable of combining with the means of other groups measured on the same variable. For example, from the average unemployment levels in various states of India one can compute the overall mean unemployment rate of India. Since neither the median nor the mode is based on arithmetic, this useful application is not possible. The precisely defined mathematical value of the mean allows the other advanced statistical techniques to be based on it too.

There are occasions, however, when taking into account the value of every score in a distribution can give a distorted picture of the data. For example, marriage distance (the distance between the places of residence of the two partners) in five cases is 40, 60, 60, 80 and 810. Without the very atypical score of 810, the mean score of the group is 60 and the median, likewise, is 60. The effect of introducing the score of 810 is to pull the mean in the direction of that extreme value. The mean now becomes 210, a value that is unrepresentative of the series. The median remains 60, providing a more realistic description of the distribution than the mean.

With these observations in mind:

Use the mean

i) When the scores in a distribution are more or less symmetrically grouped about a central point.

ii) When the research problem requires a measure of central tendency that will also form the basis of other statistics (such as measures of variability or measures of association).

iii) When the research problem requires the combination of mean with the means of other groups measured on the same variable.

iv) To measure the central tendency in a sample of observations when one needs to estimate the value of a corresponding mean

of the population from which the sample is taken.

v) When the interval level or ratio level data providing that the distribution of scores approximates a normal curve.

Use the median

i) When the research problem calls for knowledge of the exact midpoint of a distribution.

ii) When extreme scores are there in the series, as they distort the mean, but not the median. Particularly, when dealing with 'oddly-shaped' distributions, for example, those in which a high proportion of extremely high scores occur as well as a low proportion of extremely low ones.

Use the mode

i) When all that is required is a quick and appropriate way of determining central tendency.

ii) When in referring to what is 'average', the word is used in the sense of the 'typical' or the 'most usual'. For example, in talking about the average take-home pay of the coffee plantation worker, it is the modal wage that is being alluded to rather than an exact arithmetic average.

Reflection and Action 16.3

Provide examples of data that require mean, median and mode type of calculations for reflecting the central tendency of the data.

16.7 Conclusion

Succinctly, mode would be the appropriate statistic to use as a measure of the 'most fashionable' or 'most popular' when data are collected using a nominal scale. *Median* would generally be associated with the ordinal level data. *Mean* will be used with interval level or ratio level data providing that the distribution of scores approximates a normal curve.

You can take mean to be a mathematical measure and median mode to be the positional measures. You can always cluster your observations around a central value. A central value manifests both the distribution and the comparison of various distributions. It is always useful for a researcher to provide measures that indicate the average feature of a frequency distribution. Unit 16 has discussed the three measure of central tendency and provided skills of basic statistical tools for application in your research.

It would have become apparent to you that the three measures of the central tendency, namely, i) average of all the values in the distribution or mean, ii) mid-point of the distribution or median and iii) highest

density in the distribution or mode, are not to applied in a mechanical way. In the light of the objective of your study you would need to determine when you are to use which measure. You have learnt in Unit 16 that a graphic representation of distributions shows either a symmetrical or a skewed pattern. In symmetrical type, you will find that the three values coincide. This provides you the option of using the mean. In the case of bi-modal or multi-modal representation, you would do better to use the mode. In skewed distribution, if the tail is on the right side, it indicates the positive skewing of distribution. If the tail is on the left side, it shows the negative skewing of distribution. For both the negative and the positive types of skewing of distribution, you would do better by using the median measure of central tendency. You may want to work out with the help of Unit 16 the type of measure of central tendency you will use in your mini research project.

Further Reading

Black, Thomas R. 1999. *Doing Quantitative Research in the Social Science*. An Integrated Approach to Research Design, Measurement and Statistics

Nachmias, David and Chava Nachmias 1981. *Research Methods in Social Sciences*. St. Martin Press: New York.

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Unit 17

Measures of Dispersion and Variability

Contents

17.1 Introduction
17.2 The Range
17.3 The Variance
17.4 The Standard Deviation
17.5 Coefficient of Variation
17.6 Conclusion



Learning Objectives

It is expected that after reading Unit 17 you would be able to

- ❖ Obtain a measure of dispersion of data
- ❖ Explain the meaning of the term 'range' and work out how to measure the range of one's data
- ❖ Discuss the element of variance in one's data and find out the standard variation in it
- ❖ Work out the coefficient of variation in the data.

17.1 Introduction

In addition to a measure of central tendency, it is generally desirable to have a measure of dispersion of data. A measure of dispersion (or a measure of variability©, as it is sometimes called) is an indication of the clustering of measurements around the center of the distribution, or, conversely, it is an indication of how variable the measurements are. Sanders (1955) held that you need to measure dispersion to evaluate the extent to which the average value depicts the data. Another reason for measuring dispersion is to find out the spread in order to improve or control the existing variations.

17.2 The Range

The difference between the highest and the lowest measurements in a group of data is termed range©. If sample measurements are arranged in an increasing order of magnitude, as if the median were about to be determined, then

$$\text{Sample range} = X_n - X_1 \qquad \text{.....1}$$

Where, X_1 and X_n are the lowest and the highest value of the series respectively.

See Box 17.1 for Example 1.

Box 17.1 Example 1

The number of cattle owned by members of a community is recorded as: 12, 11, 13, 20, 15, 18, 19, 17, 22 and 23. Calculate the range.

$X_1 = 11$; $X_n = 23$

Sample range = 23 - 11 = 12

The range is a relatively crude measure of dispersion, inasmuch as it does not take into account any measurement except the highest and the lowest. Furthermore since it is unlikely that a sample will contain both the highest and the lowest values in the population, the sample range usually underestimates the population range; therefore, it is a biased and inefficient estimator. Nonetheless, it is useful in some circumstances to present the sample range as an estimate (although a poor one) of the population range. Whenever the range is specified in reporting data, it is usually a good practice to report another measure of dispersion as well.

The Mean Deviation

It is clear that no information is provided by the range about the distribution of the measurements in the middle. Since the mean is so useful a measure of central tendency, one might express dispersion in terms of deviations from the mean.

The sum of all deviations from the mean ($(\Sigma(X_i - M))$ will always be zero, therefore such a summation would be useless as a measure of dispersion. On the other hand, the sum of the absolute values of the deviation from the mean expresses dispersion about the mean. Dividing this sum by the total number yields a measure that is known as *mean deviation*, or *mean absolute deviation* of the sample, is obtained.

$$\text{Sample mean deviation} = (\Sigma | X_i - M |) / n \quad \text{.....2}$$

Where, M is the mean (sample), X_i are the scores, n is the total number of scores and ?is 'the sum of' and the vertical lines indicate that the values are absolute (irrespective of sign). See Box 17.2 for example 2.

Box 17.2 Example 2

The number of cattle owned by members of a community is recorded as: 12, 11, 13, 20, 15, 18, 19, 17, 22 and 23. Calculate the mean deviation.

$\Sigma X_i = 12 + 11 + 13 + 20 + 15 + 18 + 19 + 17 + 22 + 23 = 170$

$N = 10$

$M = \Sigma X_i / N$; $M = 170 / 10 = 17$

$(\Sigma | X_i - M |) = (12 - 17) + (11 - 17) + (13 - 17) + (20 - 17) + (15 - 17) + (18 - 17) + (19 - 17) + (17 - 17) + (22 - 17) + (23 - 17) = 5 + 6 + 4 + 3 + 2 + 1 + 2 + 0 + 5 + 6 = 34$

Sample mean deviation = 34 / 10 = 3.4

It is possible that the two samples may have the same range, but not the mean deviation. Mean deviation can also be defined by using the sum of the absolute deviations from the median rather than from the mean.

17.3 The Variance

Another method of eliminating the signs of deviations from the mean is to square the deviations. The sum of the square of deviation from the mean is called the *sum of squares*, abbreviated SS, and is defined as follows:

$$\text{Sample SS} = \Sigma (X_i - M)^2 \quad \text{.....3}$$

Where, M is the mean (sample), X_i are the scores, and Σis 'the sum of'.

From the sample SS, population SS can be estimated.

$$\text{Population SS} = \Sigma (X_i - \mu)^2 \quad \text{.....4}$$

Where M is the mean (sample), X_i are the scores, and ?is 'the sum of'.

The mean sum of square is called *variance* (or *mean square*, the latter being short for *mean squared deviation*), and for a population is denoted by ó ² ("sigma squared", using the lowercase Greek letter).

Calculating variance from ungrouped data

$$\text{Population Variance} = ó^2 = \Sigma(X_i - \mu)^2 / N \quad \text{.....5}$$

The best estimate of the population variance, ó ², is the sample variance, s^2:

$$\text{Sample Variance} = s^2 = \Sigma(X_i - M)^2 / (n - 1) \quad \text{.....6}$$

Where M is the mean (sample), X_i are the scores, n is the total number of scores (sample) and Σ is 'the sum of'.

The replacement of μ by M and N by n in the above equation results in a quantity which is a biased estimate of ó ². Dividing the sample's sum of squares by n-1 (called the degree of freedom, abbreviated DF) rather than by n, yields an unbiased estimate and the above equation should be used to calculate the sample variance. If all observations are equal, then there is no variability and $s^2 = 0$; and s^2 becomes increasingly large as the amount of variability, or dispersion, increases. Since s^2 is a mean sum of squares, it can never be a negative quantity.

The variance expresses the same type of information as does the mean deviation, but it has certain important properties relative to probability and hypothesis testing that makes it distinctly superior. Thus, the mean deviation is very seldom encountered in social or bio-statistical analysis.

The variance has square units. If measurements are in grams, their variance will be in grams squared, or if the measurements are in cubic centimeters, their variance will be in terms of cubic centimeters squared, even though such squared units have no physical interpretation.

The sample variance© can be calculated using the following formula

$$\text{Sample variance} = s^2 = ((\Sigma X_i^2) - (\Sigma X_i)^2 / n)) / (n - 1) \quad \text{.....7}$$

The above formula is often called the machine formula, because of its computational advantages. There are, in fact, two major advantages in

calculating SS by Equation 7 rather than by Equation 6. First, here fewer computational steps are involved, a fact that decreases the chance of error. On a good desk calculator, the summed quantities, ΣX_i and ΣX_i^2 can both be obtained with only one pass through the data, whereas Equation 6 requires one pass through the data to calculate M, and at least one more pass to calculate and sum the squares of the deviations, $X_i - M$. Second, there may be a good deal of rounding error in calculating each $X_i - M$, a situation which leads to decreased accuracy in computation, but which is avoided by the use of Equation 7. See Box 17.3 for example 3.

Box 17.3 Example 3

The number of cattle owned by members of a community is recorded as: 12, 11, 13, 20, 15, 18, 19, 17, 22 and 23. Calculate the sample variance.

$\Sigma X_i = 12 + 11 + 13 + 20 + 15 + 18 + 19 + 17 + 22 + 23 = 170$

$n = 10$

$M = \Sigma X_i / n$; $M = 170 / 10 = 17$

X_i	12	11	13	20	15	18	19	17	22	23	$\Sigma X_i = 170$
$X_i - M$	-5	-6	-4	+3	-2	+1	+2	0	+5	+6	
$(X_i - M)^2$	25	36	17	9	4	1	4	0	25	36	$\Sigma(X_i - M)^2 = 156$

Sample variance = $s^2 = \Sigma (X_i - M)^2 / (n - 1) = 156 / 9 = 17.33$

Alternate formula (often called machine formula)

Sample variance = $s^2 = ((\Sigma X_i^2) - (\Sigma X_i)^2 / n)) / (n - 1)$

X_i	12	11	13	20	15	18	19	17	22	23	$\Sigma X_i = 170$
X_i^2	144	121	179	400	225	324	361	289	484	529	$\Sigma X_i^2 = 3046$

Sample variance = $s^2 = (3046 - ((170)^2)/ 10) / 9 = 156 / 9 = 17.33$

Calculating the variance from grouped data

The sample variance in the grouped data can be calculated using the following formula.

$$\text{Sample Variance} = s^2 = \Sigma f_i (X_i - M)^2 / (n - 1) \quad \text{.....8}$$

Where, M is the mean (sample), f is the frequency of observations with magnitude X_i, n is the total number of scores (sample) and Σis 'the sum of'.

The manual calculation becomes complex, if the mean value is having several places after decimal. A commonly used method is from assumed mean. The formula is listed below.

$$\text{Sample Variance} = s^2 = \{(\Sigma f_i * d_i^2)/ n - (\Sigma f_i * d_i / n)^2\} * i \quad \text{.....9}$$

$$d_i = (X_i - A)/ i$$

Where, i is the size of the class interval, f_i is the frequency of observations with magnitude X_i, n is the total number of scores (sample) and Σis 'the sum of'. See Box 17.4 for example 4.

Box 17.4 Example 4

Agricultural land (in acres) owned by various households is grouped under the following seven groups. The frequency of households in each category is listed below. Find the variance in the land owning.

Land Owned (in Acres)	Frequency (F_i)	Mid-Point of the Interval (X_i)	$d_i = (X_i - A) / i$	$f_i * d_i$	d_i^2	$f_i * d_i^2$
20 - 30	18	25	-3	-54	9	172
30 - 40	19	35	-2	-38	4	76
40 - 50	12	45	-1	-12	1	2
50 - 60	19	Assumed Mean (A) = 55	0	0	0	0
60 - 70	17	65	1	17	1	17
70 - 80	15	75	2	30	4	60
80 - 90	10	85	3	30	9	90
	110			-27		417

$\Sigma f_i * d_i^2 = 417$ $\Sigma f_i * d_i = -27$ $n = 110$

Sample Variance = $\{(\Sigma f_i * d_i^2)/ n - (\Sigma f_i * d_i / n)^2\} * i$

Sample Variance = $\{(417/ 110) - (-27/ 110)^2\} * 10 = (3.79 - .06) / 10 = 37.3$

The variance in the grouped data can also be calculated using the following equation (often called machine formula).

Sample variance $(s^2) = ((\Sigma f_i * X_i^2) - (\Sigma f_i * X_i)^2 / n)) / (n - 1)$ 10

Where f_i is the frequency of observations with magnitude X_i.

But with a desk calculator it is often faster to use Equation 7 for each individual observation, disregarding the class groupings. See Box 17.5 for example 5.

Box 17.5 Example 5

An investigation in a community on the bride price yielded the following data. Find the variance in bride price.

Bride Price (in Thousand Rs)	Frequency (F_i)	Mid-Point of the Interval (X_i)	$f_i * X_i$	X_i^2	$f_i * X_i^2$
10 - 20	8	15	120	225	1800
20 - 30	9	25	225	625	5625
30 - 40	12	35	420	1225	14700
40 - 50	9	45	405	2025	18225
50 - 60	7	55	385	3025	21175
60 - 70	5	65	325	4225	21125
	50		1880		82650

$\Sigma f_i * X_i^2 = 82650 \quad \Sigma f_i * X_i = 1880 \quad (\Sigma f_i * X_i)^2 = (1880)^2 = 3534400$

$n = 50$

Sample variance $(s^2) = ((\Sigma f_i * X_i^2) - (\Sigma f_i * X_i)^2 / n)) / (n - 1)$

Sample variance $(s^2) = (82650 - (3534400 / 50) / 49 = (82650 - 70688) / 49 = 11962 / 49 = 244.12$

Reflection and Action 17.1

Following the examples in the text, provide your own examples for calculating variance from ungrouped and grouped data.

17.4 The Standard Deviation

The standard deviation© is the positive square root of the variance; therefore, it has the same units as the original measurements. It can be calculated using the following formula.

Standard deviation (s) = v (Sample Variance)

In Example 5, you found the sample variance to be = 244.12, and therefore you can work out the standard deviation to be (s) = v 244.12 = 15.62

Thus various examples given above for the calculation of variance explain the procedure of calculating standard deviation.

17.5 Coefficient of Variation

Ratio scales are useful in social science research when an investigator is interested in the variability of a sample on one characteristic as compared to another.

The coefficient of variation is the percentage ratio of standard deviation to mean and it is calculated using the following formula.

Coefficient of variation = standard deviation *100 / Mean

It is a useful measure of dispersion, when comparison of variability is being made between the variables of unequal magnitude and/ or have different units of measurements, for example, height and weight.

In example 4, you would find that

Mean (M) = AM + $(\Sigma f_i * d_{ij} / n) * i$ = 55 + (-27 / 110) *10 = 55 - 2.45 = 52.55 and

Standard deviation (s) = v (Sample Variance) = v37.3 = 6.107

Coefficient of variation = s *100 / M = 6.107 / 52.55 = 11.62

Reflection and Action 17.2

Work out standard deviation and coefficient of variation of the examples you selected in Reflection and action 17.1.

17.6 Conclusion

After working out in Unit 16 how to measure the central tendency in one's data, in Unit 17 you acquired the skill of measuring dispersion of data, which indicates the clustering of measurements around the center of the distribution, or, you may say that it is an indication of how variable the measurements are.

You may agree with Sanders (1955: 90-91) who said that the range is an easy measure to work out and understand because it requires only one subtraction and it places stress on the extreme values. The mean absolute deviation, on the other hand, places equal weight to the deviation in every observation and it is equally easy to work out and understand. The squaring of deviations in calculating standard deviation emphasies the extreme value. The standard deviation is a more common measure of dispersion. The value of every observation in a series affects the value of this measure. A change in the value of any observation will generate a change in the standard deviation value. Relatively few extreme values can distort its value. The standard deviation is not possible to compute from an open ended distribution. Finally, the co-efficient of deviation is similar to the range as it is based on only two values, which identify the range of the middle fifty percent of the values.It is mostly used in the sets of skewed data and it is possible to compute it in an open-ended distribution.

Further Reading

Sanders, Donald 1955, *Statistics*. McGraw-Hill: New York

Unit 18

Statistical Inference: Tests of Hypothesis

Contents

18.1 Introduction
18.2 Statistical Inference
18.3 Cases
18.4 Tests of Significance
18.5 Conclusion



Learning Objectives

It is expected that after reading Unit 18 you would be able to

- ❖ Draw statistical inferences on the basis of the concept of probability
- ❖ Use the tool of statistical inference to test hypotheses
- ❖ Apply the tool of statistical inference for estimating the unknown parameter of the population under research.

18.1 Introduction

Unit 18 deals with statistical inference, which uses the concepts of probability to explain the element of uncertainty in decision-making. You would find that though it occupies a lower status among statistical tests, you would be able to use chi-square test in a wide variety of researches. If you have a relatively smaller sample, it would be better to use student's test that is a parametric test. You would learn in Unit 18 in detail about both the chi-square and student's tests. For hypothesis testing, Unit 18 is going to prove to be most helpful in the mini research project that you have to complete as a part of your assignment of MSO 002.

18.2 Statistical Inference

Statistical inference uses the concept of probability to deal with uncertainty in decision-making. It refers to the process of selecting and using a sample statistics to draw inferences about a population parameter, based on a sample drawn from the population. Statistical inference takes care of the two classes of problems.

A. Hypothesis testing: It tests some hypotheses about the parent population based on the sample drawn from the population.

B. Estimation: It uses the 'statistics' obtained from the sample as an estimate of the unknown 'parameter' of the population based on the sample drawn from the population.

A. Hypothesis testing

It begins with an assumption called a hypothesis that one makes about a population parameter.

Steps in testing a hypothesis

i) Formulate a hypothesis

ii) Decide an appropriate significance level

iii) Select a test criterion

iv) Carry out calculations

v) Make Decisions

Let us discuss in brief each of the five steps.

i) Formulate a hypothesis: First of all a hypothesis is set up about a population parameter. Thereafter, sample data is collected, sample statistics calculated and the information is used to assess how far the hypothesised parameter is correct. Examining the difference between the hypothesised value and the actual value of the sample's mean tests the validity of an assumption.

Conventionally, rather than a single hypothesis two are constructed. These hypotheses are constructed in such a way that if one hypothesis is accepted the other is rejected. The two hypotheses are called:

a. Null hypothesis (designated as H_0)

b. Alternative hypothesis (designated as H_A)

In the simplest form, a null hypothesis states that there is no true difference between the sample statistics and the population parameter. It asserts that the observed difference is accidental and / or unimportant arising out of the fluctuations in sampling.

A researcher, for instance, who wishes to test whether the annual per capita income in a community is higher than Rs. 10,000/- might formulate the null and alternate hypotheses as under.

Null hypothesis (H_0): $\mu = 10,000$

Alternative hypothesis (H_A): $\mu > 10,000$

In another instance, a researcher might wish to test the mean difference between the annual per capita incomes of two groups. In this case, she might formulate the null and alternate hypotheses as under.

Null hypothesis (H_0): $\mu_1 - \mu_2 = 0$

Alternative hypothesis (H_A): $\mu_1 - \mu_2 \neq 0$

ii) Decide an appropriate significance level: The next step in testing hypotheses is to set up a suitable significance level to test the validity of H_0 as against H_A. The confidence with which a null hypothesis is adopted or rejected depends on the adopted significance level.

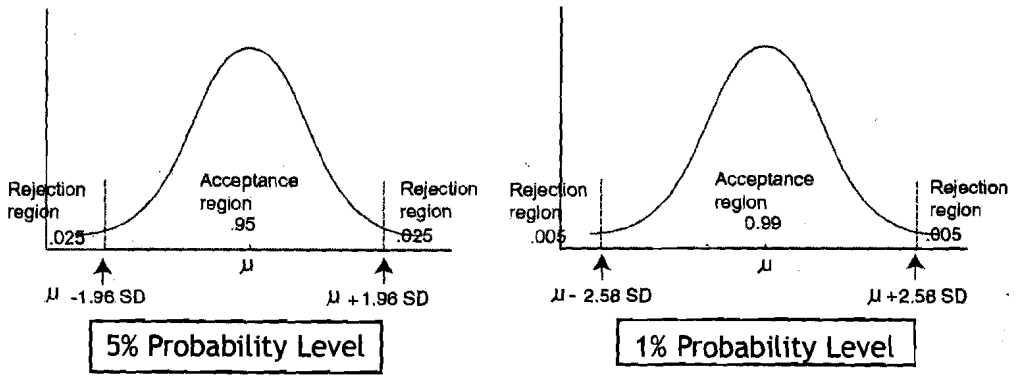


Figure18.1 Acceptance (or rejection) of Null hypothesis (two tailed) at 5% and 1%, respectively

Conventionally, the significance level is expressed as a percentage, such as 5% or 1%. In the former case, it would mean that there is 5% probability of rejecting a null hypothesis, even if true. This means that there are 5 out 100 chances that the investigator would reject a true hypothesis (see Figure 18.1).

iii) **Select a test criterion**: The next step in hypothesis testing is to set up a test criterion. An appropriate probability distribution that can be applied is selected for the particular test. Some of the common probability distributions are $\div^2$, t and F.

iv) **Carry out calculations**: Computation is carried out of various statistics and their standard errors based on sample.

B. **Make Decisions**: In this step statistical conclusions and decisions are made to reject or accept the null hypothesis, depending on whether the computed value falls in the region of acceptance or rejection (See Case 1 and Case 2 in 18.3).

Reflection and Action 18.1

Let us say that you are carrying out a research that has both the null and alternative hypotheses. You need now to set up a suitable significance level to test the validity of null hypothesis as against alternative hypothesis. For this task as well subsequent tasks, follow the procedure given in the text. Next, you would need to set up a test criterion. For this purpose select an appropriate probability distribution that can be applied for the particular test. Then carry out computation of various statistics and their standard errors. Now, based on sample statistical conclusions, make decisions to reject or accept the null hypothesis. This would depend on whether the computed value falls in the region of acceptance or rejection. Work out the steps in concrete terms of your own research project and incorporate them in your research work report.

18.3 Cases

Case 1: If the hypothesis is being tested at 5% level and the observed result has a probability of less than 5%, then the difference between the sample statistics and the population parameter is significant and cannot

be explained by chance alone. Thus the null hypothesis (or H_0) is rejected, and in turn, the alternative hypothesis (H_A) is accepted.

Case 2: If the hypothesis is being tested at 5% level and the observed result has a probability of more than 5%, then the difference between the sample statistics and the population parameter is not significant and can be explained by chance variation. Thus the null hypothesis (or H_0) is accepted, and in turn the alternative hypothesis (H_A) is rejected.

In hypothesis testing it is important to understand the following:

i) One tailed and two tailed test of hypothesis; and

ii) Type I and Type II errors

i) One-tailed and two-tailed test of hypothesis

Depending on the research problem, the null and alternate hypotheses are defined in such a way that the test is known as one-tailed or two-tailed. A two-tailed test of hypothesis will reject the null hypothesis if the sample statistic is significantly higher or lower than the population parameter. Thus, in a two-tailed test of hypothesis the rejection region is located on both the tails and the size of the rejection region is .025, whereas the central acceptance region is .95 (Fig.18 2). If the sample mean falls within μ± 1.96 SD (i.e. in the acceptance region), the hypothesis is accepted. If on the other hand, it falls beyond μ± 1.96 SD, then the hypothesis is rejected, as it will fall in the rejection region.

Let us take an example of the two-tailed hypothesis. Suppose a researcher is interested in knowing whether there is gender difference in IQ. You can formulate the following hypotheses.

IQ of Females = IQ of Males (Null hypothesis)

IQ of Females ± IQ of Males (Alternative hypothesis) or in other words, IQ of females may be lower or higher than that of males.

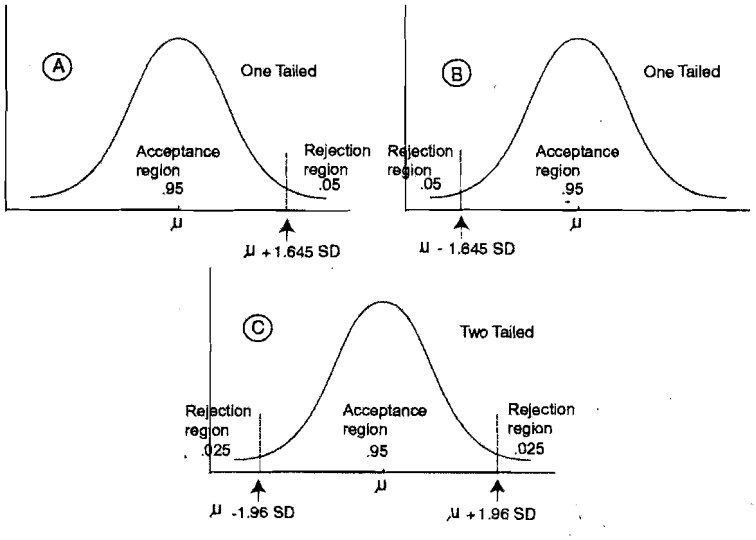


Figure 18.2 One-Tailed and Two-tailed Test of Hypothesis. (A) and (B) are One-Tailed, whereas (C) is Two-tailed.

In contrast to the two-tailed hypothesis, in one-tailed hypothesis the rejection region will be located only on one tail (see Figure 18.2). In this case, the size of the rejection region will be .05, if one is testing the hypothesis at 5% probability level. If the sample mean falls above μ + 1.645 SD (Case A: Fig. 2) or below μ - 1.645 SD (see Case B of Figure 18.2), then the hypothesis is rejected, as it will fall in the rejection region.

Let us take an example of the one-tailed hypothesis. Suppose a researcher is interested in knowing whether the IQ of females is higher than that of males. In this case, you can formulate the following hypotheses.

IQ of Females > IQ of Males (Null hypothesis)

IQ of Females = IQ of Males (Alternative hypothesis)

ii) Type I and Type II errors

i) A researcher's decision is correct when a true hypothesis is accepted and the false hypothesis is rejected. One-tailed and two-tailed test of hypothesis; and

ii) Type I and Type II errors

	Accept H_0	Reject H_0
H_0 is True	Correct Decision	Type I Error
H_0 is False	Type II Error	Correct Decision

Figure 18.3 Type I and Type II Errors in Testing a Hypothesis.

The Type I error is designated as < (alpha), whereas Type II error is designated as B (beta). It is important to note that both types of errors cannot be reduced simultaneously, as reduction in one leads to increase in the other if the sample size remains unchanged. Thus if Type I error decreases, Type II error will increase. In most of the statistical tests, the level of significance is fixed at 5% probability level (= 0.05). This means that the probability of accepting a true hypothesis is 95%. Sometimes, the level of significance is fixed at 1% probability level (=0.01). In that case, the probability of accepting a true hypothesis is 99%. In this case, accepting a false hypothesis will also increase.

Reflection and Action 18.2

Carry on with hypothesis testing with the same example as you had taken in Reflection and Action 18.1. You need now to carry out both one-tailed and two-tailed tests of your hypothesis. A two-tailed test of hypothesis will reject the null hypothesis if the sample statistic is significantly higher or lower than the population parameter. In a two-tailed test of hypothesis the rejection region is located on both the tails and the size of the rejection region is .025, whereas the central acceptance region is .95. In contrast to the two-tailed hypothesis, you would notice that in a one-tailed hypothesis the rejection region will be located only on one tail. Similarly, you would need to carry out the Type I and Type II error tests. Designate Type I error as < (alpha), and Type II error as B (beta). As pointed out in the text above, you need to remember that both types of errors cannot be reduced simultaneously, as reduction in one leads to increase in the other, if the sample size remains unchanged. If you follow the text in Section 18.3, you would be able to carry out both sets of tests on the hypothesis of your research. Make sure to include them in your research work report.

18.4 Tests of Significance

i) Chi-square test ($\div^2$)

Chi-square© is probably the most commonly used of all non-parametric tests. It is applicable when data are nominal and grouped in categories. You can examine the difference between the observed and the expected frequencies.

$$\div^2 = \Sigma ((O - E)^2 / E)$$

Where, O and E are the observed and expected frequencies respectively.

The calculated value of $\div^2$ is compared with the table value of $\div^2$ for given degrees of freedom at a certain specified level of significance (e.g. 5%). If the calculated value of $\div^2$ is higher than the table value of $\div^2$, then the difference between the theory and observation is considered to be significant. On the other hand, if the calculated value of $\div^2$ is lower than the table value of $\div^2$, then the difference between the theory and observation is considered to be non-significant.

As mentioned above, while comparing the calculated value of $\div^2$ with the table value of $\div^2$, one has to determine the degrees of freedom. Degree of freedom is the number of classes to which the values can be allocated at will or arbitrarily without defying the limitations or restrictions. For instance, if one has to choose four numbers whose sum is 100, the freedom of choice exists only for selecting three numbers, and the fourth is selected automatically. If, for example, the first three numbers are 14, 26, 32, then the fourth is fixed and must be 28 (100 - (14+ 26+ 32)). In this case the degree of freedom is three. Chi-square is used for a variety of purposes. Also there are numerous tests that are close to $\div^2$. Here, the test of goodness of fit and the test of homogeneity / association are presented.

ii) Test of goodness of fit: We often want to know whether the observed frequencies are in agreement with the probability or expected theoretical distribution or not. The following steps may be followed:

Step 1: Define null and alternative hypotheses.

Step 2: Decide probability level.

Step 3: Estimate the expected frequency E for each category based on theory and or probability.

Step 4: Calculate chi-square.

Step 5: Determine the degree of freedom.

Step 6: Compare the observed chi-square with the tabulated chi-square. Accept/ reject the null hypothesis.

See Box 18.1 for an example.

Box 18.1 Example: Test whether a form of transport is favoured more significantly than another?

	Mode of Transport					
Frequencies	*Car*	*Bus*	*Metro*	*Scooter*	*Train*	*Total*
Observed	18	21	19	20	22	100
*Expected**	20	20	20	20	20	100

Solution:

Step 1: Null hypothesis: There is no significant difference in the choice of the type of transportation.

Alternative hypothesis: There is significant difference in choice of type of transportation.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: The expected frequencies (20) in all the categories is based on the fact that there is an equal choice of the type of transportation.

Step 4: Calculations:

$\div^2 = \Sigma((O - E)^2 / E)$

$\div^2 = ((18 - 20)^2 / 20) + ((21 - 20)^2 / 20) + ((19 - 20)^2 / 20) + ((20 - 20)^2 / 20) + ((22 - 20)^2 / 20)$

$\div^2 = 4/20 + 1/20 + 1/20 + 0 + 4/20 = 10/20 = 0.5$

Step 5: Degree of freedom = k -1 = 5 -1 = 4

Step 6: The table value of chi-square at 5% probability level for 4 degree of freedom is = 9.49. The calculated value of $\div^2$ (0.5) is lower than the table value of $\div^2$ (9.49). Thus the null hypothesis is accepted and the difference between the theory and observation is non-significant and there is no significant difference in the choice of the type of transportation.

iii) Test of association/ homogeneity: This type of $\div^2$ is used for two purposes. The first purpose is to examine whether or not the two or more attributes are associated (test of association). The second purpose is to determine whether two samples are drawn from the same population or not (test of homogeneity©). In the former case the data is based on

one sample whereas in the latter, there are two or more samples.

Chi-square, a non-parametric test, is a rough estimate of confidence; it accepts weaker, less accurate data as input than the parametric tests, like t-tests and the analysis of variance, and therefore, has less status in the pantheon of statistical tests. Nonetheless, its limitations are also its strengths; because chi-square is more 'forbearing' in the data it will accept, it can be used in a wide variety of researches.

The steps in the chi-square method for the test of homogeneity remain the same as that of the test of goodness of fit, except that in step 3 the expected frequencies are calculated for each cell as illustrated.

Populations	Attribute			Total
	Category 1	Category 2	Category 3	
Population 1	A	B	C	N_1
Population 2	D	E	F	N_2
Total	N_3	N_4	N_5	N

Expected Frequency of Cell A = $(N_1 * N_3) / N$

Expected Frequency of Cell B = $(N_1 * N_4) / N$

Expected Frequency of Cell C = $(N_1 * N_5) / N$

Expected Frequency of Cell D = $(N_2 * N_3) / N$

Expected Frequency of Cell E = $(N_2 * N_4) / N$

Expected Frequency of Cell F = $(N_2 * N_5) / N$

See Box 18.2 for an example to find out if there was a difference in the income of the two groups. On the basis of this example, you may take up another case to test association. Homogeneity.

Box 18.2 Example to Examine if the Bhils and Minas Differ in their Income

Populations	Income groups		
	High	Middle	Low
Bhils	28	41	65
Minas	31	43	55

Solution:

Step 1: Null hypothesis: There is no significant difference in income between Bhils and Minas.

Alternative hypothesis: There is significant difference in income between Bhils and Minas.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: The expected frequencies are as given below.

	Income groups						Total
	Observed						
Populations	High		Middle		Low		
	Observed	Expected	Observed	Expected	Observed	Expected	
Bhils	28	*30.06*	41	*42.80*	65	*61.14*	*134*
Minas	31	*28.94*	43	*41.20*	55	*58.86*	*129*
Total	59	*59.00*	84	*84.00*	120	*120.00*	*263*

Expected Frequency of Cell A = $(N_1 * N_3) / N = 134 * 59 / 263 = 30.06$

Expected Frequency of Cell B = $(N_1 * N_4) / N = 134 * 84 / 263 = 42.80$

Expected Frequency of Cell C = $(N_1 * N_5) / N = 134 * 120 / 263 = 61.14$

Expected Frequency of Cell D = $(N_2 * N_3) / N = 129 * 59 / 263 = 28.94$

Expected Frequency of Cell E = $(N_2 * N_4) / N = 129 * 84 / 263 = 41.20$

Expected Frequency of Cell F = $(N_2 * N_5) / N = 129 * 120 / 263 = 58.86$

Step 4: Calculations:

$\div^2 = \Sigma ((O - E)^2 / E)$

$\div^2 = ((28 - 30.06)^2 / 30.06) + ((41 - 42.80)^2 / 42.80) + ((65 - 61.14)^2 / 61.14) + ((31 - 28.94)^2 / 28.94) + ((43 - 41.20)^2 / 41.20) + ((55 - 58.86)^2 / 58.86)$

$= 0.141 + 0.076 + 0.244 + 0.147 + 0.079 + 0.253 = 0.940$

Step 5: Degree of freedom = [(No. of rows -1)* (No. of column -1)] = (2-1)*(3-1) = 2

Step 6: The table value of chi-square at 5% probability level for 2 degree of freedom is = 5.991. The calculated value of $\div^2$ (0.940) is lower than the table value of $\div^2$ (5.991). Thus the null hypothesis is accepted and the difference between the theory and observation is non-significant and there is no significant difference in the income of Bhils and Minas.

There is a short cut method for the calculation of $\div^2$ if the frequency distribution is arranged in '2x2 contingency table', as illustrated in Figure 18.3.

	Variable 1 Category 1	Variable 2 Category 2	Total
Sample 1	A	B	A + B
Sample 2	C	D	C + D
Total	A + C	B + D	N = A +B +C + D

Figure 18.3 Short-cut Method to Calculate

$\div^2 = N* (A*D - B*C)^2 / (A + B) *(C + D)* (A + C)* (B + D)$

The calculated value of $\div^2$ is examined against the tabulated value at 1 d. f. at specified probability level to ascertain significance. See Box 18.3 to find out significant difference between males and females in terms of their occupations.

Box 18.3 Example to Examine Significant Gender-based Difference in Occupation as Skilled/ Unskilled Labourers

Gender	Skilled Labourers	Unskilled Labourers
Males	47	56
Females	32	71

Solution

Step 1: Null hypothesis: There is no significant sex difference in skilled and unskilled laborers.

Alternative hypothesis: There is a significant sex difference in skilled and unskilled laborers.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: Calculations:

Gender	Skilled Labourers	Unskilled Labourers	Total
Males	47	56	103
Females	32	71	103
Total	79	127	206

N=206 A*D= 3337 B*C = 1792

A + B= 103 C + D=103 A + C=79 B + D=127

$\div^2 = N^* (A^*D - B^*C)^2 / (A + B) *(C + D)^* (A + C)^* (B + D)$

$\div^2 = 206^* (3337 - 1792)^2 / 103 + 103 + 79 + 127$

$\div^2 = 491727150 / 106440097 = 4.620$

Step 4: Degree of freedom = [(No. of rows -1)* (No. of column -1)] = (2-1)*(2-1) = 1

Step 5: The table value of chi-square at 5% probability level for 1 degree of freedom is = 3.841. The calculated value of $\div^2$ (4.620) is higher than the table value of $\div^2$ (3.841).

So you can say as a conclusion that the null hypothesis is rejected and the sex difference between skilled and unskilled laborers is significant.

iv) Student's t test (t)

Student's t test is a parametric test most suitable for a small sample. It is probably the most widely used statistical test and certainly the most widely known. It is simple, straightforward, easy to use, and adaptable to a broad range of situations. No statistical toolbox should ever be without it. "Student" (real name: W. S. Gossett) developed the statistical methods to solve problems stemming from his employment in a brewery. Like chi-square, the following steps may be followed for the use of the Student's t test:

Step 1: Define null and alternative hypotheses.

Step 2: Decide probability level.

Step 3: Calculate the value of t using appropriate formula.

Step 4: Determine the degree of freedom.

Step 5: Compare the observed chi-square with the tabulated chi-square. Accept or reject the null hypothesis.

Student's t test is applied in different conditions, such as

a) To test the significance of the mean of a random sample
b) To test the difference between the means of the two independent samples
c) To test the difference between the means of the two dependent samples
d) To test the significance of the correlation coefficient.

Let us discuss each of the above conditions.

a) To test the significance of the mean of a random sample: This test is used when the researcher is interested in examining whether the mean of a sample from the normal population deviates significantly from the hypothetical population mean. The following formula is used for its calculation:

$$t = \{(M - \mu) * vn\} / S$$

When using actual mean:

$$S = v\ [\Sigma(X - M)^2 / (n - 1)]$$

When using assumed mean

$$S = v\ [\{\Sigma d^2 - (d_m)^{2*}n\} / (n - 1)]$$

Where M and μ are the means of the sample and population respectively;

n is the sample size

S is the standard deviation of the sample.

d = X - A, X being the variable

d_m is the mean of deviation

A is the assumed mean. Let us take an example, in Box 18. 4, of testing the mean nutritional intake.

Box 18.4 Example to Test The Mean Nutritional Intake in the Population with 2000 Calories.

Nutritional Intake (Calories)

2300	2000	2150	1950	2000	2150	1900	1900	2250	2050

Solution:

Step 1: Null hypothesis: The mean nutritional intake in the population, from which the sample is drawn, is 2000 Calories.

Alternative hypothesis: The mean nutritional intake in the population, from which the sample is drawn, is not 2000 Calories.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: Calculations:

Nutritional Intake (Calories)	d = X - A	d^2
2300	300	90000
2000	0	0
2150	150	22500
1950	-50	2500
2000	0	0
2150	150	22500
1900	-100	10000
1900	-100	10000
2250	250	62500
2050	50	2500
20650	650	222500

$n = 10$ $\quad \Sigma d^2 = 222500$ $\quad d_m = 650 / 10 = 65$

$M = 20650 / 10 = 2065$ $\quad \mu = 2000$

$S = v [\{\Sigma d^2 - (d_m)^{2*}n\} / (n - 1)]$

$S = v [\{222500 - (65)^{2*}10\} / 9 = 141.52$

$t = \{(M - \mu) * vn\} / S = \{(2065 - 2000) * v (10)\} / 141.52 = 1.452$

Step 4: Degree of freedom = 10 -1 = 9

Step 5: The table value of t at 5% probability level for 9 degree of freedom is = 2.232. The calculated value of t (1.452) is lower than the table value of t (2.232).

Thus the null hypothesis is accepted and the difference is not significant.

b) To test the difference between the means of the two independent samples: This test is used when the researcher is interested in examining whether the respective means of two independent samples differ significantly from each other. The following formula is used for its calculation:

$$t = [(M_1 - M_2) * v \{(n_1 * n_2) / (n_1 + n_2)\}] / S$$

When using actual mean:

$$S = v [\{\Sigma(X_1 - M_1)^2 + \Sigma(X_2 - M_2)^2\} / (n_1 + n_2 - 2)]$$

When using assumed mean

$$S = v [\{\Sigma d_1^2 + \Sigma d_2^2 - n_1 (M_1 - A_1)^2 - n_2 (M_2 - A_2)^2\} / (n_1 + n_2 - 2)]$$

Where $d_1 = X_1 - A_1$ and $d_2 = X_2 - A_2$ respectively

M_1 and M_2 are the respective means of the two samples

A_1 and A_2 are the assumed mean of the two samples

n_1 and n_2 are the sample sizes and S is the common standard deviation. We wuld take an example in Box 18.5 to find out the marital distance among the Santhals and Murias.

Box 18.5 Example to Examine whether Santhals and Murias Differ in Marital Distance

	Marital Distance (km)									
Santhals	10	12	15	17	18	17	19	22	22	12
Murias	22	19	21	23	18	21	23	20	19	21

Solution:

Step 1: Null hypothesis: Santhals and Murias do not differ in their marital distance.

Alternative hypothesis: Santhals and Murias differ in their marital distance.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: Calculations:

Santhals			Murias				
X_1	$d_1=X_1-A_1$	d_1^2	X_2	$d_2=X_2-A_2$	D_2^2	A1 =	A2=
10	-6	36	22	2	4	16	20
12	-4	16	19	-1	1	16	20
15	-1	1	21	1	1	16	20
17	1	1	23	3	9	16	20
18	2	4	18	-2	4	16	20
17	1	1	21	1	1	16	20
19	3	9	23	3	9	16	20
22	6	36	20	0	0	16	20
22	6	36	19	-1	1	16	20
12	-4	16	21	1	1	16	20
164	4	156	207	7	31		

$A_1 = 16$ $A_2 = 20$ $M_1 = 16.4$ $M_2 = 20.7$

$n_1 = 10$ $n_2 = 10$ $\Sigma d_1^2 = 156$ $\Sigma d_2^2 = 31$

$S = v [\{\Sigma d_1^2 + \Sigma d_2^2 - n_1 (M_1 - A_1)^2 - n_2 (M_2 - A_2)^2\} / (n_1 + n_2 - 2)]$

$S = v [\{156+ 31 - 10 (16.4 - 16)^2 - 10 (20.7 - 20)^2\} / (10 + 10 - 2)]$

$S = v [\{156+ 31 - 10 (16.4 - 16)^2 - 10 (20.7 - 20)^2\} / (10 + 10 - 2)]$

$S = v [180.5/ 18] = v10.028 = 3.167$

$t = [(M_1 - M_2) * v \{(n_1 * n_2) / (n_1 + n_2)\}] / S$

$t = \{(16.4 - 20.7) * v (100 / 20)\}/ 3.167 = (4.3 * 2.236) / 3.167 = 3.036$

Step 4: Degree of freedom = 10 + 10 - 2 = 18

Step 5: The table value of t at 5% probability level for 9 degree of freedom is = 2.101. The calculated value of t (3.036) is higher than the table value of t (2.101).

You can say that the null hypothesis is rejected and the difference in marital distance between Santhals and Murias is significant.

c) To test the difference between the means of the two dependent samples: This test is used when the researcher is interested in examining whether the mean of two dependent samples differ significantly from each other. The following formula is used for its calculation:

$$t = (d_m * v\, n) / S$$

$$S = v\, [\Sigma (d - d_m)^2 / (n - 1)] \text{ or}$$

$$S = v\, [(\Sigma d^2 - (d_m)^2 * n) / (n - 1)]$$

Where, $d = X_1 - X_2$;

d_m is the mean of the deviations;

n_1 and n_2 are the sample sizes; and

S is the common standard deviation. We would take an example in Box 18.6 to find out differences in observations of two researchers.

Box 18.6 Example: Two observers have taken the income of ten households. Examine whether their observations differ significantly?

	Household No.									
Observers	1	2	3	4	5	6	7	8	9	10
Observer 1	2400	1950	2200	1800	2050	2250	2000	1950	2300	2000
Observer 2	2300	2000	2150	1950	2000	2150	1900	1900	2250	2050

Solution:

Step 1: Null hypothesis: The difference in the observation by the two observers is not significant.

Alternative hypothesis: The difference in the observation by the two observers is significant.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: Calculations:

Household No.	Observer 1	Observer 2	$d = X_1 - X_2$	d^2
1	2400	2300	100	10000
2	1950	2000	-50	2500
3	2200	2150	50	2500
4	1800	1950	-150	22500
5	2050	2000	50	2500
6	2250	2150	100	10000
7	2000	1900	100	10000
8	1950	1900	50	2500
9	2300	2250	50	2500
10	2000	2050	-50	2500
			250	67500

n =10 $d_m = 250/10 = 25$

$S = v [\Sigma d^2 - (d_m)^2 * n / (n - 1)]$

$S = v [(67500 - (25)^2 * 10) / 9]$

S = 82.496

$t = (d_m * v n) / S$

t = (25* v 10) / 82.496 = 0.958

Step 4: Degree of freedom = 10 -1 = 9

Step 5: The table value of t at 5% probability level for 9 degree of freedom is = 2.232. The calculated value of t (0.958) is lower than the table value of t (2.232).

You would say that the null hypothesis is accepted and the difference between the observers is not significant.

d) To test the significance of Correlation coefficient: Whether a coefficient of correlation is significant or not may be tested using the following formula:

$$t = \frac{r * v (n - 2)}{v (1 - r^2)}$$

Where, r is the coefficient of correlation and n is the number of observations. Degree of freedom is n-2. In Box 18.7, we would take an example to test test the importancve of a correlation.

Box 18.7 Example: Using the Following Data to Test the Significance of the Correlation

r = 0.45, n = 102

Step 1: Null hypothesis: The coefficient of correlation is not significant.
Alternative hypothesis: The coefficient of correlation is significant.

Step 2: Probability level for the hypothesis testing is 5%.

Step 3: Calculations:

$t = (r * v (n - 2)) / v (1 - r^2)$

$t = (0.45 * v (100)) / v (1 - 0.45*0.45)$

$t = (0.45*10) / v (1 - 0.2025) = 4.5 / v0.7975 = 4.5 / 0.893 = 5.039$

Step 4: Degree of freedom = 102 -2 = 100

Step 5: The table value of t at 5% probability level for 100 degree of freedom is = 1.96. The calculated value of t (5.039) is higher than the table value of t (1.96).

Thus, you would find that the null hypothesis is rejected and the correlation is significant.

Reflection and Action 18.3

Of the four tests in section 18.4, select one test and carry it out with respect to your own research work. Write it out in detail in your research work report.

18.5 Conclusion

Unit 18 has provided you with a range of ways to draw inferences. There are a good number of examples given for you to try and prepare your own examples. The exercises of working with as many as possible examples would help you to master the skills of testing hypotheses and estimating unknown parameters of the population. You need to keep in mind that no matter what design you used to test a hypothesis, you would reach only approaximations in terms of probability. The testing of a hypothesis prepares for you the ground for generating further hypotheses and in this manner the scientific knowledge progress. Initial approaximations put on firm basis the original hypothesis and from this you can further deduce other hypotheses. If you are able to establish links between propositions you would have generated scientific knowledge.

Further Reading

Handel, J.D. 1978, *Statistics for Sociology*, Englewood Cliffs, N.J.

Watson, G. and McGawd 1980. *Statistical Inquiry: Elementary Statistics for the Political Science and Policy Sciences.* John Wiley: New York

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Unit 19

Correlation and Regression

Contents

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Learning Objectives



It is expected that after reading Unit 19 you would be able to

- ❖ Appreciate the relevance of the analysis of co-variation between two or more variables
- ❖ Describe different types of correlation
- ❖ Elaborate methods of calculating correlation of both ungrouped and grouped data
- ❖ Understand the method of regression analysis that helps in estimating the values of a variable from the knowledge of one or more variables.

19.1 Introduction

In the concluding Section of Unit 18, we mentioned the linkages between propositions. Let us now discuss the subject of correlation and regression.

Unit 19 is about correlation, that is an analysis of co-variation between two or more variables. You would notice that the statistical tool of correlation helps to measure and express the quantitative relationship between two variables. Unit 19 elaborates the ways of applying the tool. It shows the relevance of coefficient of correlation, coefficient of determination and regression analysis in the social sciences. Further, it explains regression analysis, which is the method of estimating the values of a variable from the knowledge of one or more variables. The unit tells you to use the statistical tool of correlation without fear or apprehension that its application is difficult and complex.

19.2 Correlation

Correlation[●] is an analysis of the co-variation between two or more variables. When the relationship between the two variables is quantitative, the statistical tool for measuring the relationship and expressing it in a brief formula is known as correlation. If a change in one variable results in a corresponding change in the other, the two variables are correlated. Let us look at types of correlation.

Types of correlation

Probing into the types of correlation, we contemplate two types : correlation:

A) Positive and Negative correlation;

B) Linear and Non-linear correlation

A) Positive and negative correlation

If the values of the two variables deviate in the same direction, i.e., if an increase in the value of one results on an average in a corresponding increase in the value of the other, or if decrease in the value of one variable results in a decrease in the value of the other, then correlation is said to be p*ositive or direct*. Some examples of a series of positive correlation are (i) height and weight (ii) land owned and household income. On the other hand, if the variables deviate in the opposite directions, i.e. if an increase (decrease) in the value of one variable, on an average, results in a decrease (increase) in the value of the other variable, then the correlation is n*egative or indirect*. Some examples of negative correlation are (i) physical assets and the level of poverty, (ii) muscle strength and age. Figure 19.1 shows the positive and negative types of correlation.

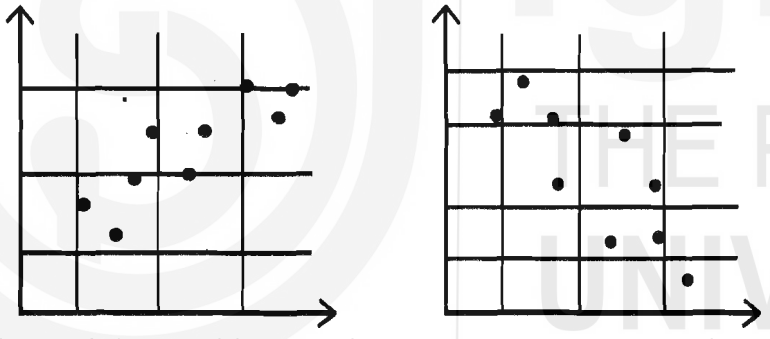


Figure 19.1 (a) Positive Correlation and (b) Negative Correlation

The values of correlation range from -1 to +1.When r = +1, it means there is perfect positive correlation between the variables. When r = -1, there is perfect negative correlation. When r = 0, it means there is no correlation between the two variables (see Figure 19.2).

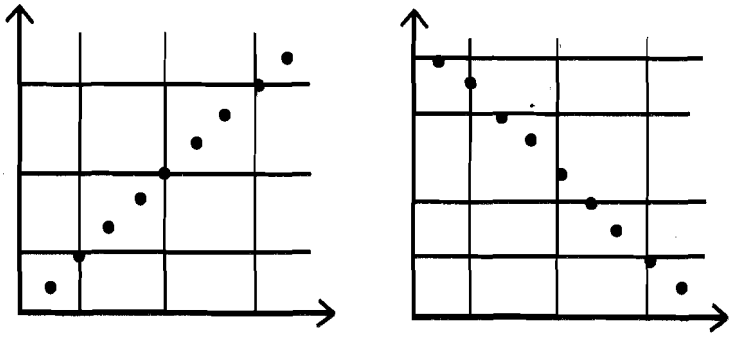


Figure 19.2 (a) Perfect Positive Correlation (r=+1) and (b) Perfect Negative correlation (r =-1)

B) Linear and non-linear correlation

The correlation between two variables is said to be linear if corresponding to a unit change in one variable, there is a constant change in the other variable over the entire range of the values. Consider the following data in Figure 19.3.

X	1	2	3	4	5	6
Y	3	5	7	9	11	13

Figure 19.3 Constant Change Figuring in the Entire Range of Values

In this case, the data in Figure 19.3 can be represented by the relation Y=1 + 2 X. In general, two variables are said to be linearly related if there exists a relationship of the form Y=a + b X.

On the other hand, the relationship between the two variables is said to be non-linear or curvilinear if corresponding to a unit change in one variable, the other variable does not change at a constant but a fluctuating rate. Example of a non-linear correlation is given by the following data set in Figure 19.4.

X	1	2	3	4	5	6
Y	5	8	14	15	18	22

Figure 19.4 Non-linear Correlation

In the example in Figure 19.4, there is fluctuating (not constant) change in the value of Y corresponding to a unit change in the value of X, and thus it represents a non-linear correlation.

You would like to know how to study correlation. Let us briefly discuss the methods of studying correlation. But before going on to metods of studying correlation, let us complete Reflection and Action19.1

Reflection and Action 19.1

Relating to your hypothesis, draw the figure of its positive and negative correlations. Next draw another figure of perfect positive and perfect negative correlations. In addition, draw two more figures of constant change reflected in the entire range of values and non-linear correlation. You may take help of Figures 18.1 to 18.4 in the text above for drawing your figures.

Methods of studying correlation

The various methods to determine whether there is a correlation between two variables are (i) Scatter diagram; (ii) Graphic method; (iii) Karl Pearson's coefficient of correlation; (iv) Rank method; (v) Concurrent deviation method; and (vi) Method of least squares. Of these, the first two are based on the knowledge of diagrams and graphs and the rest on

mathematical tools. Of the several mathematical tools used, the most popular is the Karl Pearson coefficient of correlation (r) and thus we will focus on this method. The procedure is different for calculating correlation from ungrouped and grouped data.

19.3 Method of Calculating Correlation of Ungrouped Data

There are various methods for the calculation of the coefficient© of correlation from ungrouped data.

i) Using actual mean
ii) Using assumed mean
iii) Direct method

The use of all these methods is illustrated with the help of the following example.

Example: Find out the correlation coefficient (Karl Pearson's) between the age at marriage of husbands and wives using the following data in Figure 19.5

Age at Marriage	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	*Case 9*	*Case 10*
Husbands	28	25	24	29	31	22	21	25	26	28
Wives	22	23	21	25	26	20	19	21	21	24

Figure 19.5 Correlation Coefficient between the Age at Marriage of Husbands and Wives

Method of calculating correlation coefficient using the actual mean

You would first learn the method of calculating correlation coefficient using the actual mean and then you would actually carry out the calculation itself.

The formula used for calculating r is:

$$r = \Sigma xy / N * ó_x * ó_Y$$

Where, $x = (X - M_x)$ in which M_x is the mean of series of X values;

$y = (Y - M_Y)$ in which M_y is the mean of series of Y values;

$ó_x$ = Standard deviation of series X

$ó_Y$ = Standard deviation of series Y

N = Number of pair of observations

This formula can also be expressed as:

$$r = \Sigma xy / \Sigma [Óx^2 * Óy^2]$$

The following steps elucidate the calculation of the coefficient of correlation.

I. Take deviations of X series from the mean of X and denote them by x;

II. Square these deviations and obtain the total, i.e. Óx²;

III. Take deviations of Y series from the mean of Y and denote them by y;

IV. Square these deviations and obtain the total, i.e. Óy²;

V. Multiply the deviations of x and y and obtain the total Ó xy; and

VI. Substitute the values of Óx², Óy², and Ó xy in the above formula.

Calculation of correlation coefficient using actual mean

After learning the method, let us now make the calculation as reflected in Figure 19.6

X	$x = X - M_x$	X^2	Y	$y = Y - M_y$	y^2	Xy
28	2.1	04.41	22	-0.2	00.04	-00.42
25	-0.9	00.81	23	0.8	00.64	-00.72
24	-1.9	03.61	21	-1.2	01.44	02.28
29	3.1	09.61	25	2.8	07.84	08.68
31	5.1	26.01	26	3.8	14.44	19.38
22	-3.9	15.21	20	-2.2	04.84	08.58
21	-4.9	24.01	19	-3.2	10.24	15.68
25	-0.9	00.81	21	-1.2	01.44	01.08
26	0.1	00.01	21	-1.2	01.44	-00.12
28	2.1	04.41	24	1.8	03.24	03.78
259	0	88.90	222	0	45.60	58.20

Figure 19.6 Calculation of Correlation Coefficient using Actual Mean

$r = \Sigma xy / ? [Óx^{2*} Óy^2]$

$M_x = 259 / 10 = 25.9$ $M_y = 222 / 10 = 22.2$ $(Óx^2) = 88.9$ $(Ó y^2) = 45.6$ Ó xy = 58.2

$r = 58.2 / v [88.9 * 45.6] = 0.914$

Method of calculating correlation coefficient using assumed mean

The only difference in this method as compared to the above method is that in the former, the deviations are taken from the actual mean, and in this case from the assumed mean (i.e. by looking at the series of X and Y, assume means for X and Y and proceeding in the same manner).

Calculation of correlation coefficient using assumed mean

You would now calculate as per Figure 19.7.

X	D_x=X - Ax	d_x^2	Y	d_Y = Y- Ay	d_Y^2	d_x*d_Y
28	3	9	22	0	0	0
25	0	0	23	1	1	0
24	-1	1	21	-1	1	1
29	4	16	25	3	9	12
31	6	36	26	4	16	24
22	-3	9	20	-2	4	6
21	-4	16	19	-3	9	12
25	0	0	21	-1	1	0
26	1	1	21	-1	1	-1
28	3	9	24	2	4	6
259	9	97	222	2	46	60

Figure 19.7 Calculation of correlation coefficient using assumed mean

$$r = \frac{N\Sigma d_x * d_Y - (? d_X * ? d_Y)}{v\{N \Sigma d_x^2 - (\Sigma d_x)^2\} * v\{N \Sigma d_y^2 - (\Sigma d_y)^2}$$

$$r = \frac{10*60 - (9* 2)}{v\{10*97 - (9)^2\} * v\{10*46 - (2)^2}$$

$$r = \frac{582}{636.697}$$

r = 0.914

Direct method of calculating correlation coefficient

The coefficient can also be calculated by taking actual X and Y values, without taking deviations either from the actual or assumed mean. The formula for its calculation is as follows.

$r = (N * \Sigma XY - \Sigma X * \Sigma Y) / v [N * \Sigma X^2 - (\Sigma X)^2] * v [N * \Sigma Y^2 - (\Sigma Y)^2]$

The direct method gives the same answer as one gets when deviations are taken from the assumed or actual means. The example demonstrates this point in Figure 19.8.

X	Y	X^2	Y^2	XY
28	22	784	484	616
25	23	625	529	575
24	21	576	441	504
29	25	841	625	725
31	26	961	676	806
22	20	484	400	440
21	19	441	361	399
25	21	625	441	25
26	21	676	441	546
28	24	784	576	672
259	222	6797	4974	5808

Figure 19.8 Calculation of correlation coefficient using direct method

Let us now complete Reflection and Action 19.2 and then learn in Section 19.4 the methods of calculating correlation of grouped data.

Reflection and Action 19.2

Select one of the following two calculations and carry it out in relation to your hypothesis. You need not worry about making mistakes in your calculations. At the moment the idea is to learn the procedure. This is not to be a part of your report.

i) Calculation of correlation coefficient using assumed mean

ii) Calculation of Correlation Coefficient using Direct Method

19.4 Method Of Calculating Correlation Of Grouped Data

With a large number of observations, the data is concealed into a two-way frequency distribution called correlation table. The class intervals of Y series are written as column headings and that of the X series are written as row headings. The frequency distribution for the two variables is written in the respective cells. The formula for calculating the coefficient of correlation is:

$$r = \frac{\Sigma f\,{}^{*}d_X{}^{*} d_Y - (\Sigma f_X{}^{*}d_X \,{}^{*} \Sigma f_Y{}^{*}d_Y) / N}{\sqrt{\{\Sigma f_X{}^{*}d_X^2 - (\Sigma f_X{}^{*}d_X)^2 / N\}^{*} \sqrt{\{\Sigma f_Y{}^{*} d_Y^2 - (\Sigma f_Y{}^{*}d_Y)^2 / N\}}}}$$

Steps:

i) Take the step deviations of variable X and denote these deviations by d_X

ii) Take the step deviations of variable Y and denote these deviations by d_Y

iii) Multiply $d_X \,{}^{*}d_Y$ and the respective frequencies for each cell and write the figure obtained in the right hand upper corner of the cell.

iv) Add together all values to obtain $\Sigma f\,{}^{*}d_X{}^{*} d_Y$

v) Multiply all the frequencies of the variable X by the deviations of X and obtain the total $\Sigma f_X{}^{*}d_X$

vi) Take the squares of the deviations of the variable X and multiply by respective frequencies to obtain $\Sigma f_X{}^{*}d_X^2$

vii) Multiply all the frequencies of the variable Y by the deviations of Y and obtain the total $\Sigma f_Y{}^{*}d_Y$

viii) Take the squares of the deviations of the variable Y and multiply by respective frequencies to obtain $\Sigma f_Y{}^{*}d_Y^2$

ix) Substitute the values for $\Sigma f_Y{}^{*}d_Y^2$, $\Sigma f_Y{}^{*}d_Y$, $\Sigma f_X{}^{*}d_X^2$, $\Sigma f_X{}^{*}d_X$, $\Sigma f\,{}^{*}d_X{}^{*}d_Y$ in the above formula to get the value of r.

Let us now take an example to calculate the Karl Pearson's coefficient of correlation using the data in Figure 19.9.

Expenditure on Luxury Items	(Income in Thousand Rs.)				
	20 - 25	25 - 30	30 - 35	35 - 40	40-45
0 - 4	28	12	05		
4 - 8	41	22	09	03	
8 - 12	09	33	28	14	16
12 -16		18	22	29	37
16-20			03	09	12

Figure 19.9 Coefficient Correlation regarding Expenditure on Luxury Items

We can calculate correlation coefficient in grouped data using direct method as seen in Figure 19.10 (See figure 19.10).

Expenditure on Luxury Items	Income in Thousand Rs.)								
	20 - 25	25 - 30	30 - 35	35 - 40	40-45	fy	DY	fy*dy	fy*dy*dy
0 - 4	28	12	5			45	-2	-90	180
4 - 8	41	22	9	3		75	-1	-75	75
8 - 12	9	33	28	14	16	100	0	0	0
12 -16		18	22	29	37	106	1	106	106
16 -20			3	9	12	24	2	48	96
Fx	78	85	67	55	65	350		-11	457
dx	-2	-1	0	1	2				
fx*dx	-156	-85	0	55	130	-56			
fx*dx*dx	312	85	0	55	260	712			

Figure 19.10 Calculation of Correlation Coefficient in Grouped Data

Now we can proceed to calculate fx*dx*dy using direct method as given in Figure 19.11.

Expenditure on Luxury Items	Income in Thousand Rs.)					fx*dx*dy
	20 - 25	25 - 30	30 - 35	35 - 40	40-45	
0 - 4	112	24	0	0	0	136
4 - 8	82	22	0	-3	0	101
8 - 12	0	0	0	0	0	0
12 -16	0	-18	0	29	74	85
16 - 20	0	0	0	18	48	66
fx*dx*dy	194	28	0	44	122	388

Figure 19.11 Calculation of Correlation Coefficient of Grouped Data

$N = 350 \qquad \Sigma f * d_X * d_Y = 388 \qquad \Sigma f_X * d_X = -56$

$\Sigma f_Y * d_Y = -11 \qquad \Sigma f_X * d_X^2 = 712 \qquad \Sigma f_Y * d_Y^2 = 457$

$$r = \frac{\Sigma f * d_X * d_Y - (\Sigma f_X * d_X * \Sigma f_Y * d_Y) / N}{}$$

$$v \{\Sigma f_x * d_x^2 - (\Sigma f_x * d_x)^2 / N\} * v \{\Sigma f_y * d_y^2 - (\Sigma f_y * d_y)^2 / N\}$$

$$r = \frac{388 - (-56 * -11) / 350}{v \{712 - (-56)^2 / 350\} * v \{457 - (-11)^2 / 350\}}$$

$$r = 386.24 / (26.515 * 21.369) = .682$$

Most of the variables show some kind of relationship. With the help of correlation one can measure the degree of relationship between two or more variables. Correlation, however, does not tell us anything about the cause and effect relationship. Even a high degree of relationship does not necessarily imply that a cause and effect relationship exists. Conversely, however the cause and effect relationship (or functional relationship) would always result in the expression of correlation.

We would now discuss regression analysis.

19.5 Regression

Regression© analysis is the method of estimating the values of a variable from the knowledge of one or more variables. The variable that the researcher tries to estimate is called dependent variable (denoted as Y), whereas the variable used for prediction is independent variable (denoted as X). In a regression equation, there may be one or more independent variables, but there is only one dependent variable. Depending on whether there are one or more independent variables, the regression equation is called simple or multiple. The term 'linear' is added if the relationship between the dependent and the independent variable is linear. Thus a simple linear regression equation is represented as

$$Y = a + b X$$

Where, Y is dependent variable

X is independent variable

'a' is regression constant

'b' is regression coefficient. It measures the change in Y corresponding to a change in X.

Similarly a multilinear regression equation is represented as

$$Y = a + b_1 X_1 + b_2 X_2 + \ldots b_n X_n$$

Where, Y is dependent variable

$X_1, X_2, \ldots X_n$, are independent variables

'a' is regression constant

'$b_1, b_2, \ldots b_n$' are respective regression coefficients.

Like the calculation of coefficient of the correlation, there are various methods of calculating regression equation:

1. From actual mean values of X and Y.

2. From assumed mean values of X and Y.

Calculation of regression equation using actual mean

Regression equation (of Y on X) can be calculated using the following formula:

$Y- M_Y = b_{yx} * (X- M_X)$ or

$Y- M_Y = r (ó_Y / ó_X) * (X- M_X)$

As, $b_{yx} = r (ó_Y / ó_X) = (?xy / ?x^2)$, the regression equation may be calculated using the following formula.

$Y- M_Y = (\Sigma xy / \Sigma x^2) * (X- M_X)$

Where, Y and X are dependent and independent variables respectively;

M_Y and M_X are means of Y and X variable respectively; and

$y = Y-M_Y$ and $x = X-M_X$

The following example illustrates the calculation of the regression equation.

Example: Calculate the regression equation using the following data, taking age at marriage of husbands as independent variable and that of wives as dependent variable (see Figure 19.11)

Age at Marriage	*Case 1*	*Case 2*	*Case 3*	*Case 4*	*Case 5*	*Case 6*	*Case 7*	*Case 8*	*Case 9*	*Case 10*
Husbands	28	25	24	29	31	22	21	25	26	28
Wives	22	23	21	25	26	20	19	21	21	24

Calculation of regression equation using actual mean (see Figure 19.12)

Age of Wives Y	$y = Y-M_Y$	y^2	Age of Husbands X	$x = X-M_X$	x^2	xy
22	-0.2	00.04	28	2.1	4.41	-0.42
23	0.8	00.64	25	-0.9	0.81	-0.72
21	-1.2	01.44	24	-1.9	3.61	02.28
25	2.8	07.84	29	3.1	9.61	08.68
26	3.8	14.44	31	5.1	26.01	19.38
20	-2.2	04.84	22	-3.9	15.21	8.58
19	-3.2	10.24	21	-4.9	24.01	15.68
21	-1.2	01.44	25	-0.9	0.81	01.08
21	-1.2	01.44	26	0.1	0.01	-0.12
24	1.8	03.24	28	2.1	4.41	03.78
222	0	45.60	259	0	88.9	58.20

Figure 19.12 Calculation of Regression Equation using Actual Mean

$M_Y = 222 / 10 = 22.2$ $M_X = 259 / 10 = 25.9$

$Y - M_Y = (\Sigma xy / \Sigma x^2) * (X - M_X)$

$Y - 22.2 = (58.2 / 88.9) * (X - 25.2)$

$Y - 22.2 = 0.655 * (X - 25.2)$

$Y - 22.2 = 0.655X - 16.96$

$Y = 5.24 + 0.655X$

Calculation of regression equation using assumed mean (see Figure 19.13)

Regression equation (of Y on X) can be calculated using the following formula, taking the assumed mean:

$Y - M_Y = b_{yx} * (X - M_X)$

Where, $b_{yx} = [\Sigma d_X * d_Y - (\Sigma d_X * \Sigma d_Y) / N] / [\Sigma d_x^2 - (\Sigma d_x)^2 / N]$

Y and X are dependent and independent variable respectively;

M_Y and M_X are mean of Y and X variables respectively

$d_Y = Y - AM_Y$ **and** $d_X = X - AM_X$

AM_Y and AM_X are the assumed mean of Y and X variable respectively; and

Calculation of regression equation using assumed mean

Age of Wives Y	$d_Y = Y - AM_Y$	dy^2	Age of Husbands X	$d_X = X - AM_X$ x	dx^2	dx * dy
22	0	0	28	3	9	0
23	1	1	25	0	0	0
21	-1	1	24	-1	1	1
25	3	9	29	4	16	12
26	4	16	31	6	36	24
20	-2	4	22	-3	9	6
19	-3	9	21	-4	16	12
21	-1	1	25	0	0	0
21	-1	1	26	1	1	-1
24	2	4	28	3	9	6
222	2	46	259	9	97	60

Figure 19.13 Calculation of Regression Equation using Assumed Mean

$M_Y = 222 / 10 = 22.2$ $M_X = 259 / 10 = 25.9$

$b_{yx} = [\Sigma d_X * d_Y - (\Sigma d_X * \Sigma d_Y) / N] / [\Sigma d_x^2 - (\Sigma d_x)^2 / N]$

$b_{yx} = [60 - (9*2) / 10] / [97 - 9*9/10]$

$b_{yx} = 58.2 / 88.9 = 0.655$

$Y - M_Y = b_{yx} * (X - M_X)$

$Y - 22.2 = 0.655 * (X - 25.2)$

$Y - 22.2 = 0.655X - 16.96$

$Y = 5.24 + 0.655X$

Standard error of estimate: Perfect prediction, using a regression equation is not possible (except when correlation value is -1 or + 1). Thus the researcher is interested in finding the accuracy of estimation of a regression equation. Standard error of estimate measures the error involved in using a regression equation as a basis of estimation. It can be calculated using the following equation:

$SEE_{y..x} = v \{\Sigma(Y - Y_c)^2 / N - 2\}$

Where, $SEE_{y..x}$ is Standard error of estimate

Y is dependent variable

Y_c is predicted value of Y

N is the number of observations

It can also be calculated from the following formula

$SEE_{y..x} = v \{(\Sigma Y^2 - a?Y - b\Sigma XY) / N- 2\}$

Where, $SEE_{y..x}$ is Standard error of estimate

Y is dependent variable

X is independent variable

'a' is regression constant

'b' is regression coefficient.

N is the number of observations

Coefficient of determination: Coefficient of determination (r^2) is the square of correlation coefficient (r) and is often used in interpreting the value of the coefficient of correlation. If the value of r were 0.8 then the coefficient of determination or r^2 would be 0.64. This would mean that 64% of variance of one variable (dependent) is explained in terms of the other variable (independent).

Reflection and Action 19.3

I tried to understand how to make the calculation of regression equation using assumed mean. I could not succeed. May be you can explain it to me with an example. Write out on a separate sheet of paper your explanation with one or two examples. May be I will then follow it. You will need to send it to the co-ordinator of MSO 002.

19.6 Conclusion

Unit 19 is the last unit of Block 5 on Quantitative Methods. All five units of this block have emphasised that quantitative methods should be used in social research when they are necessary and relevant and can provide superior results. Sometimes you can use them in combination with the qualitative methods. You need not avoid the quantitative methods because

of lack of information or apprehension that it is difficult to understand them. The five units of block 5 have provided you appropriate examples wherever possible and necessary to help you understand the tools that are very useful in your research project assignment.

Further Reading

Burns, Robert B. 2000. *Introduction to Research Methods*. Sage Publications: London

Cohen, Louis and Michael Holliday 1982. *Statistics for Social Research*. Harper and Row: London

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Unit 20

Survey Method

Contents

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Learning Objectives 

It is expected that after reading unit 20 you will be able to Proceed with organising a mini research project in terms of preparing for data collection

- ❖ Work out the relevance of survey method of data collection for your research
- ❖ Spell out the techniques of carrying out a survey in your own research
- ❖ Gain confidence in pointing out benefits and weaknesses of the survey method to be used by you in your research.

20.1 Introduction

In Block 5 you acquired, whenever required, the skills of carrying out statistical calculations for arriving at significant results from the data collected during research. The question arises as to how do you collect data? What are the different ways of gathering relevant facts regarding the subject of your research? Unit 20 is about one of the ways of collecting facts and figures pertinent to your research. The unit begins with the question of why should one use the survey method of data collection? Next, it goes into the historical background of survey research and explains what is survey research. It mentions the practice of sampling in data collection but does not go into its details because Unit 15 in Block 5 and Unit 21 in Block 6 deal with the subject of sampling in ample detail. The unit discusses how to actually carry out a survey and outlines the advantages and weaknesses of survey research.

Unit 20 is only an introductory note on the important subject of survey method. Units 21,22 and 23 provide you with full details of survey research so that you may actually carry out a survey as part of your mini research project, a requirement for completing MSO 002. I hope that you have selected a topic for your research project and identified its methodology.

20.2 Rationale of Survey Research Method

Social science research techniques are often classified into two categories, namely, qualitative and quantitative. Qualitative research enables us to understand the subtle aspects of social relations. They are particularly useful when one is interested in probing a specific question in depth, its meanings and their different interpretations. However, qualitative methods also have their limitations. They are, for example, more suitable when research is being carried out in a small setting or is focused on a specific group or community. Qualitative research methods are not very useful when we need to know about macro phenomena, such as the demographic structure of a population or the extent and nature of poverty or disease.

Quantitative methods or survey research enables us to study these questions in a more comprehensive manner. Depending upon the requirement, survey research can be extended to as large an area/ population as a whole nation or even the entire world. Thus when the universe of study is large and the researchers are looking for broad trends or patterns in a given population they often resort to survey methods. In other words, qualitative and quantitative research methods are not opposed to each rather they are complementary. The two can be combined, one enriching the other.

An important feature of survey research is that unlike qualitative methods, which are generally used by specialist researchers, survey research does not have the monopoly of sociologists or economists. Surveys have become part and parcel of modern life, constituting almost an industry

The contemporary world is often described as the "information society". This implies that the flow of information has become its most crucial and central aspect. Recent advances in telecommunication technologies have made this flow of information easier as well as critical for the working of present day society, its politics and its economics.

As is the case with information society, "agrarian" and "industrial" societies too were products of major breakthroughs in technology. Some sociologists think that there have been primarily three revolutions in human history, namely, agricultural revolution, urban revolution and industrial revolution. However, the agricultural and industrial societies are defined primarily in terms of their major economic activity, that is, the nature and means of production. By comparison, the term "information society" has a different connotation. While production (whether agricultural or industrial) continues to be central, it is carried out in a regime of information. In decision-making processes, farmers and factory owners work on the basis of the available information. In some cases the producers themselves generate such information before they plan production of certain commodities.

Similarly, consumers decide about consumption according to the

information that mass media make available to them. Markets depend a great deal on the flow of information. Each time a company decides to launch a new product, it undertakes extensive marketing surveys about the tastes and purchasing powers of potential buyers. Producers are expected to provide information about their products to potential buyers through advertisements, particularly in those media which have a larger impact on the people.

Information, its production and distribution has also become an important sector of the economic system. It provides employment to a large number of people and generates a huge amount of wealth. There are a number of professional organisations and companies in almost every country that carry out surveys for all kinds of clients, from business houses to political parties. This is what we meant when we said earlier that survey is an industry in the contemporary world.

Information has also become crucial for the modern state and the functioning of the democratic systems. Almost the entire policy making process of the modern welfare state is based on information (see Box 20.1).

Box 20.1 Information Gathering by the State

Various organs of the state collect all possible information about its population through periodic censuses and surveys. The Government of India, for example, has a specialist body called National Sample Survey Organization (NSSO), which periodically undertakes sample surveys of the Indian population on various social and economic parameters. The data that it generates is used by various government agencies for formulating policies and programmes. Similarly, the Indian Planning Commission also has a 'programme evaluation wing', which undertakes surveys in order to evaluate the working of various developmental programmes. Other departments of the government also sponsor surveys focused on the issues of their concern. Similar institutions are found in other parts of the world. The point is that the information about populace is essential not only for governance but also for formulating and executing the programmes of development, and as such information is generated through periodically carried out surveys.

Global agencies involved with developmental activities either generate their own information about the economic well being of populations in different parts of the world or depend upon the available data on various subjects (such as poverty, unemployment, health). The World Bank and the different agencies of the United Nations periodically publish reports on different aspects of the existing state of affairs in a given country.

The political process too has become information oriented. Political parties in modern democracy closely monitor "public opinion" and articulate their priorities accordingly. Similarly, citizens in modern democracies also form their opinions about various political parties on the basis of information they get from several sources. Psephologists©, who carry out surveys on 'public opinion' before elections and make predictions (or projections)

about the possible outcome of elections, have come to acquire a respectable place in politics and media. Television channels and newspapers undertake elaborate surveys during election times on the prospects of various political parties and the voting behaviour of people. Similarly, in countries like the United States of America and other Western democracies, the media and the corporations constantly monitor the popularity ratings of their leaders and political parties, both in power and outside.

Besides the fact that surveys have gained in importance in the modern world, they have always been an important research method. They have been used for understanding the emerging trends or patterns in a given population or for testing hypotheses. Some of them may have policy implications, while some may be purely for academic interest. For example, sociologists interested in understanding the process of secularisation may undertake surveys on how often people perform religious rituals in their everyday social, economic and political life.

20.3 History of Survey Research

Though systematically carried out surveys have a short history, rulers in the past have always been interested in finding out what was going on in their states and the condition of their subjects. There are umpteen stories of rulers (or their representatives) going to meet the public, sometimes incognito, with the explicit intent of enquiring about their welfare and any seeds of discontent. This was considered extremely important for proper rule. In ancient times roman emperors polled surveys of their citizens. The Victorians social reformists undertook surveys and interviewed ten to twenty thousand persons for seeking an adequate representation of opinions.

However, survey research in its systematic form began after the Industrial Revolution and urbanisation of Europe. Karl Marx was perhaps the first social scientist to collect information from some key informants about the condition of industrial workers and tried to relate it to his theory of class society and class struggle. On the basis of such data he also tried to quantify workers' exploitation in terms of working hours and wages rates (see Box 20.2 on early surveys).

Box 20.2 Some Early Surveys.

The first systematic survey was supposedly carried out by Henry Mayhew, a Scottish philosopher and social reformer, who wanted to find out about the living conditions in Edinburgh in the early 19th century and asked ordinary people to report on their situation. With reformist zeal, Charles Booth initiated a survey on *Labour and Life of the People of London* in 1886. The findings of his survey were published in seventeen volumes between 1889 and 1902. Around the same time several other surveys were carried out, mostly in Great Britain and elsewhere in the Western world, focusing primarily on the measurement of poverty.

20.4 Defining Survey Research

Survey research is basically a method of gathering information from a population on a given subject. Unlike qualitative research, survey research invariably covers a large population; but it does not imply that it collects information from each and every individual. Statisticians have designed various methods of drawing a representative sample from a given population, which can reveal trends for the entire population.

Quantitative research methods are often classified into two types, namely, census and sample based survey research. When information is gathered from each and every member of the population, or in other words, when all units of the population are covered for information, it is called census. But it is an expensive, lengthy and time-consuming process. Therefore, we focus on a portion (or unit) of the population; it is from the study of a part that we arrive at an understanding of the whole. When a part (or section, or unit) of a population is studied, it is called 'sample survey research'. The term 'sample' is used for the part of a population that is subjected to study. Identifying such a portion or sample population is not easy. In order to make a survey scientific and representative, one must follow a scientific procedure.

20.5 Sampling and Survey Techniques

Sampling is a method that identifies a representative number from a given universe of population. There are two basic properties of a sample.

i) It should be adequate.

ii) It should be representative of the universe (the 'entire population').

The most crucial point in sampling is to make sure that one's personal values do not influence the selection process. In order to keep out the researcher's bias, various techniques or procedures of selecting a sample have been suggested. For detailed information on sampling see Unit 15 of Block 5 and Unit 21 of Block 6.

Let us at this stage complete Reflection and Action 20.1 exercise.

Reflection and Action 20.1

You can assess the usefulness of a survey in terms of its purpose and therefore it is necessary that you do not confuse the kinds of material you are going to collect. In order to gain more clarity on this point, answer the following questions on a sheet of paper.

Is the survey of "facts" that you count yourself the same as a survey of facts which are reported by respondents and only tallied by the researcher?

Are the respondents' opinions or statements about items not social facts and as such worth researching about?

Is it not necessary to consider whether and how you would locate them in the social context and use to fill out your understanding of the "facts" that you counted yourself?

20.6 Operationlising Survey Research Tools

An important step in any kind of research is the preparation of research tools. Survey research is typically carried out with the help of a questionnaire or interview-schedule. Preparing a questionnaire and interview schedule is the most important step in survey research (see Box 20.3 on the difference between a questionnaire and an interview).

Box 20.3 The Difference between a Questionnaire and an Interview

When the respondents themselves fill in the answers (or responses) to the questions asked, it is called questionnaire. In a schedule, the investigators read out the questions to the respondents and fill in the responses.

There are different ways of approaching a respondent. The simplest way is to approach the potential respondent directly. That is how most surveys are conducted. A research team would invariably go to a village or a locality and try talking to the head of the household (HOH). Questionnaires are also sent by mail; such questionnaires are called 'mailed questionnaires'.

Another method of approaching the respondent is the household drop-off survey. In this the researchers go to the respondents' homes (or businesses) and hand over the questionnaires to the respondents. The respondents can be either requested to mail them back to the researchers or the researchers may personally go to collect them at a later date.

Some researchers have also started using telephones for approaching respondents and filling the interview schedule through conversation on phone. Telephone interviews have become a popular mode of carrying out surveys in countries like the United States of America. There are obvious advantages of such an approach. Telephone interviews can save a lot of time. One can also cover a large area or population through telephone surveys without having to travel. The researchers can also approach the respondents at a later date and ask follow-up questions. Today, e-mail is also being used for mailing questionnaires.

However, in a country like India telephones (or e-mail) are still a privilege of the few. Though some rural areas are now connected by telephone, not every household has a telephone connection. In fact, only a small proportion of the entire population in cities has telephone connections. Thus, only in certain kinds of research where the respondents are largely from middle class backgrounds that one can use the method of telephonic interviews. In such settings not everyone will be willing to respond positively to a request for an interview on telephone. Even when they agree, the interviews generally will have to be short and precise.

Perhaps the best way of carrying out a survey is through personal interviews. Unlike the mail survey or telephone (or e-mail) interviews, in personal interviews, the researchers have opportunities of not only getting

responses from the respondents directly but also get the opportunities of probing some questions which may be beyond the scope of the survey but may help in enriching the data, finding answers to certain critical questions, and sometimes even in identifying further questions.

Once the data have been collected, the researchers have to codify and process the data in a manner that it becomes presentable in tabular form and charts. It should also become accessible for use for statistical treatment that would tell us about the different qualities of the data. Issues relating to processing of data and its presentation in the report will be discussed in detail in the units of Block 8.

20.7 Advantages and Weaknesses of Survey Research

Survey research has the following advantages:

i) Survey research is relatively inexpensive (especially self-administered surveys).

ii) Survey research is useful in describing the characteristics of a large population, demographic structure of a population, and its emerging trends and patterns.

iii) Survey research can be administered from remote locations using mail, e-mail or telephone. Consequently, very large samples are feasible, making the results statistically significant even when analysing multiple variables.

iv) In survey research one can ask many questions about a given topic, which gives considerable flexibility to the analysis.

v) We can choose different ways of administering a survey. From face-to-face interviews to telephones and e-mails one can use any mode of collecting data depending on one's requirements and limitations.

vi) Unlike the qualitative methods, survey research is carried out through standardized questions, which makes measurement more precise by enforcing uniform definitions upon the participants. Standardisation ensures that similar kinds of data are collected from groups and then interpreted comparatively (between-group study),implying more objectivity and higher reliability.

Following are some of the common problems with survey research:

i) A preoccupation with standardisation results in designing questions in very general terms to make them minimally appropriate for all respondents. This could lead to simplification and one may end up missing what may be most appropriate to many respondents.

ii) Survey research is inflexible in the sense that it requires a precise study design. Everything must be worked out in advance, the

tools to be used and the method of administering the tools. In order to make a survey methodologically sound, it should remain unchanged throughout the period of data collection.

iii) In order to make a survey viable and meaningful the researcher has to make sure that a large proportion of selected respondents agree to respond. This, however, may not always be an easy task to achieve. In such situations carrying out a survey becomes difficult.

iv) Surveys also demand a great deal of attention and honesty on the part of respondents, particularly when a questionnaire is being used and the survey is self-administered. Respondents may not always be willing to give such attention to filling the questionnaire. Sometimes, it may be hard for participants to recall certain information or to take a clear position on controversial issues.

v) Another problem with survey research is that it is invariably context-blind. However, in the social world, context and the environment in which questions are being asked and answers given is very important. For example, the responses of a female respondent being asked questions about gender equality in her home, in the presence of her husband and other family members, may be very different from the same questions asked at her work place where she is employed. Survey research can rarely sea lhe the questions of "context".

Reflection and Action 20.2

In his note on Social Surveys in the chapter, Producing Data, Mitchell (1984: 272) wrote,

Obviously, the constraints imposed upon data collection in normal survey work mean that the sort of information collected will be of a different quality from that collected by observation and by extended interviewing. Survey data are likely to provide estimates of the variability and extent of different patterns of association but they naturally do not lend themselves to following out leads or to exploring the cognitive and affective implications to the respondent of the links being studied.

Read the above excerpt from Mitchell's note and in the light of your reading of Unit 20, answer the following questions on a sheet of paper.

i) What are the constraints imposed upon data collection in normal survey work?

ii) Can you find an example of a survey that provides estimates of variability and extent of different patterns of association? For this purpose you may use issues of the Economic and Political Weekly and find an example of survey with the above material.

iii) What does the term 'links' refer to in the above passage? Does it refer to data about networks in surveys?

20.8 Conclusion

Unit 20 aimed at familiarising you with survey method and its relevance in social research. Tracing the history of survey method, it elaborated on

the procedure of carrying out survey and pointed out both its advantages and weaknesses. Unit 20 has prepared adequate background for you to read the details of survey design, instrumentation and execution in the next three units of Block 5.

Further Reading

Moser, C. A. and G. Kalton 1973. *Survey Methods in Social Investigation*. The English Language Book Society: London

de Vaus, D.A. 1986. *Surveys in Social Research*. George Allen and Unwin: London

Young, P. V. 1988. *Scientific Social Surveys and Research*. New Delhi: Prentice Hall.

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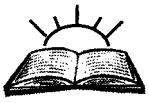
Unit 21

Survey Design

Contents

21.1 Introduction
21.2 Preliminary Considerations
21.3 Stages / Phases in Survey Research
21.4 Formulation of Research Question
21.5 Survey Research Designs
21.6 Sampling Design
21.7 Conclusion

Learning Objectives



It is expected that after reading Unit 12 you would be able to

- ❖ Work out (a) the purpose of enquiry, (b) the unit on which the survey is to focus and (c) the availability of resources
- ❖ Divide the survey research into stages or phases
- ❖ Formulate the kinds of questions to be asked during the survey
- ❖ Decide the type of research design to employ
- ❖ Choose a sampling plan for survey.

21.1 Introduction

Design elements are crucial in understanding the complexity of undertaking a survey. The survey method involves several aspects, which are crucial for its execution in a systematic and scientific manner. Unit 21 provides a description of the basic dimensions of survey in social research. The topics discussed in this unit are: preliminary considerations for undertaking survey research, different stages/phases in conducting a survey, formulation of research questions, types of research design, and details of sampling design.

21.2 Preliminary Considerations

There are three preliminary considerations before any researcher decides to undertake survey as a method of social investigation. The considerations are

i) Purpose of enquiry,
ii) Population on which survey is to focus, and
iii) Resource availability.

Each of these considerations is essential for survey research.

The first prerequisite for undertaking survey research is clear and well-defined objectives, purposes or research questions. The researcher must be clear that the survey method is the best method to study those objectives (purposes or research questions). If there is a clear idea

about the objectives of a research study, it leads to the choice of the appropriate survey as a method of investigation.

The second prerequisite is specifying the population of study. This influences the decisions about sampling and resources. The accessibility of the population is an important element in developing survey design. It judges the duration of study, the different layers of people to be included and the size of the research staff as well as the sample.

The third important prerequisite in designing a survey is to take stock of the resources availability for study. Resources may be in the form of financial costs, manpower requirement and the total time within which the survey has to be completed. Surveys are usually labour intensive, the single largest expenditure being the fieldwork costs which include the interviewing time, travel time, and transport costs, etc. There are additional costs involved in survey research, namely, training and supervision of interviewers, questionnaire construction, pilot testing the questionnaire, printing, posting, coding, computer programming, etc. Thus, the researcher must estimate the availability of resources before starting the survey research.

21.3 Stages / Phases in Survey Research

Survey research calls for a systematic and comprehensive collection of information about the attitudes, beliefs and behaviour of people. In a survey, the researcher follows a deductive approach. He begins with a theoretical or applied research problem and ends with empirical measurement and data analysis. Once a researcher decides that survey is the best and appropriate method to undertake his research, then elaborate steps are taken in order to make the application of the method more scientific and systematic. Further, there is no unanimity among the researchers on the actual number of steps or their ordering. However, here we deal with a few major steps in three phases/stages that cover the preparation, planning and execution of survey research (See Figure 21.1).

Stages / Phases in Survey Research		
Design and Planning Phase	**Data Collection Phase**	**Data Analysis and Reporting**
1. Research Question Formulation 2. Decide Survey Research Design 3. Draw the Sample 4. Data Gathering Techniques 5. Questionnaire Construction 6. Pilot Survey 7. Finalising the Survey Instrument 8. Training of the Investigators	1. Locating the Respondents 2. Accessing the Respondents and Field Settings 3. Supervision and Monitoring of Main Survey	1. Editing 2. Coding 3. Tabulation and Analyses 4. Write-up

Figure 21.1 Major Steps in Three Stages of Survey Research

The first phase covers design and planning for a survey. This is a very elaborate and long phase in which the details of conducting a survey are worked out. It is crucial as it sets the ground for the actual survey.

The important steps in this phase are formulating a research question, deciding the survey research design, working out the sampling procedure, deciding the data gathering techniques, construction of a questionnaire, conducting a pilot survey, modifying the survey instrument, training field investigators/interviewers.

The second phase involves the execution of the main survey for data collection. It includes locating and accessing the respondents and field settings, conducting the survey, monitoring and supervision of the field personnel.

In the third and final phase, the researcher edits the data collected, prepares codebook, and decides the tabulation for data analysis. Finally, the researcher prepares the Write-up/Report of the study.

The listing of steps in a sequential form may give the impression that once a step is covered there is no turning back. However, to the contrary, it is often necessary to alter decisions made at an earlier point in the light of developments during the later stages of research. For instance, the problems encountered during the execution stage may call for modification either of the sampling design or of the type of instrument for collection or of the questionnaire. Further, it is also a mistake to assume that these steps can be followed one at a time without any regard for subsequent steps. In reality, it is often important to keep in mind the other steps while working out the details of one step. For instance, it is necessary to keep in mind the intended data analysis procedures while constructing a questionnaire.

21.4 Formulation of the Research Question

The first step in a survey design is the formulation of a research question. Research question here refers to the major goal problem or objective of the study. In fact, the formulation of a question should precede the selection of survey method for data collection. Though survey has a wide range of applications in the social sciences, it may at times turn out that the other methods of data collection (such as in-depth interviewing or participant observation, etc.) may be more appropriate or suitable to the problem chosen. Thus, it is necessary to think of the appropriateness of the survey method for investigating a particular research problem.

Further, it may be kept in mind that there is a need to formulate a research question at the beginning of research. But, this emphasis does not mean that the initial research question is the final one (see Box 21.1). Often research questions arise unexpectedly in the middle of a conversation with informants. These need not be ignored. Their addition or modification of questions decided earlier is always a useful excercise.

Box 21. Refine Your Research Questions

According to David de Vaus (2002), it is important to know what we are looking for, it is a mistake to let the initial focus blind us to other unanticipated questions which may perhaps be more interesting, important or manageable than the initial one. Research questions can be refined and new issues emerge in the course of survey research.

How does one arrive at a research question? Often, the researcher's curiosity about a particular social phenomenon guides him to choose a particular research question. However, the researcher can formulate his research question in more than one way. First, the starting point could be a theory or a model. The choice of theoretical framework or model will have implications for the kind of questions that are to be formulated and the kind of data that are to be collected. Second, significant social policy implications may guide researchers in formulating their research problem. In other words, the problem chosen should be relevant to the issues of social improvement, social change, or social action. Third, the goal of producing social criticism may lead some researchers to formulate research questions suitable for that objective. Some research questions may meet several or some of these criteria, but it is rare that a research question will meet all of them.

Further, it is important that the survey's general purpose be translated into a specific central problem/aim/objective. It is not enough to say, for example, 'I am interested in getting some answers about inequality'. One should be clear about the kinds of questions one wants to answer. What answers to what questions? Does he want to know the extent of inequality, its distribution, its causes, its effects, or what? What sort of inequality one is interested in - social, political, economic, etc? Over what period? Where?

The process is of narrowing down from a general area of interest to a level that is specific enough for concrete empirical research to be carried out. After specifying the primary objective of the survey, the next step involves identification and itemising of the subsidiary topics that relate to the central purpose. For example, in a study of student attitudes to the quality of undergraduate education in a college, the subsidiary issues may include the quality of teachers, the infrastructural facilities, the admission procedures, the type of courses offered, the content of the courses, the interaction between teachers and students, the facilities for remedial study, the facilities and scope for extra-curricular activities, etc. Once the subsidiary items have been identified, the researcher looks for the specific information required relating to each of those items. For example, with respect to the type of courses required, detailed information is needed on the duration of courses, the status of the courses (credited or non-credited), orientation of the courses (theoretical or practical), etc.

A thorough review of the existing literature (books and journals) on the

topic is helpful while narrowing the specific topic, identifying the subsidiary topics, itemising the subsidiary topics and spelling out the kind of information required on these topics for data collection. A review of literature is helpful because it reveals to us the scope and coverage of research that has already been conducted and helps us in identifying important gaps so that an attempt could be made to fill those gaps through survey research.

There are other ways too that can help a researcher in formulating his research question. One is the exploratory study, which is a tentative and relatively unstructured investigation of a few people who are similar in many respects to those we intend to study as part of the main investigation. For instance, if we intend to work on the quality of undergraduate education in a college, one may have to visit an undergraduate college, interview a few students, and identify the specific research questions for the study. The most important goal of such an exploratory study is that it stimulates the thinking of the researcher and helps him identify specific issues that may be worthy of inclusion in the study. Sometimes, it may help us in understanding the way the concepts are understood differently by different people. For instance, in our earlier example, different students may view differently the notion of 'quality' in undergraduate education. For some, it may mean good teachers/ teaching. For others, it may be good infrastructure or a range of relevant courses of study, etc.

Another aspect of the research question formulation is that of consultation with those who are knowledgeable about the topic and who have done related research. An encounter with these experts can help researchers in anticipating the pitfalls of the proposed research study.

Reflection and Action 21.1

Suppose you have to carry out a survey of waste disposal methods, and you need to formulate research questions. Work out the major goal problem or objective of your study. Write down answers to the following questions on a sheet of paper.

Questions

- In the light of the objective of your study, do you find the survey method a useful and appropriate way of data collection? Provide specific reasons of accepting or rejecting survey method as a method of data collection.
- How have you arrived at each of the research questions? State clearly the choice of your theoretical model.
- Have you looked at the social policy with regard to waste disposal? Elaborate the implications of the policy in terms of it guiding your research problem.
- Is your study going to generate social criticism of an issue of importance for the general public? If yes, you need to work out how your study is going to lead other researchers to formulate further research in the same area.
- Have you transformed the general objective of your study into a specific central problem? It is important that you do this exercise at this stage and state the narrowing down of the problem from general to specific level for concrete research to be carried out.

- ❖ Have you consulted the experts in the area of your research to find out what to expect in your field of inquiry and what are the likely pitfalls to anticipate and to be careful about?

Write your answers to above questions with the help of the relevant text in Section 21.4.

Types of research questions

There is no simple way to define research questions. However, according to David de Vaus, we can delineate different kinds of questions and provide guidelines to help focus research -- descriptive research questions or explanatory research questions or both.

a) Descriptive research questions

It is difficult to focus a descriptive question but five questions can help.

- ❖ What is the time-frame of our interest?
- ❖ What is the geographic location of our interest?
- ❖ patterns for sub-groups?
- ❖ What aspect of the topic are we interested in?
- ❖ How abstract is our interest?

b) Explanatory research question

The first step in formulating explanatory research question is to decide whether we are looking for causes or consequences. We must list possible causes and consequences and then collect relevant data. There are a number of ways of coming up with such a list, namely, previous research, the facts, our own hunches, an interaction with the informants.

Four questions might help formulating explanatory research question.

- ❖ What am I trying to explain?
- ❖ What are the possible causes?
- ❖ Which causes will I explore?
- ❖ What are the possible mechanisms?

Thus, there are varieties of issues that need to be kept in mind while formulating the research question that proposes to undertake survey as a method of data collection. It actually triggers the mind of the researcher as how to operationalise the research.

21.5 Survey Research Designs

After the formulation of the research question, we must decide the type of design to employ. Research designs for surveys are mainly of two types, namely, experimental and descriptive. Experimental designs use environmental arrangements and rely on two or more groups of a participants or observations. When a randomly constituted group of a hundred children is compared three times, the survey design is called experimental. The descriptive design produces information on groups and phenomena that already exist. No new groups are created. Descriptional designs are also called 'observational' or 'explanatory' designs.

Experimental designs

According to Arlene Fink (1995), experimental designs are characterised by comparing two or more groups, at least one of which is experimental. The other is a control (or comparison) group. An experimental groups is given a new or untested, innovative programme, intervention, or treatment. The control is given an alternative (e.g. the traditional programme or no programme at all). A group is any collective unit. Sometimes, the unit is made up of individuals with a common experience, such as men who have participated in a war or those who have had undergone treatment at a hospital or those who have attended a particular school. At other times, the unit is naturally occurring: a classroom, business, hospital, or a prison.

There are different types of controls. Firstly, there are concurrent controls in which participants are not randomly assigned to groups. 'Concurrent' means that each group is assembled at the same time. For example, when 10 of 20 schools are randomly assigned to an experimental group while, at the same time, 10 are assigned to a control group, you have a randomised trial or true experiment. Secondly, there are concurrent controls in which participants are not randomly assigned to groups. These are called non-randomised controlled trials, quasi-experiments, or non-equivalent controls. Thirdly, in 'self-controls', a group is surveyed at two different times. These require pre-measure, post-measures, and are called 'longitudinal' or 'before-after' designs. Fourthly, 'Historical Controls' which make use of data collected for participants in other surveys. Finally, 'combinations' of all consist of concurrent controls with or without pre or post-measures. Of all the experimental designs, longitudinal designs are used quite often in social research.

Longitudinal designs

In a longitudinal[◎] design, data are systematically collected over a period of months or years in such a way that it is possible to observe trends in attitudes or behaviours over the specified period. Consider the following example. If a researcher is interested in studying the changes in the spending behaviour of the white-collar employees, she or he will have to conduct the study at different points of time in a year or periodically. A study of this kind of a problem involves longitudinal (or time-series) designs.

Trend studies and panel studies

There are two types of longitudinal designs: Panel Study and Trend Study. In a panel study, the same respondents (people) are interviewed two or more times. In a trend study, two or more different samples of people (respondents) are drawn at different times from the same population (for examples see Box 21.2). You may have noticed that the television and newspaper media draw samples from time to time to study trends.

Box 21.2 Examples of Panel Study and Trend Study

Suppose we wish to understand the changing support for the leading political parties in the general elections to Parliament, two months before the election. For this study, we draw a sample of adults in the voting age group and 60 percent support, let us say, Political Party I. One month before the election, we re-interview the people who were a part of our sample. Perhaps, 55 percent of them now support Political Party I. This would be a panel study. On the other hand, if we draw a new sample of voters, one month before, and find that 55 percent of the new voters preferred Political Party I, this would be a trend study.

Trend studies provide information on net changes and panel studies provide information on both net and gross changes. Suppose at Time 1, sixty out of every 100 people say they would vote for Political Party A . Between Time 1 and Time 2, 10 of the Political Party A voters might change their opinion and vote for Political Party B and five of the Political Party B might vote for Political Party A. Thus, between Time 1 and Time 2, many people have changed their vote (opinion) and this is a gross change. The net result of these individual changes is that at Time 2, 55 of every 100 people would vote for Political Party A. Thus, if we use a panel design we can count the number of people in our sample who change their opinion between Time 1 and Time 2. If we use a trend design, we can describe the net change in the population, but we cannot count the number of individual change. If the net change is 5 percent (from 60 percent to 55 percent supporting Political Party A), the gross change might be anywhere between 5 percent and 85 percent. Trend studies describe how the distribution of a variable is changing for the population studied. Panel studies describe how individual members of a population are changing (see Box 21.3 for an example of panel design).

Box 21.3 An Example of Panel Design

Lazarsfeld, et.al, find a classic example of panel design in "The People's Choice". (1944). The researchers interviewed a panel of 600 residents of Erie County, Ohio (USA), once a month between May and November of 1940 with respect to how they intended to vote in the presidential election of 1940. Of particular interest to these investigators was the process by which panel members decided to vote the way they eventually did.

There are both advantages and disadvantages to panel designs. Most of the advantages relate to being able to interview the same respondents repeatedly over a period of months or years to see if any changes occur in their thinking and attitudes. If we find shifts in attitudes or reported behaviour, we are in a better position to argue that there has been a real change in the population.

Another advantage of panel design is that they permit much more information to be collected about each respondent than is feasible through

other designs. Panel designs also avoid a heavy dependence on the memory of respondents for information about his time covered by the panel. However, they may still rely on memory for questions about the respondent's past.

The primary disadvantage of panel study is sample mortality; that is, there will be a loss of panel members owing to lack of cooperation, death, or change of residence, etc. Another disadvantage is that it takes a long time to collect data and hence the costs involved may be more. Further, repeated surveys on the same population may cause respondents to become overly sensitized to their role as "selective" respondents.

Descriptive designs

There are two types of descriptive designs, namely, cross-sectional designs and cohort designs.

Cross-sectional designs

In a cross-sectional[@] design, the data is collected at one point in time. This is the most frequently used and most fundamental design in social survey research and is sometimes called 'single-shot survey'. This design is most appropriate for making inferences about the characteristics of the population from which the sample is drawn, and inferences about the relationships between variables at that point in time at which data is collected. The interviewing for such studies is sometimes carried out in less than a week, but more typically requires a few weeks and in some cases a few months. For example, a survey of current people's choices of a political party is a cross-sectional survey.

A researcher might use the data either to describe a sample on one variable or a number of variables or to demonstrate the association between these variables. Consider the following example. A researcher is interested in exploring the attitudes of the parents on the education of their children. He selects a sample of households with school going children in a community (Rural/Urban) and interviews the parents in those select households. After the interviews are completed, the researcher analyses the data and draws conclusions. The research design involved here is a cross-sectional design.

One of the advantages of this design is that a researcher can classify a sample into many quite different sub-groups to explore the separate dimensions of the research topic. A researcher may also use this design in causal analysis. Interestingly, by asking questions about the past it is possible to study certain longitudinal (overtime) social phenomena such as social mobility using a cross-sectional design.

However, the cross-sectional designs have two important limitations: (1) it is difficult to establish the time order of the variables, (2) it is difficult to analyse change over time. To illustrate the first point, suppose in a study, we find that the organisational affiliation is associated with political efficacy, feelings that one can influence the political system. The question

arises as to whether our respondents first joined organisations and later came to feel efficacious because of their experiences in that organisation, or whether they felt efficacious first, which led them to join a particular organisation. Alternatively, whether both causal sequences are operating, either for different people or for the same people. If we gathered data at one point in time, it is difficult to know when differences on each variable developed. Since causes come before effects, it is difficult to know in a cross-sectional design which variable should be taken as independent, causal agent.

A second limitation of the cross-sectional design is that it is difficult to use it for analysing changes over time. Consider the analysis of voting behaviour. At any given point during an election, we can ask respondents how they would vote 'if the elections were held today'. However, voting decisions might change during a campaign and different voters may exhibit different patterns of change. Some know their choice from the beginning and never vary; some switch back and forth between candidates; some are undecided until Election Day. Moreover, people who decide early in a campaign and never waver may have different characteristics and may experience different pressures than people who decide late. In sum, data collected at one time make it difficult to understand social processes that occur over time.

ii) Cohort designs

These forward-looking, or prospective, designs provide data about changes in a specific population. Suppose a survey of the aspirations of athletes participating in the 1996 Olympics is given in 1996, 2000, and 2004. This is a Cohort® design and the Cohort is 1996 Olympics.

Cohort designs can also be retrospective, or look back over time (a historical Cohort) if the events being studied actually occurred before the onset of the survey. For example, suppose a group of persons was diagnosed ten years ago with disease X. If you survey their medical records to the present time, you are using a retrospective Cohort.

Reflection and Action 21.2

In the case of your study of waste disposal methods, you would have formulated research questions and then also refined them. For making clear the type of research questions and the type of research design you have formulated and adopted, answer the following questions on a sheet of paper.

Questions

- Are the questions formulated by you a mix of different types mentioned in the text or of one specific type only?
- What type of survey design have you selected for the survey in your research on waste disposal methods?

Write in detail about the type of design you have selected and also give reasons why you have selected this one and not any of the other designs mentioned in the text.

21.6 Sampling Design

After survey design has been selected, a sampling plan must be chosen. Many details about sampling have been discussed earlier in the units of Block 4 and Block 5, and therefore I am including only those that are new.

Why sampling?

Because the researchers may not include the whole of the population in survey research for reasons of costs and manpower, a part of the population is selected for understanding the characteristics of a population. Sampling, therefore, is a process of systematically selecting cases for inclusion in a research project. A researcher gets a set of cases (or a sample) that is more manageable and cost effective to work with than the pool of all cases. For example, it would be much less costly and time consuming to measure variables on 200 than 20,000 people. The researcher is not just interested in a small subset of cases. Instead, he would like to generalise about the entire pool. If well done, sampling lets the researcher measure variables on the smaller set of cases but generalise results accurately to all cases. For instance, if sampling is well conducted, a researcher can measure variables with, say, 2000 cases, and generalise to 200 million. Survey researchers argue strongly that there would only be 2 - 4 percent variation if all the 200 million cases were used for the study.

The next question is how it is possible to generalize from a handful of cases. It is not based on any magic, but on logical statistical reasoning that has been tested repeatedly with empirical evidence. Moreover, a researcher cannot use just any sample for the purposes of generalization. There are well laid down sampling procedures that require rigorous exercises in order to increase the level of precision in a study.

Basic terms in sampling

i) Sampling element

A sampling element is the unit of analysis (or case) in a population. It can be a person, a group, an organisation, a written document, or symbolic message, or even a social action (a divorce, a fight, etc.) that is being measured.

ii) Population

It is the large pool of elements from which a sample is drawn. Sometimes, the term 'universe' is used interchangeably with 'population'. To define the universe or population, a researcher specifies the unit being sampled, the geographical location, and the temporal boundaries of populations. The term 'target population' refers to the specific pool of cases the researcher wants to study.

iii) Sampling ratio

The ratio of the size of the sample to the size of the target population is the 'sampling ratio'. For example, a college has 2000 students, and a researcher draws a sample of 200 from it. Thus the sampling ratio is 200/2000 = 0.1, or 10 percent.

iv) Sampling frame

A population is an abstract concept. Except for specific small populations, one can never truly freeze a population to measure it. For example, in a city at any given moment, some people are dying, some are traveling outside the city, some have gone on temporary migration to other cities, and some are taking birth. The researcher must decide exactly who to count. Should he count a city resident who happens to be on a holiday or outside the city when the time is fixed for the study? Therefore, the notion of 'population' is abstract and it exists in the mind, but is impossible to pinpoint concretely. Since it is an abstract concept, except for small populations, a researcher needs to estimate the population. Thus, it requires an operational definition.

A researcher operationalises a population by developing a specific list that closely approximates all the elements in the population. This list is a 'sampling frame'. The researcher may choose from many types of sampling frames: telephone directories, driving licences, ration cards, membership of a club, students' registration in a university, etc. A good sampling frame is crucial to good sampling. A mismatch between the sampling frame and the conceptually defined population can be a major source of error. For instance, if you select the telephone directory as a sampling frame, it constitutes only 5-10 percent of the population in a city, say, Delhi. The directory does not list those who do not have a telephone connection. It also does not update quickly the frequent shifts of residences and changes in telephone numbers in a city.

v) Parameter and statistic

Any characteristic of a population is a 'population parameter'. For instance, students from the science stream of children in the age group 6-11 years, etc. It is the true characteristic of the population. Parameters are determined when all elements in a population are measured. The parameter is never known with absolute accuracy for large populations, so researchers must estimate it as based on samples.

Researchers use information from the sample, called a 'statistic', to estimate population parameters.

Sampling errors

If many samples are taken from the same population, it is unlikely that they will all have characteristics identical either with each other or with the population. In brief, there will be what is called 'sampling error'. Sampling error is not necessarily the result of mistakes made in the sampling procedure. Rather, variations occur due to the chance selection of different individuals.

Types of sampling designs

Sampling designs are of two types. The first is called probability-sampling design and the second is non-probability sampling design. In Unit 15 of Block 5 our focus was on how to carry out calculations while here we are discussing each type of sampling design in terms of its essential character

and procedure. All the same you are likely to find some repetition of subject matter which has been retained to reinforce the learning of the same.

i) **Probability sampling design:** Probability sampling provides a statistical basis for stating that a sample is representative of the 'target population'. In probability sample, every element in the population has a known chance of being included in the sample. That means, every member of the target population has a non-zero probability of being included in the study/sample. This allows for estimates of the accuracy of sample findings in approximating what we would find out if we had conducted a census of the total population.

ii) **Non-probability sampling design:** In non-probability sampling designs, we do not know whether an element of the population has an equal chance of being selected. Its probability of selection cannot be determined, as is that with probability sampling where each element has a 50 percent chance of being selected and 50 percent chance of not being included in the sample. The non-probability samples are drawn based on judgment regarding the characteristics of the target population and the needs of survey. With non-probability sampling, some members of the eligible target population have a chance of being chosen and others do not. Thus, the statistical estimates of precision cannot be made with this sample. The non-probability sampling designs are preferred when there is no possibility of probability sampling. Whenever feasible, probability-sampling designs are preferred.

Probability sampling procedures

i) Simple random sampling

In simple random sampling, each member of the population under study has an equal chance of being selected. The method involves selecting at random from a list of the population (a sampling frame) the required number of subjects for the sample. Because of the probability and chance, the sample should contain subjects with characteristics similar to the population as a whole. For example, some old, some young, some tall, some short, some rich, some poor, etc. One essential requisite for this kind of sampling is that a complete list of the population (sampling frame) is needed.

The biggest advantage of simple random sampling is that a researcher can get an unbiased sample without much technical difficulty. For instance, once a member (or element) is selected, he (or it) is not eligible for a second chance and is not returned to the pool. This is what makes a simple random sample relatively unbiased. The typical ways of selecting a simple random sample are mainly through a lottery or through a table of random numbers or now through computer generated random numbers. The lottery method is adopted for smaller populations or sampling frame. For bigger sampling frames, the computer-generated numbers are selected.

It may be kept in mind that simple random sampling may not guarantee a perfect representation of the population. In other words, it may be wise to say that most random samples are close to the population most of the time but may not perfectly match the entire population.

ii) Systematic sampling

This is a modified version of simple random sampling. It involves selecting cases/elements from a population list in a systematic rather than random fashion. Here, the researcher calculates a 'sampling interval' rather than using a list of random numbers. The interval becomes his quasi-random selection method. Thus, in a systematic sample, every 'n'th member has a chance to be included in the sample. For instance, if we are to select 10 cases out of a total of 100, every tenth will have a chance to be selected. In this case, 'n' is any number between 1 and 10. Thus, the starting point in the systematic sampling is chosen at random.

In most cases, a simple random sample and a systematic sample yield virtually equivalent results. One important situation in which systematic sampling cannot be substituted for simple random sampling occurs when the elements in a sample are organised in a cycle or pattern. For example, if sampling is organised of married couples with the male first and female second, such a pattern gives the researcher an unrepresentative sample if a systematic sample is a used. His systematic sample can be non-representative and include only wives or only husbands, depending upon the manner in which cases are organised or patterned.

iii) Stratified sampling

Stratified sampling involves dividing the population into homogenous groups (sub-groups or strata) each group containing subjects with similar characteristics. For example, in the earlier example, Group A might contain only males and Group B only females. After dividing the population into strata or sub-groups, the researcher draws either a simple random sample or systematic sample or both from each of the sub-groups.

How does one decide on sub-groups? The strata or sub-groups are chosen because evidence is available that they are related to the outcome. The justification for the selection of the strata can come from literature and expert opinion.

In stratified sampling, the researcher controls the relative size of each stratum, rather than letting random processes control it. This guarantees representation of different strata within a sample. However, one condition is that the stratified sampling procedures produce samples that are more representative of the population than simple random sample or systematic sample if the stratum information is accurate.

iv) Cluster sampling

The most widely employed probability sample design in survey research is cluster sampling. It addresses two problems - first is the lack of good sampling frame, and second the costs involved in reaching a sampled element or a case. For example, there is no single list of undergraduates

in colleges of a city. Even if one gets an accurate sampling frame, it would cost too much to reach many of the undergraduates as the colleges are spread out geographically in the city. In this case, instead of using a single sampling frame, researchers use a sampling design that involves 'clusters'. In this case, the cluster will be the college.

A cluster is a naturally occurring unit (e.g., a school, which has many classrooms, students, teachers; a city with zones, namely, Each, West, South, Central, North, etc., states, etc.). The clusters are selected randomly and all members of the selected clusters are included in the sample or simple random or systematic or stratified samples are taken out of each cluster. Cluster sampling is used in large surveys. It differs from stratified sampling in that with cluster sampling one starts with a naturally occurring constituency. The researcher selects from among the clusters and either surveys all members of the selection or randomly selects from among them. The resulting sample may not be representatives of areas not covered by the cluster, nor does one cluster necessarily represent another.

v) Stage sampling

Stage sampling, also known as multi-stage sampling, is an extension of cluster sampling. It involves selection of a sample in several stages. That is, taking samples from samples. Suppose we want to survey children's academic performance in schools from a large city. One type of stage sampling might be to select a number of schools; at random, and from each of these schools select a number of classes and select children from within these classes. Another type of stage sampling could be to select one school, in terms of either the geographic region of the school in the community/city or in terms of the type of school (public, private aided, private unaided, etc.) and take their simple random sampling, systematic sampling, or stratified sampling or even mixture of all these.

Non-probability sampling procedures

i) Accidental or convenience sampling

This is also called 'man-on-the-street' survey and it involves choosing the individuals/cases that are readily available on the street, at a market place, at a school, or at a cinema theatre, etc., until the required sample size is obtained. This kind of survey can produce ineffective, highly unrepresentative samples and is not recommended. When a researcher haphazardly selects a sample that is convenient, he can easily get a sample that seriously misrepresents the population. Such samples are cheap and quick, although biases and errors are there in plenty. An example of this kind of survey is the kind of interviews television programmes conduct on the street.

ii) Quota sampling

Quota sampling has often been described as the non-probability equivalent of stratified sampling. In quota sampling, the researcher divides the population into sub-groups or categories such as men and women, reserved

castes and non-reserved castes, arts and commerce, younger and older, etc., and then decides the proportion of individual in each category or sub-group. Thus, the number of respondents is fixed in various categories of the sample.

Quota sampling is an improvement because the researcher can ensure that some population differences are in the sample. However, it is not to argue that it is fully representative. For instance, once quota categories are selected in quota sampling, the actual number of individuals in each category is selected based on the convenience or accidental sampling. Further, the researcher bias might also creep into the selection of actual cases of individuals who are included in the study.

iii) Purposive or judgmental sampling

In purposive sampling, researchers handpick the cases to be included in the sample based on their judgment of their typicality. That means, the judgment of the researcher is used in selecting cases with a specific purpose in mind.

Purposive sampling is appropriate in the following three situations. First, a researcher uses it to select unique cases that are especially informative. Second, a researcher may use purposive sampling to select members of a difficult-to-reach, specialised population. Third, the purposive sampling is preferred when a researcher wants to identify particular types of cases for in-depth investigation.

iv) Dimensional sampling

This is a further refinement of quota sampling. It involves identifying various factors of interest in a population and obtaining at least one respondent of every combination of those factors.

v) Snowball sampling

It is also called a network or chain referral or reputational sampling and it is a method for identifying and sampling (or selecting) the cases in a network. Snowball sampling is based on an analogy to a snowball which begins small but becomes larger as it rolls on wet snow and picks up additional snow. Friendship networks are the most important sources of this kind of sampling. Further, professional associations, chat groups, etc. may also provide bases for such sampling.

Sample size

A question often asked is of the size of the sample. How large should it be? The best answer could be 'it depends'. That means there is no clear-cut answer to this question. However, the literature on survey sampling does give a general advice to prospective survey researchers. For some people, a sample of thirty is the bare minimum if the researcher plans to some form of statistical analysis of the data. However, the size of the sample depends on the plans of the researcher and how accurate the sample has to be for his purposes, and on population characteristics. It may be stated here that a large sample alone does not guarantee a

representative sample. Further, when we increase the sample size, we increase costs. Larger samples mean increased costs. A researcher may keep in mind all these considerations while judging the size of the sample.

In Section 15.3 of Unit 15, you have already learnt how to calculate sample size, when estimating mean and when sampling for proportion.

Reflection and Action 21.3

Discuss in a note of about five hundred words the sampling type and design of the survey you need to carry out in your research on waste disposal methods. While writing the note, take help of the relevant text in the unit.

21.7 Conclusion

This unit has attempted to discuss the initial concerns of the survey researcher. It spelled out the essential prerequisites for undertaking a survey and the steps to be followed in survey research in order to make it more systematic. The unit provided a detailed account of research question formulation, survey research designs, and the sampling designs. Thus, it tried to equip the student with the basic terms and concepts and the process with suitable examples.

Further Reading

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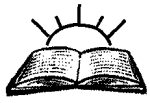
Unit 22

Survey Instrumentation

Contents

22.1 Introduction
22.2 Techniques/Instruments for Data Collection
22.3 Questionnaire Construction
22.4 Issues in Designing a Survey Instrument
22.5 Conclusion

Learning Objectives



It is expected that after reading Unit 12 you would be able to

- ❖ Understand techniques of data collection
- ❖ Practice the art of constructing questions
- ❖ Highlight the issues of reliability and validity in designing survey instruments.

22.1 Introduction

A reliable and valid instrument enhances the quality of data collected. If a reliable instrument is consistent and valid, it is also accurate. In other words, an instrument becomes reliable when each time it is used, the same information flows. A poorly worded survey instrument can seriously affect precision, affecting the entire research process. The researcher must be careful in developing the instrument for survey in order to enhance its quality and purpose.

22.2 Techniques/Instruments for Data Collection

In this section we will discuss i) types of survey instruments, ii) role of the interviewer, iii) stages of an interview and iv) interview bias.

i) Types of survey instruments

There are five principal types of instruments (or techniques) used in survey research. They are: (a) self-administered questionnaires, (b) face-to-face interviews, (c) telephone interviews, (d) internet survey, and (e) structured observation. Each of these instruments has its advantages and disadvantages, which are discussed below.

a) Self-administered questionnaire

A self-administered questionnaire consists of questions that an individual completes by himself or herself. Self-administered questionnaires can be mailed or completed 'on site', say, on a computer or by hand in a classroom, waiting room, or office. The respondents read the questions, then record their answers.

Advantages: Self-administered questionnaires have a clear advantage regarding cost. Since interviews are not part of the data gathering process, the expense of interviews is minimised. This reason alone probably accounts for the fact that so much survey research is conducted by self-administered questionnaires. Another advantage of this instrument is that respondents have time to consider (and ponder over) questions carefully. There is no pressure to react to questions right away as is often the case in an interview. Some respondents feel more comfortable expressing their actual reactions to questions on sensitive topics (sex, politics, and religion) on a self-administered questionnaire than they do in an interview.

In a mailed questionnaire, the researcher can send questionnaires to a wide geographical area and the respondents can complete when it is convenient and can check their personal records, if necessary. Mailed questionnaires offer anonymity and avoid interviewer bias. They are very effective and response rates are high for a target population that is well educated, or has a strong interest in the topic or the survey organization.

Disadvantages: The biggest disadvantage of the questionnaire is low response rate. Respondents may consider questionnaire filling a waste of time. Questionnaires are less successful in those social contexts where oral traditions reign and written traditions are in the back seat. When the attempt is to reach a cross-section of the population, a response rate of 10 percent (and less) may not be uncommon with questionnaires. The researchers may raise response rates by sending reminders, but this adds to the time and cost of data collection. Moreover, reminders, howsoever gentle, may be interpreted as irritants. A partial explanation of this low response rate is that some people have a difficult time filling out questionnaires. For purposes of filling out even simple written questionnaires, the literacy level must be high.

Further, a researcher cannot control the conditions under which a questionnaire is filled. For instance, if the questionnaire is completed during a get-together, there will be many others around the respondent influencing his answers. Some respondents may fill out the questionnaire in the presence of their family members, who may aid in giving answers. Sometimes, someone other than the sampled respondent may complete the questionnaire without the researcher's knowledge. Some respondents may complete the questionnaire weeks apart or answer questions in a different order than that intended by researchers. Incomplete questionnaires can also be a serious problem. Researchers cannot visually observe the respondent's reactions to questions, physical characteristic or the setting in which questionnaires are filled.

The self-administered questionnaire format limits the kind of questions a researcher can ask. Questions requiring visual aids (e.g. look at the picture and tell me what you see), open-ended questions, many contingency questions, and complex questions do poorly in self-administered questionnaires.

b) Face-to-face interview

An interview requires at least two persons: one to ask the questions (the interviewer) and the other, to respond (the interviewee). However, in some cases, group interviews are also possible.

Advantages: Face-to-face interview is generally the best data gathering technique for survey research. This approach enables the researcher to obtain information from a much larger percentage of those sampled than do self-administered questionnaires, particularly those mailed. One reason is that it is more difficult for respondents to refuse cooperation when they are directly confronted and requested to respond to questions than when they receive a questionnaire and are asked to fill it out themselves. The interviewing situation also increases the response rate because many respondents who are unable to fill out a questionnaire by themselves can and will respond to the same questions when asked by an interviewer.

The face-to-face interview enhances not only the response rate, but also the quality of response. When questions are not understood by a respondent, the interviewer can clarify their meaning by the use of 'probing questions'. If a respondent does not answer a question in the proper frame of reference, an interviewer can follow up by asking: "Could you explain what you mean by what you just said?" The use of such probes can eventually bring the respondent around to providing the information sought by a particular question. Besides clarifying doubts, the additional questioning can add depth of information which a respondent provides. A further advantage of face-to-face interviews is that the respondent can ask for clarifications to the questions. It is less likely that false answers will be given by respondents directly to the interviewer.

Disadvantages: The advantages of face-to-face interviews over self-administered questionnaires are conditional: the effectiveness of the confrontation depends on good interviewers who achieve the respect of respondents. A considerable disadvantage of face-to-face interviews is that it is expensive. In fact, the cost can be prohibitive for many survey research situations, particularly, training, supervision, and personnel costs for interviews can be too high. Another disadvantage in a face-to-face interview is the possibility of interviewer bias. The appearance, tone of voice, question wording, and so forth of the interviewer may affect the respondent.

c) Telephone interviews

By telephone interviews is meant those interviews that are conducted on telephone, where the voice of the interviewer is used.

Advantages: Comparatively speaking, the telephone interview is less expensive. It can often provide a representative sample at less than half the cost of face-to-face interviewing. Telephone interview is a popular survey instrument where a large number of respondents have telephones. Further, if concessions and discounts are obtained from telephone

companies, it becomes far more inexpensive as an instrument of data collection.

Disadvantages: People without telephone connections (normally, poor people) and people with unlisted telephone numbers (the well-to-do and those who have recently shifted residence) have to be excluded from telephone surveys. Telephone interviews yield only one-third of the information that could normally be obtained from face-to-face interviews. In the telephone interview, the interviewer cannot use the visual questioning technique (e.g. handing the respondent a lengthy list of alternative response categories) available in self-administered and face-to-face interviews. Moreover, relatively high cost of telephone calls in many parts of the world along with the limited interview length are the main shortcomings of this instrument.

In addition, open-ended questions are difficult to use. Interviewers can only note serious disruptions (e.g. background noise) and respondent's tone of voice (e.g. anger, flippancy or hesitancy).

d) Internet survey

Since the mid-1990s, the internet has become a viable and popular means of administering questionnaires. There are two main ways in which the internet has been used as an instrument for survey: e-mails and via web pages.

i) **E-mail surveys**: E-mail questionnaires are the cheapest of all the techniques of survey research. They come in three different forms. First, as plain text-questions inserted as part of an e-mail. This is the most basic method of e-mail survey in which respondents simply edit the mail message to indicate their response. Second, a formatted questionnaire sent as an e-mail attachment. Third, an interactive questionnaire, which can be sent as an attachment, answered and returned by email.

ii) **Web Page based surveys:** These surveys require that the respondent visit a page (URL). From this page, they will be given a questionnaire. Typically, respondents are recruited for web page questionnaires in one of the following ways:

❖ Pop-up questionnaires: When a person happens to visit the page, a questionnaire will pop up or the respondent will be asked if he wants to go to URL (web address) to answer a questionnaire. This method of sample recruitment depends entirely on people happening to visit the site and then agreeing to answer the questionnaire.

❖ Advertising on other sites: Other sites might advertise a survey. This method can attract people from a wide range of sites and results in a large number of responses but it is difficult to think what population such a sample represents.

❖ Listserve, news group and chat group advertising: A researcher

may advertise questionnaire or invite participants from people an internet based lists.

❖ E-mail invitations: These may be sent to people whose e-mail addresses are available. The researchers may use both e-mail and web pages based surveys together also. It may be borne in mind that the shortcomings of this instrument are more or less the same as those of the telephonic interviews.

Table 22.1 Types of Surveys and their Features

	TYPE OF INSTRUMENT		
Features	Self-administered Interview	Telephone Interview	Face-to-face Questionnaire
(a) Administrative Issue			
1. Cost	Cheapest	Moderate	Expensive
2. Speed	Slowest	Fastest	Slow to Moderate
3. Length (Number of Questions)	Moderate	Short	Longest
4. Response Rate	Lowest	Moderate	Highest
(b) Research Control			
1. Probes Possible	No	Yes	Yes
2. Specific Response	No	Yes	Yes
3. Question Sequence	No	Yes	Yes
4. Only One Respondent	No	Yes	Yes
5. Visual Observation	No	Yes	Yes
(c) Success with Different Questions			
1. Visual Aids	Limited	None	Yes
2. Open-ended Questions	Limited	Limited	Yes
3. Contingency Questions	Limited	Yes	Yes
4. Complex Questions	Limited	Limited	Yes
5. Sensitive Questions	Same	Same	Same
(d) Sources of Bias			
1. Social Desirability	No	Same	Worse
2. Interviewer Bias	No	Same	Worse
3. Respondent's Reading Bias	Yes	No	No

e) Structured observation

A structured observation collects data visually and is designed to guide the observer in focusing on specific actions or characteristics. For example, two visitors to a school would be participating in a structured observation if both are asked to count and record the number of

computers they see, look for the presence or absence of air conditioning and measure the room's area in square feet. This is a very rarely used instrument/technique in survey research. It is more frequently used in participant observation.

Reflection and Action 22.1

Suppose you have to carry out a survey of waste disposal methods in your area. Which of the above discussed survey instruments would you like to select for your survey? Give specific reasons why you would select one instrument and not any other mentioned in Section 22.2.

ii) Role of the interviewer in social survey

To gather information interviews occur in several settings. Employers interview prospective employees, doctors interview patients, mental health professional interview clients, social workers interview the needy, reporters interview politicians, police interview the witnesses and victims. But, survey research interviewing is a special kind of interviewing. As with most interviewing, its goal is to obtain as far as possible accurate information.

Interview is not just about asking questions. It includes quite a bit of information about the social context in which the interview occurs.

The survey interview is a social relationship. Like other social relationships, it involves social roles, norms, and expectations. The interview is a short term, secondary social interaction between two strangers with the explicit purpose of one person obtaining specific information from the other. The social roles are those of the interviewer and the interviewee or respondent. Information is collected in a structured conversation in which the interviewer asks prearranged questions and the respondent answers. It differs in several ways from ordinary conversations. (See Table 22.2).

Often characteristics of the respondents and the interviewer, such as sex or race or age affect the way either the interviewer or the respondent would reflect attitudes and behaviour that is unrelated to the interview itself.

An important problem for interviewers is that many respondents are unfamiliar with the survey respondents' role and respondents often do not have a clear conception of what is expected of them. As a result, they substitute another role that may affect their responses. Some believe the interview is an intimate conversation or therapy session, others see it as a bureaucratic exercise in completing forms, others view it as a testing session, etc. Even in a well-designed, professional survey, follow-up research found that only half the respondents understand questions exactly as intended by researchers. Respondents reinterpreted questions to make them applicable to their idiosyncratic, personal situations or to make them easy to answer.

Table 22.2 Differences between Structured Interview and Ordinary Conversation

Sl.No	Ordinary Conversation	Sl.No	Structured Survey Interview
1.	Questions and answers from each participant are relatively equally balanced.	1.	Interviewer asks and respondent answers most of the time.
2.	There is an open exchange of feelings and opinions.	2.	Only the respondent reveals feelings and opinions.
3.	Judgments are stated and attempts made to persuade the other to a particular point of view.	3.	Interviewer is non-judgmental and does not try to change respondent's opinions or beliefs.
4.	A person can reveal deep inner feelings to gain sympathy or as a therapeutic release.	4.	Interviewer tries to obtain direct answers to specific questions.
5.	Ritual responses are common (e.g. 'Un huh', shaking head, 'How are you?' 'Fine').	5.	Interviewer avoids making ritual responses that influence a respondent and also seeks genuine answers, not ritual responses.
6.	The participants exchange information and correct the factual errors that they are aware of.	6.	Respondent provides almost all information. Interviewer does not correct a respondent's factual errors.
7.	Topics rise and fall and either person can introduce new topics. The focus can shift directions or digress to less relevant issues.	7.	Interviewer controls the topic, direction, and pace. He keeps the respondent "on task", and irrelevant diversions are contained.
8.	The emotional tone can shift from humour, to joy, to affection, to sadness, to anger, and so on.	8.	Interviewer attempts to maintain a consistently warm but serious and objective tone throughout.
9.	People can evade or ignore questions and give flippant or non-committal answers.	9.	Respondent should not evade questions and should give truthful, thoughtful answers.

Thus, the role of the interviewer is crucial. The interviewer has to obtain cooperation, build rapport, yet remain neutral and objective. He has to encroach upon the respondent's time and privacy for information that may not directly benefit the respondent. The investigators have to try to reduce embarrassment, fear, and suspicion so that respondents feel comfortable while revealing information. Good interviewers monitor the pace and direction of the social interaction as well as the content of answers and the behaviour of respondents. They are non-judgmental and do not reveal their opinions, verbally or non-verbally (e.g., by a look of shock). If a respondent asks for an interviewer's opinion, he politely redirects the respondent and indicates that such questions are largely inappropriate and may be out of context. For instance, if a respondent

asks, "what do you think?", the interviewer may answer politely, "Here, we are interested in what '*you*' think; what I think doesn't matter". Likewise, if a respondent gives a shocking answer (e.g. I was arrested three times for beating my wife), the interviewer does not show shock, surprise, or disdain but treats the answer as a matter of fact. He helps respondents in giving truthful answers.

One may ask, "if survey interviewer must be neutral and objective, why not use a robot or machine?" Machine interviewing has not been very successful because it lacks human warmth, sense of trust, and rapport that an interviewer creates. An interviewer helps define the situation and ensures that respondents have the information sought, understand what is expected, give relevant and serious answers, and are motivated to cooperate. Therefore, the interview is a social interaction in which the behaviour of both interviewer and respondent stems from their attitudes, motives and perceptions.

It may also be borne in mind that the interviewers do more than interview respondents (see Box 22.1).

Box 22.1 Time Allocation of Interviewers' Work schedule

Moser and Kalton (1973) note that face-to-face interviewers spend only about 35 percent of their time interviewing. About 40 percent is spent in locating the correct respondent, 15 percent in traveling, and 10 percent in studying the materials and dealing with administrative aspects and recording details.

iii) Stages of an interview

The interview is conducted in stages, beginning with an introduction and entry. The interviewer gets into the door, shows authorisation, and reassures and secures cooperation from the respondent. He is prepared for reactions such as, "How did you pick me up?" "What good would come out of this?" "I don't know about this?" The interviewer should explain why the specific respondent has been chosen for interviewing and why he cannot be substituted or replaced by anyone else.

The main part of the interview consists of asking questions and recording answers. The interviewer asks the appropriate questions in order, without returning to or skipping questions unless the directions specify this. He goes at a comfortable pace and gives non-directive feedback to maintain interest.

In addition to asking questions, the interviewer records answers. This is easy for close-ended questions, where interviewers just mark the correct box. For open-ended questions, the interviewers' job is more difficult. They listen to the respondent carefully, record in a legible writing what is said verbatim without correcting grammar or slang. Moreover, the interviewers need to avoid summarising or paraphrasing because this causes a loss of information or distorts answers.

The interviewer should know how and when to use probes. A *probe* is a neutral request to make clear an ambiguous answer to complete an incomplete answer, or to obtain a relevant response. Interviewers recognise an irrelevant or inaccurate answer and use probes as needed.

There are many types of probes

- A three-to-five seconds pause;
- Non-verbal communication (e.g. tilt of head, raised eyebrows, eye contact, etc.)
- Repetition of the question or the answer, and then pause
- Ask a neutral question (such as 'Any other reasons'?)

The last stage is the exit, when the interviewer thanks the respondent and leaves. He then goes to a quiet private place to edit the questionnaire and record other details, while they are still fresh in mind. Other details include the date, time, and place of interview; a thumbnail sketch of the respondent's attitude (serious, angry, laughing, etc.). The interviewer records the personal feelings also on the sides. For instance, "the respondent became nervous when questioned about his income".

iv) Interviewer bias

Interviewer bias falls into six categories

i) Errors by respondent - forgetting, embarrassment, misunderstanding, or lying because of the presence of others.

ii) Unintentional errors or interviewer sloppiness - contacting the wrong respondent, misreading a question, omitting questions, reading questions in the wrong order, recording the wrong answer to a question, misunderstanding the respondent.

iii) Intentional subversion by the interviewers -- purposeful attention of answers, omission or rewarding of questions, etc.

iv) Influence due to the interviewer's expectations about a respondent's answers based on the respondent's appearance, living situation, etc.

v) Failure of an interviewer to probe or to probe properly.

vi) Influence on the answers due to interviewer's appearance, tone, attitude, reactions to answers, or comments made outside of the interview schedule.

Further, there are some other factors which might influence the interviewer. For instance, the social setting in which the interview occurs and the interviewer's social background (race, caste, gender, social class, etc.) may also affect the responses.

22.3 Questionnaire Construction

All the data gathering techniques (or instruments) we have discussed

earlier employ a set of questions to which the respondents are asked to reply. This set of questions is referred to as a questionnaire for self-administered questionnaires, mailed questionnaires as well as internet surveys and as an interview schedule for face-to-face interviews and telephonic interviews. This section considers the types of questionnaires and the questions, discussing the guidelines for constructing a good questionnaire or interview schedule.

In this section we will discuss i) types of questionnaires, ii) types of questions, iii) designing a good questionnaire, and iv) things to avoid in questionnaire construction.

i) Types of questionnaires

There are three types of questionnaires, namely, structured, unstructured and semi-structured questionnaires. Structured questionnaires use structured (or closed) questions that provide a respondent with a set of options and it is expected that he picks up one out of many. It does not give much freedom or choice to the respondent. These questionnaires are used when the respondent is a high profile person or professional and who does not want to give longer time for the interview. The unstructured questionnaire includes only the open-ended questions without any options being provided to the respondent. The semi-structured questionnaires include both structured (closed) and unstructured (open) questions and are the most widely used in social research.

ii) Types of questions

a) Structured (closed) and unstructured (open-ended) questions

As mentioned earlier, the structured questions provide the alternative (multiple choice) answers from which the respondent chooses an option. The following is an example.

Example 1: If the general elections were held today, for which party would you vote?

- ❖ Congress
- ❖ B.J.P.
- ❖ CPI(M)
- ❖ Any other (Specify)
- ❖ Don't Know

The alternative answers for a structured question are printed on the questionnaire and either the respondent or the interviewer (depending on the type of instrument) ticks off the appropriate response. Another example of a structured question is the following.

Example 2: How do you feel about the Central Government's initiative to make education a fundamental right?

- ❖ Strongly Approve
- ❖ Approve
- ❖ Ambivalent

- ❖ Disapprove
- ❖ Strongly Disapprove
- ❖ Don't Know

The second question is a better example of a structured (closed) question than the first one because the alternative responses cover the full range of relevant (approving or disapproving) answers. The first question obviously fails by this criterion of completeness because it does not include current political parties, which are potential options. Notice that both questions have a "don't know" category. It is important to have such a category for structured questions because some respondents really may not know how they feel about such issues. However, the researcher generally does not volunteer this as a response alternative because many respondents would use it just to avoid making a decision among the other alternatives.

On the other hand, unstructured (open-ended) questions do not predetermine the possible answers from which the respondent must choose. The following is an example.

Example 3: What do you feel are the major problems facing our nation today?

_____

_____

_____

Instead of providing the possible answers, the questionnaire leaves space for the respondent to answer the question in his own words. In other words, the issue is left open. Such questions have the advantage of allowing for the expression of the depth and complexity of the respondent's feelings and attitudes about a particular topic.

One disadvantage of unstructured questionnaires is that they produce data, which is sometimes difficult to analyse quantitatively because the categorisation of responses must take place after the data has been collected. In some cases, the answers given by respondents vary so much that it becomes impossible to discern a relatively small number of response patterns. This problem does not occur with structured questions because the categories of response on the questionnaire become the categories used for data analysis.

Another important use of structured questions is in the measurement of abstract concepts such as anomie, social class, etc., using an index or scale, which combines several structured questions.

It should be made clear that structured (closed) and unstructured (open-ended) questions have their advantages and disadvantages and that some topic areas are best covered by one or the other question type. For example, the issues for which there is general agreement about the possible alternative replies are best tapped by structured questions. However,

structured questions sometimes inappropriately force respondents to select an answer from irrelevant and predetermined options/choices. This is a major and potential drawback with structured questions.

Unstructured questions, on the other hand, provide respondents the opportunity to 'open up' and answer questions in their own terms. Unfortunately, such responses are sometimes difficult to interpret and analyse.

b) Threatening versus non-threatening questions

Researchers sometimes ask about sensitive issues or ones that respondents may find threatening. The questions about sexual behaviour, drug or alcohol use, criminal or deviant behaviour, mental health, illegal activity, controversial public issues, etc., are considered to be threatening. Researchers who ask such questions must do so with extra care.

Threatening questions are part of a broader issue. Respondents may be ashamed, embarrassed, or afraid to give a truthful answer. Instead, they give what they believe to be the normative or socially desirable answer. This is the *'social desirability bias'*. This social pressure can cause an over-reporting or under-reporting of the true situation. For example, people may under-report an activity that involves deviance, sex, illness, etc. They may over-report being a good citizen (e.g. voting, knowing about issues, etc), being well informed and cultured (e.g. reading, going to cultural events), fulfilling moral responsibilities (e.g. having a job, giving to charity), or having a good family life (e.g. having a happy marriage and good relations with children), etc.

One way of addressing threatening questions is by offering explicit guarantees of confidentiality and by telling respondents that what the survey is seeking are truthful answers, irrespective of what they are. They should ask questions on sensitive topics after respondents have developed trust in an interviewer. They can also wait until after asking a less threatening warm-up material and providing a meaningful context. They can phrase questions to make it easy for a respondent to admit engaging in the threatening behaviour. Another method is to have an introductory statement that states that many people engage in such a behaviour and the respondent certainly is not alone. Yet another way is to use survey instruments that permit anonymity. For instance, it may be better to use a mail or self-administered questionnaire or internet survey or telephonic interview instead of face-to-face interviews.

c) Knowledge questions

Studies on survey suggest that a large majority of the public cannot correctly answer questions that seek to know the facts or knowledge. Researchers may sometimes want to find out whether respondents know about an issue or topics, but knowledge questions can be threatening because respondents do not want to appear ignorant.

d) Skip or contingency questions

Researchers avoid asking questions that are irrelevant for a respondent. Yet some questions apply only to specific respondents. A *'contingency question'* is a two (or more) part question. The answer to the first part of the question determines which of two different questions select respondents for whom a second question is relevant. Sometimes they are called *screen or skip questions.* On the basis of the answer to the first question, the respondent or an interviewer is instructed to go to another or to skip certain questions:

Example 4: Were you a student of the social sciences?

(1) Yes (2) No

(If No, please go to Question 2).

1. (a). If yes, which subject / discipline?

1. (b). How many years have you studied the subject?

iii) Designing a good questionnaire: some guidelines

A good questionnaire forms an integrated whole. The researcher weaves questions together so that they flow smoothly. A good questionnaire is clear, unambiguous and uniformly workable. Its design must minimise potential errors from respondents.

There are two key principles for a good survey questionnaire: Avoid confusion and keep the respondents' perspective in mind. Further, questionnaire construction is an art. It takes skill, practice, patience, and creativity. The principles/guidelines for constructing a good questionnaire are the following:

a) Introduction

Every questionnaire should have an introduction, which gives a description of what the study is all about. The introduction should also provide instructions for responding to the questionnaire and the promise of confidentiality.

b) The order of questions

Most researchers like to begin a questionnaire with one or two questions that will be easy to answer, such as questions about the household size, occupation, village, etc. However, it is important not to make these questions so personal that respondents will be put on the defensive or terminate the interview immediately.

As a rule of thumb, the line of questioning generally is broader at the beginning than later in the questionnaire. For instance, in an apolitically oriented survey, the opening questions might probe in a general way (including some open-ended questions) for the respondent's opinion on the most important issues of the day. Later in the questionnaire, the interviewer might read a list of specific issues and ask the respondent to appraise the relative importance of each one.

The questions should be placed in an order, which facilitates an orderly progression of the interchange between the interviewer and the respondent. One would not, for example, ask a few questions about the most important issues of the day, then skip to questions about political leaders, and then skip back to more questions on the issues of the day, then ask some questions about the respondent's characteristics, then skip back to more questions about political leaders.

Further, the most personal questions are usually saved until late in the questionnaire, so that if the respondent refuses to answer or terminates the interview at that point, most of the information would already have been obtained.

c) Form of the questions

It is important to determine whether structured or unstructured questions are best suited for a given objective. We have stressed the importance of interspersing both types of questions throughout the questionnaire to maintain the interest of the respondent and to complement each other in eliciting both closed and open-ended information. Even more detailed decisions are necessary. Should a structured question take the form a numerical scale (for instance, rating something from 0 to 9 in terms of favorability) or a verbal scale (highly favorable, somewhat favorable, highly unfavorable, somewhat unfavorable)?

d) Clarity

It is crucial to make sure that respondents will be able to understand the meaning of each question. In other words, the researcher must phrase questions in terms the respondents will understand, but he must be careful not to seem patronizing to the respondents. This is often a difficult balance to achieve and is usually best gained through extensive pre-testing of alternative questions.

e) Cross-check questions

It is a good policy to include several different questions on one topic area to see if respondents answer them in the same way. Such questions allow for an appraisal of the validity of the questionnaire and of the accuracy of the respondents' self-reports. A special type of cross check question is the 'random probe'. Each respondent is asked to explain what is meant by his or her responses to a few randomly selected questions. Different respondents are asked to do this for different structured questions. The procedure enables the researcher to eliminate from the analysis phase of research any structured questions which many respondents have misunderstood.

f) Interviewer control

The questionnaire should not only elicit information, it should also facilitate control of the quality of the interviewer's work. For instance, the questionnaire should explicitly instruct the interviewer what to do whenever a specific procedure might be in question. The instruction,

"Give the respondent two or three minutes to think about the question", may be necessary in certain cases, since some interviewers are more impatient than others.

It is important to let the interviewer know through the questionnaire that his work will be fully evaluated after it is completed. Not only should there be a section at the end of the questionnaire for the interviewer's signature and the date of the interview, but this section should be headed with a statement like, "I certify that this is a complete and honest interview, conducted in accordance with the instructions". This phrase implies the sort of commitment which helps motivate interviewers to their best effort.

Another section on validation is sometimes even more persuasive. A portion of each interviewer's work should normally be 'validated' by a member of the research staff who either telephones or writes to a portion of the interviewer's respondents (usually about 15 percent) to make certain the interview was completed, roughly how long it took, whether there were any irritants to the respondents, and whether the respondent confirms the answers to two or three questions. It is important to let the interviewer know that this type of validation will take place; and the questionnaire may end with a section which has space for validator's comments and recommendations.

g) Pre-test

All the interviewing experience and wisdom in the world cannot replace the method of pretest as a means of ensuring that all the above considerations are observed to the fullest possible extent. In a pre-test, the proposed questionnaire is actually administered to a very small sample of respondents (anywhere from 10 to 100, depending on the size of the eventual sample). It is a good idea for the researchers to conduct some of the interviews and for the people who will actually be administering the eventual interviews to conduct others. Thus, the researcher can be mindful of the practical problems inherent in the questionnaire with the help of a pre-test. Sometimes, several pre-tests are necessary, with the questionnaire being revised between the pre-tests.

iv) What to avoid in questionnaire construction

The following aspects should be avoided while preparing a questionnaire.

a) Avoid jargon, slang, and abbreviations: Jargon[©] and technical terms (such as alienation, anomie, Oedipus complex, etc.) are difficult to understand by laypersons, hence they should be avoided in the questionnaire. Slang is a kind of jargon within a sub-culture. Members of other sub-cultures may not understand it. So slang (such as hotdog, snowbird, etc.) should also be avoided. Also, avoid abbreviations. One should avoid slangs, jargons, and abbreviations unless a specialized population is being surveyed.

b) Avoid ambiguity, confusion, and vagueness: Ambiguity and vagueness plague many researchers engaged in questionnaire construction. A researcher might make implicit assumptions without thinking of the respondents. For example, the question, "What is your income?", could mean weekly, monthly, or annual; family or personal; before taxes or after taxes; for the current year or last year; from salary or from all sources. The confusion causes a lot of inconsistency in how different respondents assign meaning to and answer the question.

Another source of ambiguity is the use of definite words or response categories. For example, an answer to the question, "Do you jog regularly? Yes–– No––," hinges on the meaning of the word *regularly*. Respondents may define the word *regularly* as everyday or every week or month. To reduce confusion, it is better to be specific.

c) Avoid emotional language and prestige bias: Words have implicit connotative as well as explicit denotative meanings. Likewise, titles, or positions in society carry prestige or status. Words with strong emotional connotations and stands on issues linked to people with high social status can colour how respondents hear and answer survey questions. Use neutral language. Avoid words with emotional 'baggage' because respondents may react to the emotionally laden words rather than to the issue. Also avoid prestige bias - associating a statement with a prestigious person or group. Respondents may answer on the basis of their feelings towards the person or group rather than addressing the issue.

d) Avoid double-barreled questions: Make each question about one and only one topic. A double-barreled question consists of two or more questions joined together. It makes a respondent's answer ambiguous. For example, if asked, "Are you provided accommodation and food in the hostel?", the respondent who gets only accommodation or the one who gets only food will have problems in answering. In this case the respondent will also be not certain of the answer.

e) Avoid leading questions: Make respondents feel that all responses are legitimate. Do not let them become aware of an answer that the researcher wants. A leading (or a loaded) question is one that leads the respondent to choose one response over another by its wording. For example, the question, "You don't smoke, do you? leads respondents to state they do not smoke. Further, loaded questions can be stated to get either negative or positive answers.

f) Avoid asking questions that are beyond respondents' capabilities: Asking something that only a few respondents know frustrates and produces poor quality responses among other respondents.

g) Avoid false promises: Do not begin a question with a promise with which respondents may not agree and ask about choices regarding it. Respondents who disagree with the promise will be frustrated and not know how to answer. For example, the question, "The library is open

too many hours. Do you want it to open four hours later or close four hours earlier each day?", leaves those who either support the premise or oppose both alternatives without a meaningful choice.

h) Avoid asking about future intentions: Avoid asking people about what they might do under hypothetical circumstances. Responses are poor predictors of behaviour. Questions such as these are a waste of time as they are abstractions without any indication to the immediate experiences.

i) Avoid double negatives: Double negatives in ordinary language are grammatically incorrect and confusing. For example, "I haven't got no job", logically means that the respondent does have a job.

j) Avoid overlapping or unbalanced response categories: Make response categories or choices mutually exclusive, exhaustive, and balanced. Mutually exclusive means that response categories do not overlap.

Reflection and Action 22.2

To continue with supposing that you have to carry out a survey of waste disposal methods in your area, construct a questionnaire, specifying the types of questions you are going to include in the questionnaire.

22.4 Issues in Designing a Survey Instrument

There are two most important issues which need to be kept in mind while designing a survey instrument. First is the reliability and second the validity of the survey instrument.

i) Reliability

A reliable survey instrument is one that is relatively free from 'measurement error'. Because of this error, the scores obtained from individuals are different from their true scores, which can only be obtained from perfect measures. What causes this error? In some cases, the error results from the measure itself: It may be difficult to understand or poorly administered. For example, a self-administered questionnaire on the value of preventive health care might produce unreliable results if its reading level is too high for the teenaged mothers who are to use it. If the reading level is on the target but the directions are unclear, the measure will be unreliable. Of course, the survey researcher could simplify the language and clarify the directions and still find the measurement error. It is because measurement errors can also come directly from the examinees. For example, if teenaged mothers are asked to complete a questionnaire and they are especially anxious or fatigued, their obtained scores could differ from their true scores.

There are four kinds of reliability, discussed here in terms of survey research: stability, equivalence, homogeneity, and inter- and intra-rater reliability.

a) **Stability**: Stability is sometimes called test-retest reliability. A measure is stable if the correlation between the scores from one time to another is high. Suppose a survey of student's attitudes was administered to the same group of students at school A in April and then again in October. If the survey was reliable and no special program or intervention was introduced, then, on the average, we would expect attitudes to remain the same.

b) **Equivalence**: 'Equivalence' (or 'alternate-form reliability') refers to which two items measure the same concepts at the same level of difficulty. Suppose students were asked a question about their views toward stechnology before participating in a computer course and again two months after completing it. Unless the researcher was certain that the items on the surveys were equal, more favourable views on technology after the second survey could reflect the survey's language level (for example) rather than the improved views.

c) **Homogeneity**: Homogeneity refers to the extent to which all the items or questions assess the same skill, characteristic, or quality. Sometimes, this type of reliability is referred to as internal consistency. For example, suppose a researcher has created a questionnaire to find out about students' satisfaction with a textbook. An analysis of homogeneity will tell us the extent to which all items on the questionnaire focus on satisfaction.

d) **Inter- and Intra-rater reliability**: Inter-rater reliability refers to the extent to which two or more individuals agree. Intra-rater reliability refers to a single individual's consistency of measurement.

ii) Validity

Validity refers to the degree to which a survey instrument assesses what it purports to measure. For example, a survey of student attitude toward scareers in Information Technology would be invalid if the survey only asked about their knowledge of the newest advances in software and hardware technologies. Similarly, an attitude survey will not be considered valid unless you can prove that people who are identified as having a good attitude on the basis of their responses to the survey are different in some observable way from people who are identified as dissatisfied.

Four types of validity are often discussed: content, face, criterion, and construct.

a) **Content**: Content validity refers to the extent to which a measure thoroughly and appropriately assesses the skills or characteristics it is intended to measure. For example, a researcher who is nterested in mental health has to define the concept ("What is mental health?" "How is health distinguished from the disease?") and then write items that adequately contain all aspects of the definition so that the concept is well explained in terms of its measure.

b) Face: Face validity refers to how a measure appears on the surface: Does it seem to ask all the needed questions? Does it use the appropriate language and language level to do so? Face validity, unlike content validity, does not rely on established theory for support.

c) Criterion: Criterion validity compares responses to future performance or to those obtained from other, more well-established surveys. Criterion validity is made up of two sub-categories: Predictive and Concurrent. Predictive validity is the extent to which a measure forecasts future performance. Concurrent validity is demonstrated when two assessments agree or a new measure is compared favourably with one that is already considered valid.

d) Construct: Construct validity is established experimentally to demonstrate that a survey distinguishes between people who do and do not have certain characteristics. For example, a researcher will have to prove in a scientific manner that satisfied respondents behave differently from dissatisfied respondents.

22.5 Conclusion

Unit 22 discussed the details of survey instrumentation. It described the types of data collection techniques/instruments and their advantages and disadvantages, role of the interviewer, interviewer bias, guidelines for constructing a questionnaire and some principles to be kept in mind while preparing the questionnaire, and the issues of reliability and validity of the survey instruments. Each one of these items is important for the success of survey research as this stage is crucial to yield reliable and valid data. Thus the development of survey instrument translates the research question into a questionnaire which then is used to generate data.

Further Reading

Aldridge, Alan. And Levine, Ken. 2201. *Surveying the Social World - Principles and Practice in Survey Research*. Open University Press: Buckingham

Unit 23

Survey Execution and Data Analysis

Contents

23.1 Introduction
23.2 Problems and Issues in Executing Survey Research
23.3 Data Analysis
23.4 Ethical Issues in Survey Research
23.5 Conclusion

Learning Objectives

It is expected that after reading Unit 23 you would be able to

- ❖ Identify the difficulties one faces in executing a survey
- ❖ Carry out the various steps of data analysis, namely, editing, coding, tabulation and data analysis and finally report writing
- ❖ Recognise the kind of ethical and moral issue the researcher faces.

23.1 Introduction

A number of issues spring up throughout the process of executing survey research. We will examine a few of them in order to enhance the quality and reliability of survey. The researcher may confront/encounter many more situations that may inspire him or her to serious thinking about the implementation of the survey plan. The best way to tackle any problem in the field is to keep oneself open to surprises that may come.

23.2 Problems and Issues in Executing Survey Research

There are a number of problems a researcher faces after the preparation and plans for survey have been charted out. The problems may arise out of the poor training of interviewers or investigators, locating and accessing the respondents and field settings, implementing the data collection techniques, and in terms of the costs and resource management. This section presents some of the issues that may confront the researcher in the field.

i) Locating and accessing the field settings

Once the training of the interviewers is over, the actual process of reaching out to respondents and their field settings begins. The first task of the researcher at this stage is to identify the target population and write to the respective organisations and institutions for permission to conduct survey. It is at this stage that one must keep in mind that there are two different kinds of field settings, namely, formal (official) and informal

(unofficial settings). Thus, each of the settings would have some people who may be called the 'gatekeepers', the people with the authority to permit entry into the field settings.

a) Gatekeepers in a formal organisation

Official gatekeepers are the ones who give permission to conduct survey in formal organisations such as schools, government departments, NGOs, etc. (Headmaster in a School or a District Educational Officer at the district level or the Director of an NGO). If we enter an organisation without the permission of the gatekeepers, our survey may face threats of legal action for not taking permission as it is the right of the institution to participate in the study or not. The researcher has to ensure the approval and consent of the gatekeepers before entering formal institutions, such as schools, government departments, NGOs, hospitals, etc.

b) Gatekeepers in an informal setting

It is just not merely in the formal settings, in informal settings also (such as family, community, etc.) gatekeepers are involved. One requires permission to conduct survey research. If the researcher wishes to speak to a child in the home environment, he must speak to the parents first. Usually the parents advise their children to speak to the surveyors. If the researcher intends to speak to women of a house, he is expected to take the permission of the male head of the family. When the researcher wants to speak to a community member, he has to speak to the head of the community (village head, panchayat chairman, caste leaders, etc.). Without the permission of the gatekeepers in informal settings, the members of a family or a community may not cooperate or may even turn down the request for interview. Therefore, the interviewer must be conscious of the importance of gatekeepers in informal settings as well.

c) How do we approach the gatekeepers for permission?

The first thing a researcher must do after identifying the respondents and their settings is that they should inform the gatekeepers about the objectives and purposes behind the survey and apprise them of its overall goal. For instance, the main objective of a survey being undertaken is to assess the impact of the Integrated Education for the Disabled Children. The respondents may be informed that the survey results may be used to improve the quality of implementation and delivery of the scheme and that their cooperation is highly appreciated and valuable. Further, the researcher has to clarify the doubts and apprehensions of both the gatekeepers and respondents. For this, the researcher must be well-versed with the specific objectives of the survey. For instance, the broad objectives of the survey mentioned above are

- To study how far the integrated schools have been successful in integrating the eligible children with special needs.
- To examine the retention strategies adopted by the schools.

- To study whether the facilities for assessment and appropriate placement of the children with disabilities are available in the integrated schools.

There can be many specific objectives of the current survey. So the interviewer should try to understand these objectives and be clear about each of them. This will help him in the later stages of survey execution. It will help to correctly transact and impart the same kind of training to his assistants. The interviewer must also understand the survey's conceptual, cultural, psychological, economic, and political context.

Some of the specific questions the researcher/interviewer must be clear about in the case of our example are

- Who are the children with special needs?
- What are their special needs?
- What is the need for a special programme for children with special needs?
- What is the cultural context of the families, communities and the schools that are going to be a part of the study?
- What will be the psychological condition of the children with disabilities or special needs and their parents?
- What is the economics of running a scheme such as this (IEDC)? What are the possible uses of equipment and their utility and how they are used? Whether the investment on certain items is justified in terms of their utility.
- What is the political context of the schooling of children with special needs? The scheme might be receiving the major focus or less focus in terms of the attention of the implementing agencies, etc. Why has it become so important in recent times? What are the pressure groups asking for the betterment of the scheme? Who are the stakeholders in the programme and what are their positions vis-à-vis the objectives of the scheme?

Further, the researcher must assure the gatekeepers of anonymity and confidentiality of the information provided by them and their organisation. In case one wants to be explicit about the institution / organisation, he should request permission for doing so. Once he is in the field, after gaining entry or access to the setting, a researcher must gain access to the individual respondents. Some important tips to access the respondents are

- Accessing the respondents and building rapport with them: Remember the interview situation is one of social interaction. In a social interaction, building rapport is essential if you want your relationship to sustain. Rapport is nothing but building relationships.
- Approach the respondents for permission to include them in the

study. The respondent must be willing to participate in the survey. Everybody in the sample has a right to decide whether he or she would like to be part of the survey. If one is forced to participate in the survey, then the reliability of the information is at stake. There is also the possibility of the respondent providing misleading, incomplete, or incorrect answers.

- ❖ Do not think that it is the privilege of the respondents to give the researchers the interviews and they must cooperate with him. So, the researcher must understand what matters to the respondents before including them in the study (Often surveys are criticized for being driven by the interests of the researcher).
- ❖ Recognise the differences between the respondents: If all the respondents are alike in thought and action, then there is no need for conducting a survey. We can simply take a case and generalize from that case. Variations make the findings of the survey worthwhile and interesting.
- ❖ Avoid unjustified presuppositions and false assumptions about the respondents: Often, we are carried away by our presuppositions and stereotypes about the other individuals. For instance, one may view children with disabilities or special needs differently. This will lead to a bias in the way the questions are asked and even the respondents are accessed. Simply put, the interviewer should not be judgmental in his interaction with the respondents as also with the topic of the survey, the institutions they approach for information, or even the role of the parents, etc.
- ❖ Be a good listener, rather than a good speaker.

Reflection and Action 23.1

Suppose you need to carry out a survey of waste disposal methods of your area, what would be your strategies for reaching out to the respondents? Write a short note on the qualities you would like to see in the interviewers appointed for the survey.

ii) Implementation of data gathering technique

There are a number of problems which spring up after entering the field while executing the main survey. The problems mainly concern the implementation of the data gathering techniques such as self-administered questionnaires and face-to face interviews.

a) Self-administered questionnaires

A major problem with the self-administered mailed questionnaires is how to get them returned. We already know that the respondents face considerable temptation not to fill up the questionnaires mailed to them. The suggestion offered in such cases is that a 50 percent return rate be used as the minimum level of acceptability for survey research based on the self-administered questionnaires. This level can be achieved in some

situations such as those in which a researcher distributes questionnaires personally in a classroom, office premises, etc., but rarely when data collection is based on a mail survey. However, some steps may be suggested to maximize the return rate.

- An introductory letter should accompany the mailed questionnaire. This letter should explain the purpose of study and who is sponsoring the project. A good introductory letter can be an incentive for the respondent to fill out the questionnaire.
- Besides an introductory letter, the inclusion of a stamped, self-addressed envelope for the respondent to return the questionnaire is a necessity if a good return rate is to be achieved.
- In some cases, special incentives such as a pen or a small amount of money are also sent to the potential respondent in order to encourage cooperation. However, this step may raise some ethical questions, besides being costly.
- Finally, what is crucial to a good return rate is an intensive follow-up campaign which attempts to encourage those who have not returned their questionnaires by a certain date.

Sometimes, even if all these steps for increasing the return rate of the self-administered questionnaires are employed, it is unlikely that more than seventy percent of the questionnaires will be returned. The question then remains: How does the thirty percent who do not respond, affect the research outcomes? Can we say that the representativeness of the sample is not jeopardised? The answer is both Yes and No.

For instance, sometimes the poor return rate might affect the research findings as a result of the lack of representativeness. At other times, it may not at all affect the findings of a survey. One way of dealing with this question is to compare the information about those who do not respond with information derived from some other source about the sample. For example, assume that a self-administered questionnaire is mailed to a simple random sample of the students of a college and that sixty percent of the sample return their questionnaires. Information from the survey about the respondent's age, sex, and subject of study can be compared to the information derived from the materials available on the total student body. If there are no startling differences between the survey data and the data from other sources, it could be concluded that the forty percent of the sample which did not return their questionnaire is similar to the sixty percent of those who did return them. In this case the issue of representativeness is favourably resolved. However, it is important to mention that this is not a perfect solution and there can be other ways of resolving it.

b) Face-to-face interviews

Even though the response rate is considerably higher for interviews, there are similar problems involved in face-to-face interviews. Some

strategies for improving the response rate in interviews are the following:

- The refusal of cooperation by potential respondents can be lessened by first training the interviewers in ways to establish rapport with the respondents.
- The temptation of the interviewers to avoid certain respondents should be diminished by emphasising the validation procedure and requiring the interviewers to account for each non-completion. For example, sometimes a researcher doing door-to-door survey may avoid a house that displays a board, "Beware of the Dog".
- Respondents are often not home when the researcher attempts to contact them. It is therefore important to make visits at different times of the day and on different days of the week.

If these strategies are used effectively and the response rate is average or better, there is still the question of how representative the respondents are of the total group one has tried to study. The suggestion given in the case of self-administered questionnaire for comparing the survey information on the respondents with other information about the total group is applied in the case of face-to face-interviews as well.

Further, a major issue crucial for the success of the implementation of the interview process is the selection and training of the interviewing staff. The following aspects should be kept in mind while training the interviewers:

- Train interviewers in how to establish rapport with respondents in order to gain their cooperation. However, rapport does not mean to encourage the pleasing answers.
- The interviewers must be told to remember that the interview situation is one of social interaction. Differences in characteristics such as caste, race, sex, social class, religion) of both the respondent and the interviewer have an impact on the answers elicited.
- The interviewers should become non-judgmental towards the respondents. This quality should make the respondents feel comfortable in expressing their true feelings.
- It makes good sense to hire and train interviewers who are not radically different from the people whom they will be interviewing.
- A manual may be prepared for the interviewers which deals with the general interviewing techniques and the unique requirements of the particular study in question.

After the actual interviewing process begins, interviewers should be asked to return their first few completed interviews to the supervisory personnel for critical evaluation. At this point, some validation interviews should be conducted by telephone or in person to ensure that the interviewers

are not irritating any respondents and that they are really conducting the interviews according as the instructions. Such an assessment is helpful for the purpose of evaluating the questionnaire under actual field conditions. Independent validation of the interviews should continue throughout the time-period of the interviews. See Box 23.1 for guidelines.

Box 23.1 Some guidelines for effective implementation of the data gathering techniques

The researcher has to keep in mind the following guidelines to avoid some problems in the collection of information from the respondents.

- If your questionnaire is in English and your respondents are not comfortable with English, then try to translate the questions in the regional languages while asking the respondents.
- Make the questions meaningful, clear, unambiguous, sensitive, and revealing. The use of language also depends on factors such as age, region, social class, etc.
- Understand the social standing of particular usages in language. For instance, the 'mid-day meal' is' lunch', not 'dinner', the room where the family gathers is the 'sitting room', not the 'living room', a 'magazine' is never called a' book.'
- Sometimes people may think you are being impolite or vulgar or rude or incorrect based on the kind of language you use while interviewing them. This may spoil the entire process of interview itself. So use proper language.
- Tactics for dealing with ambiguous or unclear terms:
  - Avoidence. Use alternatives
  - Another possibility is to gloss the term, i.e. to give a brief explanation to the respondent of what we mean by the word. But one problem with glossing is that we almost impose the meaning or even the answer on the respondent.
  - Clarification. This is a form of glossing, but we explicitly clarify the potential ambiguity
  - Giving Examples. But, it carries the danger of suggesting the answers or may even distract the respondents from thinking about other answers.

23.3 Data Analysis

Once the data have been collected, the task is to reduce the mass of data obtained to a form suitable for analysis. 'Data reduction', as the process is called, generally consists of editing, coding and processing through the computer in the case of large surveys and by hand in the case of small surveys.

a) Editing

Editing the filled in questionnaires is the first step in the preparation of data for processing. It is important to make sure that the questionnaire has been filled up properly. This is a painstaking work but it can be very fruitful. In sum, a good editing job can add substantially to the quality of the collected data.

Editing interview schedules or self-administered questionnaires is intended

to identify and eliminate errors made by the interviewers and the respondents. Moser and Kalton (1973), speak of three tasks in editing:

❖ **Completeness:** A check is made that there is an answer to every question. In most surveys, interviewers are required to record an answer to every question. Missing answers can sometimes be cross-checked from other sections of the survey. At worst, respondents can be contacted again to supply the missing information.

❖ **Accuracy:** As far as possible, a check is made that all questions are answered accurately. Inaccuracies arise out of carelessness on the part of either the respondents or the interviewers. Sometimes a deliberate attempt is made to mislead. A tick in the wrong box, a ring around the wrong code, an error in simple arithmetic can reduce the validity of the data unless they are picked up in the editing process.

❖ **Uniformity:** A check is made that interviewers have interpreted instructions and questions uniformly. Sometimes the failure to give explicit instructions over the interpretation of respondents' replies leads to interviewers recording the same answer in a variety of answer codes instead of one. A check on uniformity can help eradicate this source of error.

b) Coding

The quantitative analysis of survey data requires that answers are converted into numbers. Many variables also require that answers be classified into categories. This process of converting answers to numbers and classifying answers is called Coding©. Thus, the primary task of data reduction is coding, which is primarily assigning a code number to each answer to a question in the questionnaire / interview schedule. There are six main steps in coding and classifying questionnaire data. They are:

❖ Classifying responses

❖ Allocating codes to each variable

❖ Allocating column numbers to each variable

❖ Producing a Codebook

❖ Checking from coding errors

❖ Entering data

Let us discuss in brief each step in coding and classifying data.

i) **Classifying responses:** Coding is more than allocation of numbers to the responses. It also involves the creation of a classification system that imposes a particular order on the data. This in turn affects the way data are analysed. These classification systems are not objective systems but are created by people and reflect the historical and cultural ways in which we make sense of the world around us. David de Vaus (2002) argues that as creators and consumers of research we need to be aware

that classification systems shape what we find.

ii) **Allocating codes to each variable:** Once classification schemes have been developed, our task is to allocate codes to each of the categories in the classification. These classification schemes can be developed either before a questionnaire / interview schedule is administered or after. Much of the work in the classifying responses is undertaken at the questionnaire construction stage where a set of fixed responses is provided to the respondents. Codes are allocated to these responses and these codes are normally visible in printed questionnaires to assist with data entry at a later stage.

Open-ended questions are coded after the data have been collected. Post-coding is done either by using systematic, pre-existing standard coding schemes or developing a coding scheme based on the responses provided by the respondents. For example, standard questions such as occupation, religion, caste, type of family, etc., can have standardized coding schemes. The standardized coding schemes are systematic and are developed by people with considerable expertise after considerable consultation. Further, they are publicly available and reduce code error.

Each variable has at least two categories and any person must belong to one and only one category. The essence of coding is to give a distinctive code to each category of a variable.

iii) **Allocating column numbers to each variable:** To enter codes into a computer they must be put on a 'record'. In the early days of computing a record was a computer card that could contain up to 80 digits. If more than 80 digits were required for all the respondent's answers a second card or record would be used for that case. These days with electronic recording, data can be much longer than eighty digits. The records for each case are then placed in a data file in which the first record represents the first respondent, the next record represents the second respondent and so forth.

iv) **Producing a codebook:** After deciding how to code each response to each variable, it is important to make a systematic record of all the decisions made. This record is called a Codebook and the following information is normally included.

- ❖ The exact wording of the question
- ❖ A name by which a variable is referred to in the programme. In the Codebook list a name is given to each variable.
- ❖ The type of data used for that variable.
- ❖ The first and last column numbers in which the variable is located.
- ❖ The valid codes for each question.
- ❖ The missing data codes for each question.
- ❖ Any special coding instructions used for coding particular questions.

- **Checking for coding errors:** Coding errors can create serious problems during data analysis. The most serious errors figure when data are entered in the wrong columns. But miscodes are a more common problem. These can occur during the data collection phase, during the manual coding of the answers or during the data entry phase. It is probably impossible to eliminate all coding errors but the problem can be reduced by locating and correcting as many errors as possible.
- **Entering data:** In the past, data were always coded manually and entered into the computer by keypunch operators. However, advances in computer technology have radically changed the whole process of data entry.

c) Tabulation and data analysis

By a simple command the computer gives all the tabulations that are anticipated for data analysis. It is the simplified version of the entire data collected, which is given in numerical values of the distribution of responses of the respondents. A researcher labours hard through several stages of survey research to arrive at this stage. The stage of tabulation sums up the outcome of the survey research in a skeleton form. However, it is important that the researcher assumes some knowledge of quantitative data analysis procedures to make sense of the skeleton.

Aldridge and Levine argue that there are three different aspects of a survey analysis. According to them these three dimensions are conceived to be potentially present in the analysis of any survey although they may not be fully or equally exploited. The three dimensions are: descriptive, analytical and contextual. The descriptive dimension tends to dominate in primarily descriptive surveys. The analytic and contextual aspects are more pronounced in analytic surveys, but the art of analysis is to promote the development of all three so that the research potential of a survey is fully realized.

It may also be mentioned here that the data analysis is not just a technical matter. Social scientists have ethical responsibilities to analyse data properly and report it fairly. See Box 23.2 for what you need to be careful about before analysing your data.

Box 23.2 Before Analysis of the Data, Be clear about Four Broad Considerations

- What is the level of measurement of each variable being used in any particular piece of analysis?
- How many variables will any particular piece of analysis require?
- What type of analysis is required? Is descriptive analysis required or analytic or contextual analyses?
- Have the ethical principles of full, fair, appropriate and challenging analysis been applied to the selection of data to be analysed and reported?

d) Report writing

Once the data are available the survey researchers typically write and disseminate reports or present them orally. In any case, the presentation of the results of the survey should be as clear and complete as possible. The following are some questions that are useful for evaluating the quality of a survey research report of findings.

- Could the reader replicate the report on the basis of the information provided? Are all the phases of survey research process explained in adequate detail?
- Are all the potentially relevant data provided or only highly selected excerpts included? Most studies call for much more in the way of preliminary statistical analysis than it would be appropriate to include in the final report. Thus some selectivity is always necessary. But we can question the nature of the selectivity when data for what seem to be superior indicators of the phenomena of interest are not presented and no rationale for their exclusion is provided.
- Are all the data provided supportive of the researcher's hypothesis? When there is no data to contradict the researcher's original hypothesis, we might question the selection procedure used in deciding which results to present. Also related is the tone of the report. Is it one of justifying the hypothesis or of critically evaluating it?
- Are the study's conclusions warranted on the basis of the data that have been presented? It is not uncommon for investigators to inflate the substantive significance of their data to the point that the reader of the text is led to the conclusion that the relationship is very strong when the actual statistical analysis yields a weak or moderate relationship. It is not wise to skip the tables in a report and rely on the author's conclusions about the content of these tables as presented in the text of the report.
- Have the authors demonstrated a desire to put their hypotheses in jeopardy and to really dig up any contradictory evidence that may exist? Or in contrast, do the authors seem to be interested only in presenting results that support their hypothesis?
- Is there any discussion of the author's values and the ways in which they may have had an influence on the outcome of the study?

As more and more research is conducted, an ever-increasing amount of data becomes available to researchers. It is often possible to obtain the data desired simply by reanalysing data reproduced by someone else. This is called secondary analysis of data and it can be used to substantiate or refute the earlier researches on any topic of investigation during the process of report writing.

23.4 Ethical Issues in Survey Research

Like all social research, people can conduct surveys in ethical or unethical ways. A major ethical issue in survey research is the invasion of privacy. Survey researchers can intrude into a respondent's privacy by asking about intimate actions and personal beliefs. People have a right to privacy. Respondents decide when and to whom to reveal personal information. They are likely to give such information when it is asked for in a comfortable context with mutual trust, when they believe answers will remain confidential. Researchers should treat all the respondents with dignity and reduce their anxiety or discomfort. They are also responsible for protecting the confidentiality of data.

The second ethical issue that confronts the survey researcher is the right of respondents to participate voluntarily. Respondents agree to answer questions and can refuse at any time. They give 'informed consent' to participate in research. Researchers depend on the respondents' voluntary cooperation. Therefore, researchers need to ask well-developed questions in a sensitive way, treat respondents with respect, and be very sensitive to confidentiality.

Thirdly, the tendency to mislead the people at large by the survey researchers is also an important ethical consideration. Sometimes, people may also misuse the survey results or use poorly designed or purposely rigged surveys. People may demand answers from surveys that surveys cannot provide or may not understand a survey's limitations. Those who design and prepare surveys may lack sufficient training to conduct a legitimate survey. Sometimes the researchers use the survey format in an attempt to persuade some interviewer to conduct survey, with little or no real interest in learning information from a respondent.

Reflection and Action 23.2

Suppose you have to guide a team carrying out a survey of methods of waste disposal in your area. Explain how you will handle the following questions.

Questions

- What would be your strategy to avoid the policy decisions based on careless or poorly designed surveys may result in waste and human hardship?
- How would you make the survey execution so that legitimate researchers conduct methodologically rigorous survey research?
- How would you make researchers aware of and report the limitations of the survey research?
- How can researchers combat unscrupulous politicians, business people, and others who rig surveys to produce deceptive results?

Write on a sheet of paper your answers to the above questions and add at least four more ethical issues that await a researcher while conducting a survey. Some of them may deal with the sponsorship and funding of the project, researcher's personal preferences and biases, the respondent's deception, etc. Finally answer the question: Who is responsible for dealing with the problem areas and avoiding the ethical issues in order to make the research endeavour successful and objective?

23.5 Conclusion

In this unit, we have attempted to learn the issues and problems that researchers confront while executing the survey. Primarily, it discusses the issue of locating and accessing the field settings and respondents and the problems faced during the administration of data gathering techniques. The unit also discusses the phase of analysis after the completion of data collection and the execution of the main survey. Finally, the ethical issues in the conduct of survey have been discussed.

It may be summed up that survey is a process in which the researcher translates a research question into a questionnaire, which then is used to collect data from respondents. The data thus collected is processed through a rigorous process of editing, coding, and computerisation and tabulation that emerge in the end. This data in turn attempts to analyse the research question formulated at the beginning of the survey research. The entire process requires the utmost attention of the researcher in order to avoid and minimize errors, which may distort the very purpose of research, i.e., search for truth.

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Glossary

(Explanations of glossary words have been prepared with the help of information available on the Internet and in other sources.)

Chi-square: Chi square is a non-parametric test of statistical significance for bivariate tabular analysis (also known as cross breaks). Any appropriately performed test of statistical significance lets you know the degree of confidence you can have in accepting or rejecting a hypothesis. Typically, the hypothesis tested with chi square is whether or not two different samples (of people, texts, whatever) are different enough in some characteristic or aspect of their behaviour that we can generalize from our samples that the populations from which our samples are drawn are also different in the behaviour or characteristic. A non-parametric test, like chi-square, is a rough estimate of confidence; it accepts weaker, less accurate data as input than parametric tests (like t-tests and analysis of variance, for example) and therefore has less status in the pantheon of statistical tests. Nonetheless, its limitations are also its strengths; because Chi Square is more 'forgiving' in the data it will accept, it can be used in a wide variety of research contexts.

Coding: A systematically arranged and comprehensive collection of laws or a systematic collection of regulations and rules of procedure or conduct or a system of signals used to represent letters or numbers in transmitting messages or a system of symbols, letters, or words given certain arbitrary meanings, used for transmitting messages requiring secrecy or brevity.

Cohort: Cohort derives from Latin cohors, "an enclosure, a yard," In Statistics 'cohort' means a sample meant to be representative of a whole population. In informal usage it refers to a variety or diversity.

Concept of probability: Inferential statistics is built on the foundation of probability theory, and has been remarkably successful in guiding opinion about the conclusions to be drawn from data. Yet (paradoxically) the very idea of probability has been plagued by controversy from the beginning of the subject to the present day. One conception of probability is drawn from the idea of symmetrical outcomes. For example, the two possible outcomes of tossing a fair coin seem not to be distinguishable in any way that affects which side will land up or down.

Correlation coefficient: The Pearson Product-Moment Correlation Coefficient (r), or correlation coefficient for short is a measure of the degree of linear relationship between two variables, usually labeled X and Y. While in regression the emphasis is on predicting one variable from the other, in correlation the emphasis is on the degree to which a linear model may describe the relationship between two variables. In regression the interest is directional, one variable is predicted and the other is the predictor; in correlation the interest is non-directional, the relationship is the critical aspect. The computation of the correlation coefficient is most easily accomplished with the aid of a statistical calculator. The value of r was found on a statistical calculator during the estimation of regression parameters in the last chapter. The correlation coefficient may take on any value between plus and minus one.

Cross-sectional: Adjective of cross-section that relates to a section formed by a plane cutting through an object, usually at right angles to an axis or a piece so cut or a graphic representation of such a piece. In physics, it refers to a measure of the probability that an encounter between particles will result in the occurrence of a particular atomic or nuclear reaction. In statistics it refers to a sample meant to be representative of a whole population.

Diachronic and synchronic: Diachronic is a convenient way of referring to something that changes over time. Synchronic refers to 'similar' instances existing at the same time.

Dichotomous: Dividing into two parts; relating to, involving, or proceeeding froma division or the proces of dividing into two, especially mutually exclusive or contradictory groups.

Eclecticism: Eclecticism is an approach to thought that does not hold rigidly to a single paradigm or set of assumptions or conclusions, but instead draws upon multiple theories to gain complementary insights into phenomena, or applies only certain theories in particular cases. This is sometimes inelegant, and eclectics are sometimes criticised for lack of consistency in their thinking, but it is common in many fields of study. For example, most psychologists accept parts of behaviorism, but do not attempt to use the theory to explain all aspects of human behavior. Similarly, a physicist may use Newton's laws for predicting the motion of baseballs, but will switch to the relativity for predicting motion of galaxies or to quantum mechanics for the one of subatomic particles. A statistician may use frequentist techniques on one occasion and Bayesian ones on another. An example of eclecticism in economics is John Dunning's eclectic theory of international production. Eclecticism in psychology is also supported by many in that in reality many factors influence behaviour and psyche, therefore it is inevitable to consider all perspectives in identifying, changing, explaining, and determining behaviour.

Eclecticism was first articulated by a group of ancient philosophers who tried to select from the existing philosophical beliefs those doctrines that seemed most reasonable to them. Out of this collected material they constructed their new system of philosophy. The term comes from the Greek eklektikos: choosing the best. Well known Eclectics in Greek philosophy were the Stoics Panaetius and Posidonius, and the New Academics Carneades and Philo of Larissa. Among the Romans, Cicero was thoroughly eclectic, as he united the Peripatetic, Stoic, and New Academic doctrines. Further eclectics were Varro and Seneca.

Ex-post-facto: Ex post facto is Latin for "from a thing done afterward." Ex post facto is most typically used to refer to a law that applies retroactively, thereby criminalizing conduct that was legal when originally performed.

Gatekeeper: One that is in charge of passage through a gate. The term refers to one who monitors or oversees the actions of others.

Homogeneity: In statistics, homogeneity is the concept related to reliability. While the internal consistency reliability (statistics) indicates the degree a data set approximates an ideal equivalence scale, the homogeneity indicates the degree a data set approximates an ideal.

Hypothesis testing: Setting up and testing hypotheses is an essential part of statistical inference. In order to formulate such a test, usually some theory has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved, for example, claiming that a new drug is better than the current drug for treatment of the same symptoms. In each problem considered, the question of interest is simplified into two competing claims / hypotheses between which we have a choice; the null hypothesis, denoted **H0**, against the alternative hypothesis, denoted **H1**. These two competing claims / hypotheses are not however treated on an equal basis: special consideration is given to the null hypothesis.

Informal Consent: Casual or in an informal manner or an informal agreement to or acceptance of opinion or a course of action.

Information society: An information society is one in which the creation, distribution and manipulation of information is becoming a significant economic and cultural activity. The knowledge economy is its economic counterpart whereby wealth is created through the economic exploitation of knowledge. The information society is a new kind of society. Specific to this kind of society is the central position information technology has for production and economy. Information society is seen as successor to industrial society. Closely related concepts are post-industrial society (cf Daniel Bell), post-fordism, post-modern society, knowledge society, Telematic Society, Information Revolution, and informational society (cf Manuel Castells).

One of the first people to develop the concept of the information society was the economist Fritz Machlup. In 1933 Machlup began studying the effect of patents on research. His work culuminated in the breakthrough study "The production and distribution of knowledge in the United States" in 1962. This book was widely regarded and was eventually translated into Russian and Japanese.

Jargon: The specialised or technical language of a trade, profession, or similar group. Also refers to speech or writing having unusual or pretentious vocabulary, convoluted phrasing, and vague meaning.

Logitudinal: The word comes from the Latin longitudo meaning length. Hence, longitudinal means along the length, running lengthwise, or (by extension) over the course of time.

Mean: The arithmetic mean is what is commonly called the average: When the word "mean" is used without a modifier, it can be assumed that it refers to the arithmetic mean. The mean is the sum of all the scores divided by the number of scores. The formula in summation notation is: ì = ÓX/N where ì is the population mean and N is the number of scores. If the scores are from a sample, then the symbol M refers to the mean and N refers to the sample size. The formula for M is the same as the formula for ì. The mean is a good measure of central tendency for roughly symmetric distributions but can be misleading in skewed distributions since it can be greatly influenced by extreme scores. Therefore, other statistics such as the median may be more informative for distributions such as reaction time or family income that are frequently very skewed.

Measure of variability: The terms variability, spread, and dispersion are synonyms, and refer to how spread out a distribution is. There are four frequently used measures of variability, the range, interquartile range, variance, and standard deviation.

Median: Being in the middle or in intermediate position; relating to or constituting a statistical median

Mode: The most frequent value of a set of data; a value of a random variable for which a function of probabilities defined on it achieves a relative maximum

Parametric: A parameter is a measurement or value on which something else depends. For example, a parametric equaliser is a tone control circuit that allows the frequency of maximum cut or boosts to be set by one control, and the size of the cut or boost by another. These settings, the frequency and level of the peak or trough, are two of the parameters of a frequency response curve, and in a two-control equaliser they completely describe the curve. More elaborate parametric equalisers may allow other parameters to be varied, such as skew. These parameters each describe some aspect of the response curve seen as a whole, over all frequencies. By way of contrast, a graphic equaliser provides individual level controls for various frequency bands, each of which acts only on that particular frequency band.

Peudonym: A pseudonym (Greek: false name) is a fictitious name used by an individual as an alternative to their legal name (whereas an allonym is the name of another actual person assumed by one person in authorship of a work of art; e.g., when ghostwriting a book or play, or in parody, or when using a front such as by screenwriters blacklisted in Hollywood in the 1950s, 1960s, and 1970s). In some cases, the pseudonym has become the legal name of the person using it. Occasionally, a pseudonym is employed to avoid overexposure. Prolific authors for pulp magazines often had two and sometimes three short stories appearing in one issue of a magazine; the editor would create several fictitious author names so that readers would not realise this.

Positivism: In sociology, anthropology, and other social sciences, the term was closely connected to sociological naturalism and can be traced back to the philosophical thinking of Auguste Comte in the 19th century. Describing positivism in the 1966 Henry Myres Lecture, the structural anthropologist Edmund Leach said, "Positivism is the view that serious scientific inquiry should not search for ultimate causes deriving from some

outside source but must confine itself to the study of relations existing between facts which are directly accessible to observation." In some quarters of contemporary sociology, positivism has been replaced by antipositivism.

Psephologists: Those who pursue the scientific study of elections

Qualifiers: Qualifiers is a tool for anyone, professional or student, who must assemble, analyse, evaluate, and organise research data. With Qualifiers you can collect all your data—text, audio, video—in one place and arrange it in categories to suit your purpose. Possible qualitative data include conversations, presentations, recitals, field data, and other situations. You can record audio and play back audio and video with tools such as "transcriber play" and "mark back." Perform post-analyses—"intersection," "union," "not in." Print reports. Project analytic presentations of data and trends from your computer.

Range: The range is the simplest measure of variability to calculate, and one you have probably encountered many times in your life. The range is simply the highest score minus the lowest score.

Rapport: The term refers to the relationship, especially one of mutual trust or emotional affinity. It is a French word, from Old French, from raporter, to bring back: re-, re- + aporter, to bring (from Latin apportâre : ad-, ad- + portâre, to carry.

Regression: A functional relationship between two or more correlated variables that is often empirically determined from data and is used especially to predict values of one variable when given values of the others. A classic statistical problem is to try to determine the relationship between two random variables X and Y. For example, we might consider height and weight of a sample of adults. Linear regression attempts to explain this relationship with a straight line fit to the data.

Rigged: To manipulate dishonestly for personal gain

Sample variance: The statistic s square is a measure on a random sample that is used to estimate the variance of the population from which the sample is drawn. Numerically, it is the sum of the squared deviations around the mean of a random sample divided by the sample size minus one. Regardless of the size of the population, and regardless of the size of the random sample, it can be algebraically shown that if we repeatedly took random samples of the same size from the same population and calculated the variance estimate on each sample, these values would cluster around the exact value of the population variance. In short, the statistic s squared is an unbiased estimate of the variance of the population from which a sample is drawn.

Sampling method: It is incumbent on the researcher to clearly define the target population. There are no strict rules to follow, and the researcher must rely on logic and judgment. The population is defined in keeping with the objectives of the study. Sometimes, the entire population will be sufficiently small, and the researcher can include the entire population in the study. This type of research is called a census study because data is gathered on every member of the population. Usually, the population is too large for the researcher to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn.

Standard deviation: The standard deviation is kind of the "mean of the mean," and often can help you find the story behind the data. To understand this concept, it can help to learn about what statisticians call normal distribution of data. A normal distribution of data means that most of the examples in a set of data are close to the "average," while relatively few examples tend to one extreme or the other.

Tabulation: An orderly columnar display of data, like a chart, table, refers to information set out in tabular form, also refers to the act of putting into tabular form.

Triangulation: In trigonometry and elementary geometry, triangulation is the process of finding a distance to a point by calculating the length of one side of a triangle, given measurements of angles and sides of the triangle formed by that point and two other reference points. Triangulation is used for many purposes, including surveying, navigation, astrometry, binocular vision and gun direction of weapons. Many of these surveying problems involve the solution of large meshes of triangles, with hundreds or even thousands of observations. Complex triangulation problems involving real-world observations with errors require the solution of large systems of simultaneous equations to generate solutions. Famous uses of triangulation have included the retriangulation of Great Britain.

Validity: A deductive argument is sound if and only if it is both valid, and all of its premises are actually true. Otherwise, a deductive argument is unsound. Deductive argument is said to be valid if and only if it takes a form that makes it impossible for the premises to be true and the conclusion nevertheless to be false. Otherwise, a deductive argument is said to be invalid. According to the definition of a deductive argument, the author of a deductive argument always intends that the premises provide the sort of justification for the conclusion whereby if the premises are true, the conclusion is guaranteed to be true as well. Loosely speaking, if the author's process of reasoning is a good one, if the premises actually do provide this sort of justification for the conclusion, then the argument is valid.

Variables: Variables are used in open sentences. For instance, in the formula: $x + 1 = 5$, x is a variable which represents an "unknown" number. In mathematics, variables are usually represented by letters of the Roman alphabet, but are also represented by letters of other alphabets; as well as various other symbols. In computer programming, variables are usually represented by either single letters or alphanumeric strings. Why are variables useful? Variables are useful in mathematics and computer programming because they allow instructions to be specified in a general way. If one were forced to use actual values, then the instructions would only apply in a more narrow, and specific set of situations.

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Learner's page for making notes

Unit 24

Field Research – I

Contents

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24.2 History of Field Research
24.3 Ethnography
24.4 Theme Selection
24.5 Designing Research
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Learning Objectives

It is expected that after reading Unit 24, you will be able to

- Trace the history of field research
- Discuss the meaning of the term "ethnography"
- Select theme of the research and design its plan
- Learn the ways to enter the field and find those willing to and capable of giving information
- Practice the art of observation as a participant.

24.1 Introduction

In this unit, we are concerned with the subject of field research and how it is carried out. Research carried out through fieldwork has a specific connotation in the social sciences. By fieldwork is meant interacting with people in their natural habitats, observing them and collecting socially relevant facts about their lives over a lengthy period of time.

This notion of fieldwork should be distinguished from the work of journalists, who also go to the field (in situ) to collect information and prepare news reports. Fieldwork is also different from the work that market organisations carry out, sending their investigators to collect data on the responses of users (and prospective buyers) of particular products or brands. By comparison to this, fieldwork is an intensive data collection on a given subject over a prolonged period of time by staying with the members of a community (may be a village, urban slum, or an association etc.).

24.2 History of Field Research

The classical meaning of fieldwork has been derived from the work of Bronislaw Malinowski (1922a). He laid the foundation of the method of participant observation for anthropological fieldwork. Prior to the early 1900s, most ethnographic information was collected by what Malinowski

called the amateurs (missionaries, colonial administrators, and travellers) and survey work of sorts had been carried out measuring skulls and describing physical traits (O'Reilly 2005: 7).

Malinowski maintained that an ethnographer© needed to carry out fieldwork for not less than one year in a given community by staying there, learning their language and recording the behaviour of people. In this context, the notion of fieldwork meant going "out there", or, in the words of John Beattie (1964), to study the "other culture". Within the Western tradition, an anthropologist was required to take up the study of another society, the ways of which were unfamiliar to her or him, observing, describing, and analysing it in the form of a monograph©. This was primarily a response to the fact that small-scale, tribal cultures were fast disappearing and their cultures, customs and practices were urgently required to be recorded. Fieldwork thus emerged as a "scientific method" for collecting primary information from people.

The importance of fieldwork was also realised in the early twentieth century when sociologists at Chicago University started working through what was then called the "case study method". This method also necessitated the collection of extensive case studies from smaller communities, like urban slums within large cities like Chicago and New York. Through this method, the sociologists posed a major challenge to the then influential "scientific statistical method". The Chicago sociologists not only studied face-to-face interactions in everyday settings, they also produced narratives of the social world, thus yielding the method of life history and the use of documents, such as diaries and letters. The mention of British and American traditions of field research does not imply that there are no other important traditions with their own styles of generating data from the field. For example, the German tradition of field research includes the collection of museum specimens along with other information and uses the field material to build regional hypotheses. The French tradition is much influenced by Durkheimian sociology, while the Dutch tradition focuses on the academic training of administrators in anthropology, language and literature. Madge (1963), Easthope (1974) and Wax (1971) have discussed the development of field methods in sociology.

Malinowski's (1922) emphasis on understanding the "native point of view" through intensive fieldwork required that the anthropologist collected data on the *imponderabilia*© *of actual life and of typical behaviour*, i.e., every aspect of culture in order to have a full understanding of how a culture was organised and how it functioned. In addition to Malinowski, Franz Boas (1920) also popularised fieldwork as an important part of the training of anthropologists. Boas's influence was tremendous as he insisted on the collection of data from "primitive societies", not only in terms of their social and cultural aspects, but also physical, linguistic, psychological and geographical dimensions. Therefore, from the early twentieth century, fieldwork became an essential aspect

of social research, and every researcher of the social world was expected to be initiated into it.

The focus on studying a single community through the use of participant observation came to be characterised as ethnographic work. The term "ethnography" owes its importance to the notion of observation and description of social behaviour in a single community. In India most anthropologists focused on the village for intensive study. For instance, Srinivas's (1976) study of Rampura is a good example of field based research work.

Over time, the definition and character of fieldwork has undergone tremendous change keeping in line with the changing socio-political context and the theoretical advances in the field. The idea of field has moved away from studying another culture to studying one's own culture, from a very small-scale unit to a larger social unit. Though the notion of "going to the field" is still popular among social scientists, it does not evoke the image of a bounded community. Today, we find social scientists not only studying villages, castes, tribes, but also co-operatives, NGOs, cinema, markets, the homeless, children and even literature. Social scientists today carry out multi-sited field research, producing monographs that are sensitive to contesting perspectives on reality (Clifford and Marcus 1986).

24.3 Ethnography

The word 'ethnography' is used to refer to 'empirical accounts of the culture and social organisation of particular human populations' (Ellen 1984: 7). Ethnography is, on the other hand, understood as a way of doing research, which studies people according to certain procedures and rules in their natural settings or fields to capture the social meanings of their everyday life. This indicates the intensive, field-based and qualitative research of human groups through "participant observation". Ethnography may also refer to an academic discipline that involves the comparative study of ethnic groups. Often a distinction is made between micro and macro ethnography (sometimes referred to as general ethnography). See Box 24.1 on differences between macro and micro ethnography.

Box 24.1 Differences between Macro and Micro Ethnography

Macro ethnography attempts to describe the entire way of life of a group in contrast to micro ethnography that focuses on particular aspects at particular points in the larger setting, group or institution. Typically these points are selected as they represent in some manner salient elements in the lives of participants and in turn, in the life of the larger group.

A second fundamental difference between the two is that the former analytically focuses more upon the face-to-face interactions of the members of the group or institution under investigation. Despite these differences they both share the overarching concern for everyday community life from the perspectives of participants (Berg 2001: 136). Often both complement each other.

O'Reilly (2005: 3) recommends a minimum definition of ethnography in the following words.

> It is an iterative-inductive research© that evolves through the study. It draws on a family of methods, involving direct and sustained contact with human agents, within the context of their daily lives. The field worker watches what happens, listens to what is said, asks questions, and produces a richly written account. This accounts the irreducibility of human experience, acknowledging the role of theory as well as the researcher's own role. Ethnography views humans as part-object and part-subject.

Despite the existence of a plural methodological position on the representation of the field and its analysis, the methods of fieldwork have not changed much. In other words there are certain standard methods and techniques of carrying out fieldwork. Many researchers recommend maintaining a value-neutral position, neither imposing their own views nor taking any stand on social or political issues. However, a number of social researchers have argued against this façade of value neutrality. Feminists have worked out a research orientation comfortable to both the researcher and the subjects (see Box 24.4). The researchers listen more and talk less. The orientation has humanised the research process, insisting that the researchers become both involved with their subjects and be reflexive about their thoughts.

Box 24.2 Accessing Domains of Feminist Discourse

Ursula Sharma (1981: 37) says,

> In many areas male and female experiences do not diverge and there is no specifically male/ female model.

But also a little further she contends

> So it is not just sensitivity to the presence of women, which is required of the ethnographer, but also sensitivity to the difference between different kinds of situations, and the correspondingly different ideas and experiences which will be expressed within them.

Shirley Ardener (1984) adds to the above and notes

> This accords with the stress, which has been laid on the significance of identifying the relevant universe or domain of discourse for an understanding of "muting".

24.4 Theme Selection

Although there is a lot of flexibility in the ethnographic process, unlike the survey, field research still needs to be planned, co-ordinated and systematised. Prior to visiting the field, the researcher carefully prepares a research design, outlining the issues involved, such as the theme of the research, the questions to be asked, data collection techniques to be used, the use of triangulation, the techniques of data analysis and the ethical practices to be taken care of.

The popular notion in the social sciences has been that field research should not be preceded by well-formulated hypotheses, as the field itself

was expected to throw up questions. The anthropologists were expected to start their fieldwork *tabula rasa*©, like a blank slate, for s/he did not want to be ensnared by any prejudices, stereotypes and preferences. However, the newer understanding suggests that the research design is critical for ethnographers as it guides the plan of the project. This design is made to allow flexibility and impromptu decision-making in the field, i.e., it permits unanticipated changes in the plan as the problem arises.

A piece of research is seldom undertaken with a neutral reason. The selection of a research topic typically derives from some researcher-oriented position. Furthermore, all wo/men are the products of social groups, where values, moral attitudes and beliefs orient people in a particular manner.

The use of personal biography or deep familiarity with a subject has become more common and accepted by ethnographers. Maintaining the façade of neutrality prevents a researcher from ever examining her/ his own cultural assumptions or personal experiences, while subjective disclosures by researchers allows the reader to better understand why a research area has been selected, how it was studied, and by whom. For example, if a nurse studies cancer patients and explains that her/ his selection of this topic resulted after one of his family members contracted the disease, this does not diminish the quality of the research. It does, however, offer a keener insight about who is doing the research and why. It will provide the reader with a greater understanding about why certain types of questions were investigated, while others were not. Today many researchers choose to work on problems relating to development issues, gender, environment and human rights, which reflect instrumental concerns in terms of the availability of funds and job possibilities.

Presenting subjective disclosures or giving voice to the researcher provides insights into the world of research. Everyday realities are heavily influenced by human feelings and presentation of these feelings is legitimate.

Besides the personal or theoretical interest in the topic, the feasibility of field research should also be considered. For instance, in north-eastern states of India, field research may not be easy owing to insurgency. Similarly, in some districts of Bihar and Andhra Pradesh, it may be difficult to carry out fieldwork because of the rise of the Naxalite movement.

Reflection and Action 24.1

Read chapter 7 on Ethnography and Product by Gerald D. Berreman (2004: 157-190) in V. K. Srivastava's edited book, *Methodology and Fieldwork*. Write a short note on "Ethnographers' Craft" and on the basis of your reading and note, make a tentative selection of a theme of your research. Give reasons for selecting the theme and explain both its theoretical and practical aspects in about 500 words.

24.5 Designing Research

Brewer (2000: 58) discusses the general plan for ethnographic research design outlining the major features of the topic, including the aims and objectives of research (see Box 24.2).

Box 24.3 General Plan for Ethnographic Research Design

- The choice of research site/field and the forms of sampling employed to select the field and the informants.
- The resources available for research including money and time.
- The sampling of time and events to be experienced in the field, i.e., what events the ethnographer wants to cover and a general sense of time management.
- Methods/techniques of data collection to be used in the field.
- Entering the field through whom, how negotiating rapport and trust.
- Nature of likely adoption of roles, depending on one's age, gender, status and class.
- Forms of analysis to be used specially for both quantitative and qualitative details.
- Withdrawal from the field and the forms of dissemination that will be used to report the results.

Ethnographic research is not a particular method of data collection, but a style of research, that is, distinguished by its objectives, which are to understand the meanings and activities of people in a given field (or setting) and an approach which involves close association with, often participation in, this setting (Brewer 2000: 59). Field researchers, to begin with a general notion of the problems or issues that interest them, have a sense for the settings that will be relevant for examining these problems or issues. Some formulate tentative hypotheses, while research questions are rarely pre-formulated in great detail. Research questions and theoretical issues emerge as the setting is explored. Thus, field setting must be designated and access to the setting obtained. There arises the question of gaining entry into the research setting. The decision has to be made whether to enter the field openly as researchers or to conduct research covertly without revealing the actual purpose of being in the setting. The ethics of covert research are continually debated among field researchers (Denzin 1970 and 1978). Access to research settings also relate to issues of "reactive" effects, i.e. researchers' presence leading to changes in the settings.

This form of social research uses several methods of data collection such as participant observation, in depth interviewing, the use of personal documents and discourse analysis. Since this research combines many methods, it employs triangulation, a term coined by Denzin (1970). Researchers must decide on the roles they will occupy in the setting - complete observer, observer as participants, participant as observer, or complete participant. Data collection involves carefully watching, listening and recording the details of everyday activity in the setting under study. Further, the process would involve translating these observations into systematically organised data.

NGOs and development agencies have popularised a variant of fieldwork, which owes much to the classical notion of studying people in their natural setting and taking the people's point of view. Their fieldwork practices, however, differ considerably in methodology as well as in strategies. Fieldwork carried out by NGO workers often is project-driven, to be completed in a short span of time. They, therefore, have devised short cut, quick data collection techniques, ignoring the nuanced detailed meanings of ordinary activities of people. Here the concern is more with data collection of a special kind and its description. This kind of exercise has been termed by various concepts like Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA), etc. We will return to a discussion of these techniques later in the unit. An important point which needs to be noted here is that these strategies are shaped and suited for certain specific goals and not driven in search of knowledge as ethnography aims at.

24.6 Gaining Entry in the Field

The researcher has to enter the field carefully. Entering the field is often dependent on factors like the nature of the field and the social background of the researcher. In earlier days, anthropologists/ sociologists (as white men and women) entered tribal colonies as masters, administrators, missionaries or travellers. In developing countries like India the field researcher is often a middle class urban educated person. Race, caste, ethnicity, age and gender are other important factors in determining the course of successful entry into the field. Leela Dube (1975) describes how in three different phases of fieldwork in her career, gender, marital status, age and social status were crucial in making a rapport with the respondents.

Mistakes in entry may endanger a fieldworker's success. Proper entry facilitates rapport. Important persons located at entry points to the field are called "gatekeepers". To gain entry one has to make use of formal and informal contacts. Previous acquaintances and introductory letters from research institutions or sponsoring agencies are helpful in gaining entry. The reputation of sponsors and support of gatekeepers helps in establishing authenticity. On the other hand, the researcher must keep in mind that one's behaviour affects one's reputation. Entering the field by not seeking permission from gatekeepers can cause problems for researchers. Also as a researcher enters a field through gatekeepers, s/he leaves it after informing them.

In studying the whole community, the most open points of entry are among those who share one's social class background. But not all contacts at a given level are of equal value. At an early stage, the researcher tries to identify those in leadership positions in the hope that they will provide useful contacts and even informal sponsorship. After gaining the

acceptance of some key people, the researcher then attempts to participate in ways that establish an acceptable personal identity, making it possible to move beyond the limits of the initial sponsorship.

In the early stages of the project, when the researcher is still consolidating a social base, it is not advisable to formalise one's methodology. When one is successful in establishing a social base one can get information without even asking questions. The first contact with potential participants needs to set the right tone by taking away fears, inspiring the potential participants with trust and making them interested in taking part in the research project. If one establishes contact through one's kith and kin, it is easier to get accepted. However, to associate oneself with a particular family might restrict one's freedom of movement.

The first thing people do is to locate the researcher in a particular position. The place where one is located must be acceptable to those who want to be studied. For example, one cannot identify with high caste or low caste only. One has to divide equally to have a comprehensive study of the situation. But at the same time it is impossible to claim to know everyone on an equal footing. One makes a good impression on people and wins their acceptance when one is honest and truthful about one's family background when local people enquire about it. A researcher takes on the role of a friendly stranger in the field. On entering the field, one ought to feel at ease and make others feel at home. The first day in the field is important as the researcher tells the people about her/ himself and what brings her/ him in their midst. Great care is taken not to evoke apprehensions in the people's minds. A researcher establishes contact with individuals in the field and starts becoming familiar with them. S/he has to avoid taking sides, causing offence to anybody, or interfering with their way of life. A researcher is neither a revolutionary nor a missionary. S/he observes them without trying to reform or convert them and participates with a view to observing, experiencing, and analysing a life different from her/ his life.

In order to perform one's role well a researcher has to establish good rapport with the people one is studying. To establish rapport one may reside with the subjects and familiarise oneself with the surroundings. It is essential to establish one's bonafides and reputation as a good person. A researcher's acceptance as such would facilitate unguarded natural responses. For gaining insights, the observer develops empathy with her/ his subjects. Empathy is the ability to put oneself in the other's position and imaginatively experience their thoughts and actions. A researcher is not indiscreet, does not carry tales from one person to another and does not let her/ his subject(s) feel threatened. Without competing with them for status and interacting with them wherever and whenever available, a researcher is not in a hurry and works out personal equations with some persons and through them with others. For this purpose one has to develop skills in establishing contact with the people. A researcher enjoys meeting people and talking to them and

does not feel irritated or annoyed with them. Handling situations tactfully and gathering information without becoming controversial in the field, a researcher does not accept all their statements at face value and corroborates the same with others, checks them up, and draws one's own conclusions.

Even though a researcher establishes close relations with those who are friendly, too much of familiarity and intimacy is avoided since that impedes objectivity. A researcher is aware of one's own limits and withdraws from relations before they become embarrassing. Initially concentrating on one or two key informants a researcher gradually approaches others. A few people may wish to keep themselves away from the researcher while s/he may also have to keep his distance from some in order to establish rapport with others. Those who are reticent initially may not be so later.

24.7 Key Informants

Not all contacts are of equal value. At an early stage, the researcher tries to identify those in leadership positions in the hope that they will provide useful contacts and even informal sponsorship. To handle initial relationships, one locates a guide or a key informant. Guides are indigenous persons found among the group and in the setting to be studied. They need to be convinced that the ethnographers are the ones they claim to be and that the study is worthwhile. The worth of the study must be understood and be meaningful to the guides and their group. The key informant must be convinced that no harm will befall them or other members of the group as a result of the researcher's presence. The guide (or key respondent) can reassure others in the community that the researchers are safe to have around.

One is advised not to take the leader of the organisation or community as the key informant, for the leader may be misinformed or not aware of certain things happening among the commoners. Sometimes persons who are willing to be guides or informants turn out to be restricted to their groups. Some may dissent from the group or may be disliked by others; the field workers are advised not to choose such persons to be their guides or key informants. Ideally, the chosen guides or key informants should be well trusted and liked by others in the group. Consequently the "snowballing"● of guides and informants may assist ethnographers in their manoeuvrability while in the field. Snowballing refers to using people whom the original informant introduces as persons who can also vouch for the legitimacy and safety of the researcher. The larger the ethnographers' network of reliable guides and informants, the greater their access and ability to gain further co-operation. Eventually, the need for specific guides decreases as the network of respondents grows in size and the researchers are able to begin casual acquaintanceship by virtue of their generally accepted presence on the scene.

Reflection and Action 24.2

Continuing with the theme you selected in Reflection and Action 24.1, after reading sections 24.5 to 24.7, prepare a research design based on the theme of your research and decide how you would like to gain an entry in the field and approach the people there with a view to identifying key informants. Write a short note and include the following details in it.

*Design of my research
*How I will gain an entry in the field
*How I will identify key informants

24. 8 Participant Observation

Everyday seeing has to be distinguished from observation; the latter being more focused with a purpose and is done to understand the phenomena. Social research gives a special place to observation as it is considered to be one of the fundamental tools to study people's behaviour, exemplified very well in its origin in classical British social anthropology and Chicago School in sociology. Positivist tradition places a good deal of importance in this method of data collection as it is assumed that social behaviour is observable and amenable to sensory perception. (The other method through which researchers collect data is interview.)

Observation allows the researcher to understand people and their behaviour through direct focused non-verbal observing in their natural settings, whereas in an interview the focus moves to verbal communication. Observation is used as one of the primary techniques of data collection in sociological fieldwork, which can be both intrusive, i.e., as a participant (see Box 24.3), and non-intrusive, i.e,. as a non-participant. Those researchers whose subject of enquiry does not necessarily involve mixing up with people employ the non-participant type of observation. For instance, a researcher can observe student-teacher interaction over a period of time without interfering in this type of interaction. The prerequisite of such an observation is working with an observation schedule where a list of topics is mentioned guiding the researcher to specifically observe certain types of behaviour. Non-participant observation has been found to be more useful in complex social situations. Another term, quasi-participant observation, is also used in literature to imply partial situational participation of the observer in the social life of people.

Box 24.4 Participant Observation

Participant observation entails data gathering through participation in the daily life of informants in their natural settings. A social researcher watches, observes and talks to people in order to understand their interpretations, social meanings and activities. The classical notion behind such practices is to discover the gap between what people think, do and say. The researcher adds to this the dimension of her/ his personal experiences of sharing the everyday life of those under study.

The method of participant observation, as enunciated by Malinowski,

required the researcher to detach oneself from the people and interpret their behaviour. Today, however, subjectivist positions, of which Clifford Geertz is the pioneer, maintain that the main instrument of data collection in participant observation is the researcher (see Burgess 1982: 45). Malinowski saw observation as separated from description, while Geertz insisted on interpretative understanding as the link between observation and description. Malinowski, representing the positivist tradition emphasised the need to have a detached view of things and of the social life of natives, whereas for Geertz (1973a, 1988), the ethnographic exercise is an exercise in "thick description" trying to interpret meanings in terms of what people understand, think about and how they describe their behaviour. Here the understanding is essentially intersubjective as the observer is immersed in the social life and participates in actual terms.

The ethnographer is required to develop certain special personal qualities to maintain a balance between the insider and the outsider. Burgess (1982: 45) identifies other "personal abilities" to be able to share in the lives and activities of other people, to learn their language and meanings, to remember action and speech, to interact with the range of individuals in different social situations.

Brewer (2000: 60) writes that there are two ways in which the social sciences use participant observation to understand the world as it is seen by acting within it, and to reveal the taken for granted common sense nature of that everyday world itself. The former is the traditional usage in the social sciences, where social groups or specific fields are studied from inside. However, the development in the 1960s of ethnomethodology in sociology and some new forms of interactionism led to an interest in the common sense methods and procedures by which routine activities are accomplished. Such researchers are among many things studying the organisation of conversation decision making in an organisational setting, even walking and sleeping.

In some cases the participant observes those fields of which s/he is already a part. The requirements and problems of using participant observation as a method are very different from those for whom the settings are unfamiliar as in the traditional case. Sometimes an existent role is utilised to explore the dimensions of a new setting/ field in which the role naturally locates the observer. A good example is Cohen and Taylor's (1978) use of their role as part-time teachers to study prisoners and prison life. The strategy of observation in most roles can be covert or overt and the researcher needs to have special skills in order to be successful. In new roles, for instance, the observer has to win the confidence of people, resocialise into the practices and values of the group and spend a long time in the field to have a full experience of the activities and events. If the role is covert, the observer should be dedicated, tenacious and maintain the pretence of an insider. Depending

upon the field situation, the researcher often has to make a decision about the nature of participation required. Situations condition whether or not to participate, and to what extent. In such contexts, researchers, instead of getting totally absorbed in the field situation, choose to selectively participate. Such actions have been construed as quasi-participation in social science fieldwork. Participant observation involves not only observation but the researcher uses triangulation, i.e. using a number of techniques like observation, genealogies, interviews, questionnaires, schedules, life histories, case studies, oral histories, and today even participatory rural appraisal (PRA) and rapid rural appraisal (RRA) to collect both primary and secondary sources from the field. Although relying more on qualitative research, quantitative details are also used to substantiate arguments and construct case studies.

Participant observation therefore is an arduous and tough process of data gathering and cannot be replaced by smash and grab ethnographies. At the heart of this method is involvement and detachment. On the positive side, the access to social meaning, shared beliefs and values and nuances of everyday activity that one gets through this method, is difficult to get through any other technique. The scope and limits of participant observation are however constrained by the physical limits of the role and location of the researchers. Since this method is most useful in a micro setting the generalisations arrived at reflect a partial picture. The reflexive researchers recognise the value of their views as significant specially in articulating the linkages between the micro and the macro.

Reflection and Action 24.3

Read section 24.8 of the Unit and play the role of participant observer for a period of one month only at your Study Centre in order to generate information on the level of interaction between IGNOU students and the Centre. Based on your experience as a participant observer, write an essay of five hundred words on "the art of participant observation". Exchange your essay with the essays of other MSO 002 learners at your Study Centre and discuss each other's experience of participant observation as a means of gathering information for understanding the social reality around you.

24.9 Conclusion

Unit 24 has introduced you to the vast theme of field research, which is the mainstay of generating new information about the social world that sociologists and anthropologists try to understand and explain. It has traced, in brief the history of field research and discussed the subject of ethnography. Further, it has elaborated on the issues of selecting the research theme, designing the research plan and gaining entry to the field. Talking about the main sources of deriving information in the field, Unit 24 has explained what it is to be a participant observer and subsequent use of this experience at the time of analysing one's field data.

This detailed introduction to field research has paved the way for a discussion of field research methods in Unit 25 to which we will now turn.

Further Reading

Ellen, R. F. 1984. *Ethnographic Research: A Guide to General Conduct*. Academic Press: London (chapters 3 and 4, pp.13-62)

Srivastava, V. K. 2004. *Methodology and Fieldwork*. Oxford University Press: Oxford (Introduction pp.1-50 and pp. 149-156)

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Unit 25

Field Research – II

Contents

25.1 Introduction
25.2 Genealogy
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Learning Objectives

It is expected that after reading Unit 25, you would be able to

- Discuss the field methods described in Unit 25
- Subsequently select and use some of them in your mini research project.

25.1 Introduction

Unit 25 deals with some of the techniques, and methods, which qualitative researchers use in their pursuit of data collection. Undoubtedly, field research has always been conducted as a matter of personal style. Clammer (1984: 70) had once pointed out that many Indian anthropologists widely practiced the drawing up of inventories of customs in response to lists of queries of the kind given in Notes and Queries but such encyclopaedism has now almost universally disappeared and Clammer (1984: 69) mentioned four basic sources to styles in the practice of field-based research, namely,

- The individual and idiosyncratic characteristics of individual fieldworker
- Ideological and philosophical assumptions
- The general conception of method
- The nature of problem being studied

You will not find all researchers using all the methods and techniques discussed in Unit 25. Depending on the source(s) of the personal style, a particular researcher may or may not use a method or technique. It is a good idea for you to get familiar with most common methods and techniques of qualitative research. With this notion in mind, we are going to discuss such methods and techniques as genealogy, interview, case study, life history, oral history and PRA/ RRA techniques. We begin the discussion with genealogical method.

25.2 Genealogy

One specialised method to study kinship, family and marriage is by the use of genealogies, which are prepared using the techniques of observation and interview.

W. H. R. Rivers (1900) showed the importance of genealogy in social and cultural studies and delineated the procedure of drawing up genealogical data (see Box 25.1 on the early realisation of the importance of genealogical method in social research). Malinowski (1922:14-15) defined genealogy as a "synoptic chart of a number of connected relations of kinship". The investigator traces the genealogical chart of the respondent (called ego) by making enquiries from him. However he may not place all his relatives in the right birth order or his memory of them may be faulty. Thus the fieldworker completes the genealogy seeking information from other respondents. The genealogical chart, however, may not be complete because people may not remember their ancestors, their names and other details about them beyond a certain number of generations. The problem of remembering is bound to multiply in societies where descent is traced from both sides.

Box 25.1 Relevance of Genealogical Method for Social Research

In 1904 Haddon suggested that a new approach to field research should involve:

Exhaustive studies of limited groups of people, tracing all the ramifications of their genealogies in the comprehensive method adopted by Dr Rivers for the Torres Straits Islanders and for the Todas (1905: 478).

Rivers' work among the Toda (1901-1902, published 1906) had pioneered this approach and his example was followed by C. G. and B. Z. Seligman among the Vedda (1907-1908, published 1911) and A. R. [Radcliffe-] Brown in the Andamans (1906-1908, published 1922).

The above excerpt is a quotation from Urry's article on *A History of Field Methods* (1984: 47) and it shows a clear bias to intensive fieldwork in single communities.

Not only do fieldworkers prepare genealogies but also the people whose charts they prepare may also keep an account of their kin and affinal relatives. The kinship chart therefore is an analytical tool as well as an ensemble of rules according to which the actors are expected to behave (Barnes 1947). In societies where writing technology has made inroads, kinship charts that hitherto existed as part of the oral tradition are now being written down (Srivastava 2004: 32). Some societies have specialised groups of genealogists who derive their livelihood by charging their clients for keeping their kinship and marriage records.

The facts of kinship and marriage that are of relevance to the researcher may not hold the same importance for the people, thus the charts that people prepare for their purposes are different from those that fieldworkers prepare after sustained interviewing and observation. According to Fortes (1949), the kinship chart that the actors prepare

may be called pedigree whilst the one the fieldworker prepares as part of his data depending upon his research interests may be known as genealogy. Genealogical data are used for a variety of purposes apart from that of studies of kinship. Demographers© use genealogical statements. Migratory histories of peoples can also be studied through this method. Genealogy also facilitates the process of rapport establishment with people.

Reflection and Action 25.1

Read Unit of ESO 12 of IGNOU's B. A. Sociology programme to learn how to make genealogical diagrams. Then, prepare a genealogical chart of your own family with a generation depth of at least three generations before you and a horizontal spread of all relationships arising out of marriages. In preparing the chart, note the name, sex, occupation and dwelling place of the person whose details you are noting down. Next, find out as accurately as possible when and where the person was born and where the person has lived. Note the names of each of the person's spouses, whether or not the marriage is still alive, and record in each case where the marriage began and where and when it ended if it is not still extant. Note down the spouse's date and place of birth and where the spouse lives now, or date and place of spouse's death. Information on births, marriages and deaths is likely to be more precise. Distinguish between social filiation at birth from filiation acquired by adoption or fosterage. The very process of making this chart is going to provide you a learning experience. After completing the chart you may study it in order to find out about the pattern of territorial spread of your family, its occupational pattern and types of marital unions, average age at marriage, the pattern of male and female longevity and so on. It would be interesting for you to compare your chart and findings on its basis with similar documents prepared by fellow learners of MSO 002 at your Study Centre.

25.3 Interview, its Types and Process

Interview is usually defined as a conversation with the purpose of gathering information. There is, however, a difference between "everyday conversation" and "interview", the latter being an unequal situation in which usually the researcher decides and controls the talk either directly or indirectly (Srivastava 2004: 29). Interview is based on the assumption that the respondent's verbal descriptions are a reliable indicator of behaviour, meanings, attitudes and feelings and that the stimuli (the questions) are a reliable indicator of the subject of the study. It is a two-way process in which both the interviewer and the respondent have a mutual view of each other, engage in an interactive situation, communicate ideas and an incipient relationship emerges between the two. Interview is an effective method of collecting information for certain types of assumptions, particularly when investigators are interested in understanding the perceptions of participants or learning how participants come to attach certain meanings to phenomena or events. In such situations, interviewing provides a useful means of access. Unlike observation, it is less time consuming and one can collect data pertaining to intangible things. Interview is also a flexible tool that can be used to gather additional information on the spot that has not been

predetermined. One can catch lies and contradictions easily by watching gestures and cues. Taking interviews is preceded by preparing a list of questions on the topics relating to the research problem. This list is known as interview guide. It is used as a ready reference by the interviewer to cover as many issues as possible in a limited period of time.

It is fine to have a ready reckoner with you for an interview but this may in some ways restrict the flow of information. For this reason many researchers like to use different types of interview schedules. We may discuss types of interview on the basis of a number of criteria (see Box 25.2 on criteria of types of interview).

Box 25.2 Criteria of Types of Interview

The first criterion is the degree of pre-determination in the questions asked (this includes formal questionnaires through a standard agenda and checklists to questions cropping up in the middle of interview.)

A second criterion is the degree of directiveness (this includes the direction of questions from neutral to the most specific questions on particular subjects.)

The third criterion is linked to the second. It is the degree of openness or closedness of questions asked (for example, "How are you?" versus "Are you not going to school today?")

The fourth criterion is the length of interview (that is a brief encounter versus in-depth inquiry)

A fifth criterion is of prior arrangement (fixing an interview by appointment)

A sixth criterion is the interview setting (group versus two persons, subject's residence, ethnographer's house, neutral location, and so on)

The above excerpt is based on Kemp and Ellen (1984: 231).

After looking at different criteria, let us now discuss types of interview.

Types of interview

Interviews are generally classified into three types, namely,

- Structured interview
- Unstructured interview
- Semi-structured interview

We will now deal in some detail with each type of interview.

Structured interview

This type of interview uses a formally structured schedule of interview questions. The rationale is to offer each subject approximately the same stimulus so that responses to the questions ideally are comparable. They are designed to elicit information using a set of predetermined questions that are expected to elicit the subject's thoughts, opinions, and attitudes about certain issues depending on the study.

Unstructured interview

There is no formal question schedule in this type of interview. Interviewers begin with the assumption that they do not know in advance what the

necessary questions are. They also assume that not all subjects will necessarily find equal meaning in like-worded questions. The interviewers must develop, adapt and generate questions and follow up probes appropriate to the given situation and the central purpose of the investigation. Unstructured interviews allow researchers to gain additional information about various phenomena they observe by asking questions.

Semi-structured interview

This type of interview involves the implementation of a number of predetermined questions or only predetermined topics. These questions are typically asked of each interviewee in a systematic and consistent order but the interviewers are allowed the freedom to digress to probe far beyond the answers to their prepared and standardised questions.

To determine which type of interview format to use you must consider the kind of questions you want to ask and the sort of answers you expect to receive. The nature of the question (direct or indirect, open or close ended, long or short) will depend on the nature of the study.

Interview process

It is also relevant to understand about the interview process. Interviews frequently begin with "open ended" questions (such as demographic questions, general questions) that may be essential for developing rapport between interviewers and subjects. Questions concerning the central focus of the study may be placed together or scattered throughout the schedule. Extra questions, i.e. those questions equivalent to certain essential ones but worded slightly differently, are asked in order to check the reliability of responses. Probing questions provide a way to draw out more complete stories from subjects. Probes frequently ask subjects to elaborate on what they have already answered in response to a given question.

The investigator must convince the subjects about the importance of the survey. One must convince subjects what they have to say is important. A list of questions may help the flow of interview and come in handy when conversations grind to a halt. One should cultivate appropriate conversation styles, sitting positions and eye movements. During the interview if conversation touches the low ebb, it should be rekindled by indicating that you know something; you offer opinion or provide a calculatedly wrong assertion so that the respondent is motivated to air his views and opinions. In case of a stagnating conversation, you should push with an appropriate probe. Probing is an art which has to be cultivated. One should not interrupt the respondent accidentally, but if it must be done it should be done gracefully. Questions should be clarified by the use of non-verbal stimuli such as artefacts, show cards, pictures or even photographs. A certain focus is required to control the situation in all stages of the interview. See Box 25.3 for some tips that can help during the interview:

Box 25.3 Helpful Tips For Conducting an Interview

- Begin an interview with small talk to establish a rapport.
- Be dressed appropriately and present a natural front.
- Interview in a comfortable place.
- Be aware, appreciative, respectful and cordial to the respondent.
- Do not be satisfied with monosyllabic answers.
- Never forget the purpose of your interview.

In many interview situations, one-to-one interviewing is often not possible especially in villages, in teashops or slums where interactions are held in public view. Often the researcher finds the individual interviewing turning into a group interview where others surround the two, interject and supplement answers. Group interviews are advantageous especially if one is seeking public information, for instance on water crisis or sanitation in a slum, etc.

25.4 Feminist and Postmodernist Perspectives on Interviewing

We are here adding two different perspectives on interviewing for your use as and when you may find either or both useful for your mini research project.

The feminist perspective on interviewing

Feminist methodology rejects the assumption that maintaining a strict separation between the researcher and the researched produces a more valid, objective account. One way in which feminists avoid treating their subjects as mere objects of knowledge is to allow the respondent to talk back to the investigator. It aims at building more from the sharing between the researcher and his respondents. In order to do this the researchers need to interview in ways that allow the exploration of incompletely articulated aspects of women's experiences. Ann Oakley's (1981) feminist paradigm for interviewing seeks to minimise objectification of the subject as data by viewing the interview as an interactional exchange. In her framework, answering the questions of interviewees personalises and humanises the researcher and places the interaction on a more equal footing. The meaning of the interview to both the interviewer and the interviewee and the quality of interaction between the two participants are all salient issues when a feminist interviews women. Oakley also points out that interactive interviewing is an approach that documents women's own accounts of their experiences and allows the sociologist to garner knowledge not simply for the sake of knowledge but for the women who are providing information.

Traditionally, qualitative researchers have conducted interviews that are "open-ended" and "intensive", seeking to avoid structuring the interaction in terms of the researcher's perspective. But eliciting useful accounts is much more than encouraging women to talk. Most members of a society

learn to interpret their experiences in terms of the dominant language and meaning and women have trouble talking about their experiences. What researchers can do is to take responsibility for recognising how the concepts we have learned as sociologists may distort women's accounts. We can return to activities conducted in specific settings as the source for our studies, and ground our interviewing in accounts of everyday activity - in accounts of how particular women actually spend their time at home, for example, rather than a previously defined concept of "housework". Since words available do not fit, women learn to "translate" when they talk about their experiences. As they do so, parts of their lives "disappear" because they are not included in the language of the account. In order to "recover" these parts of women's lives, researchers must develop methods for listening around and beyond words.

The postmodernist perspective on interviewing

Postmodernist interview involves the sharing of personal and social experiences of both respondents and researchers, who tell their story in the context of a developing relationship. In this process, the distinction between the "researcher" and the "subject" gets blurred. We also view researchers' disclosures as more than tactics to encourage respondents to open up. The feelings, insights, and stories that researchers bring to the interactive encounter are as important as are those of respondents. Thus, our work focuses on the interview process, the stories and feelings that both respondents and researchers share in the interview and the understanding that emerges during interaction.

Interactive interviewing requires considerable time, multiple interview sessions, and attention to communication and emotions. It also may involve participating in shared activities outside the formal interview situation. Our approach is flexible and continually guided by the ongoing interaction within the interview context.

Participants engaged in this kind of research must be open to vulnerability and emotional investment while working through the intricacies of sensitive issues. Interactive interviewing reflects the way relationships develop in real life; as conversations where one person's disclosures and self-probing invite another's disclosures and self-probing; where an increasingly intimate and trusting context makes it possible to reveal more of ourselves and to probe deeper into another's feelings and thoughts; where listening to and asking questions about another's plight led to a greater understanding of one's own; and where the examination and comparison of experiences offer new insights into both lives. This inter-subjective process provides a contextual basis for a level of understanding and interpretation that is not present in traditional hierarchical interview situations - where interviewers reveal little about themselves, aloofly ask questions in one or two brief sessions, and have little or no relationship with respondents.

Feminists have called for researchers to acknowledge their interests and

sympathies. They have also questioned the separation of the researcher and the respondent and viewed research as properly ascribing to the goals of empowerment, consciousness-raising and improvement of life circumstances. Moving away from a traditional research model, interpretivists encourage self-disclosures on the part of the researcher. Researcher involvement both helps respondents feel more comfortable sharing information and closes the hierarchical gap between researchers and respondents that traditional research encourages. Interviewees become narrators who improvise stories in response to researcher's questions, probes and stories.

Reflection and Action 25.2

Make a team of three fellow learners of MSO 002 at your Study Centre and each member of the team needs to select one of the three types of interview methods for interviewing a teacher of her/ his choice on the subject of reforms in the examination system at open and distance learning institutions. Each team member is to prepare a short note of about five hundred words on the basis of her/ his findings. Each member is to then explain in an oral presentation before other learners of MSO 002 at one of the counselling sessions of this course the differences in findings due to the difference in the way interview was conducted in each case.

25.5 Narrative Analysis

Narrative analysis seeks to analyse narratives (events, viewpoints) of subjects. Das (1999) has discussed contemporary methods used in narrative analysis (see Box 25.4 on different techniques of collecting verbal data).

Box 25.4 Three Techniques to Collect Verbal Data used in Narrative Analysis

In her article on narrative analysis, Das (1999: 48-50) has mentioned three techniques to collect data.

1) Narrative technique: It facilitates an exploration of variations in the life histories of people in similar social settings. Here the narrative is 'linear and oriented' and the focus is on a single event or a sequence of events that occurred in a person's life.

2) Amplificatory technique: In this technique the person narrating the life history gets the opportunity to present the story of her or his life around the events which are most important in the eyes of that person.

3) Elicitory interview: this technique is used for testing a hypothesis and with this purpose the researcher focuses on eliciting information.

Narratives collected through interaction with subjects are not always enough and have to be supplemented by additional data. In analysing narratives one should be able to read between the lines and also investigate the various situations that made a subject respond to a certain question in a certain way. It is subject positioning that constitutes the type of response one elicits from them. For example, a war widow

might vent her anger at the government for not caring for her needs because she is economically unable to support herself while another from an established background might dismiss such aids as unnecessary. When subjects refuse to respond it does not mean that they do not have an opinion. At the same time one should also take into account the fact that opinions might be formed at the spot when the subject had never thought about any before. In such cases the response would be influenced by the nature of the ongoing situation. Data collected should not only amount to the words that are spoken, but also should be the summing up of observations, attitudes, various records and respondents' viewpoints. The production of truth is questionable (Visweswaran 1996) as there are specific kinds of truth produced by a specific kind of epistemology. Even silences also have their own narratives and one should be aware of the response made to fulfil certain subject functions.

25.6 Interpretation

Interpretation requires more care than asking questions. The respondent's answer is to be situated relationally. Meanings reside in the cultural context. Certain answers may be offered as a matter of mere courtesy and may not have anything to do with accuracy (see Jones 1964), some answers may be given due to impatience, others still due to political, moral and other social constraints. As Kemp and Ellen (1984: 234-235) have said, "one way of approaching the problems of interpretation is systematically envisage all possible questions or interpretations of questions that might have elicited the actual answers you get".

Interpretation also involves the understanding of the power dynamics that structured the interaction between the interviewer and the subject. One should be aware of the various kinds of circumstances and situations that elicit a certain type of response. Silence and subject refusal have their own interpretations and should be read as meaningful data, for it is not only spoken words that have meanings but also gestures, attitudes, cues and silence or denial.

25.7 Case Study and its Types

Case study method involves systematically gathering enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how it operates or functions. Case study is not actually a data gathering technique, but a methodological approach that incorporates a number of data gathering measures. The approach of case studies ranges significantly from general field studies to the interview of a single individual or group. Case studies may focus on an individual, a group, or an entire community and may utilise a number of data technologies such as life histories, documents, oral histories, in-depth interviews, and participant observation.

Case studies can be rather pointed in their focus, or can approach a broad view of life and society. For example, an investigator may confine his examination to a single aspect of an individual's life such as studying a medical student's actions and behaviours in medical school.

One must determine the area of social life to be studied according to the nature of the problem. When examining an individual case study, a similar type of assessment must be undertaken. A single lengthy interview may be sufficient or several interviews may be required to be supplemented with field notes during observation, copies of journal or diary entries from the subject, or other forms of documentation. Several reasons may make it necessary for a broader and more sweeping investigation on all aspects of an individual's social life as they are interconnected and one cannot be adequately understood without a consideration of the others.

Types of case study

According to Yin (1994) and Winston (1990) there are three types of case studies.

1) **Exploratory**: In exploratory case studies, fieldwork (and data collection) may be undertaken before defining a research question. This type of study may be seen as a prelude to a large social scientific study.

2) **Explanatory**: This type of study seeks to explain certain phenomena and is useful when conducting studies particularly in the complex studies of organisations or communities.

3) **Descriptive**: This type of study requires the investigator to present a descriptive theory, which establishes the overall framework for the investigator to follow throughout the study. Before beginning research the investigator must determine exactly what the unit of analysis in the study will be.

What distinguishes case studies from more general ethnographic reportage is the detail and particularity of the account. Each case study is a description of specific configuration events in which a particular set of actors have been involved in some defined situation at a particular point of time. In setting out a case study the analyst must decide in advance at what point to enter the ongoing flow of events and at what point to withdraw from it. It should emphasise on the theoretical connection between the events rather than on the events themselves. Any technique can be used for the collection of data and it is preferable to operate with "social fields" (Gluckman 1961) since data beyond what is strictly germane to this purpose are redundant.

While on his notion of social fields, let us also mention Gluckman's (1961) concept of extended-case method, which van Velsen (1964: xxv) calls "situational analysis". The extended-case method refers to the researcher's collection of detailed material of a particular sort. It also entails the specific use to which such field material is put while the

ethnographer analyses the same. Mostly, sociologists and anthropologists have used extended-case method or situational analysis to discuss conflict as a normal aspect of social change. See Box 25.5 for van Velsen's (1967: 148-149) views on the use of the extended-case method/ situational analysis.

Box 25.5 J.van Velsen on The Extended-case Method and Situational Analysis

... ... I have outlined methods of analysis and fieldwork from the comparison of haphazardly collected customs, through the more modest but sociologically more fruitful structural method with its emphasis on social morphology, to a method that aims at analysing the interrelation of structural ('universal') regularities, on the one hand, and the actual ('unique') behaviour of individuals, on the other.

Although I am of the opinion that the fieldworker's theoretical approach is of primary importance with regard to the type of material he seeks, and although I think that fieldwork methods can be prescribed only in general terms, I have made some suggestions regarding the collection of the type of material that is most likely to satisfy the demands of some of the present theories. These demands are of a synchronic analysis of general structural principles that is closely interwoven with a diachronic analysis of the operation of these principles by specific actors in specified situations.

Case study method is not a new style of data gathering and analytic technique. The fields of medicine and psychology, for example, by their very nature require physicians and psychologists to examine patients case by case. Case studies are commonly used in business and law curricula to help students bridge the gap between foundational studies and practice. The use of diaries and biographies, a popular method used by some feminist and other social scientists, approximate the case study method. *The Professional Thief* by Edward Sutherland (1937), *The Jack Roller* by Clifford R. Shaw (1930) and *Being Different: The Autobiography of Jane Fry* by Bogdan (1974) are some examples of classic case studies.

Reflection and Action 25.3

While explaining the application of case method in the field of law, Epstein (1967: 229) 'treated law as a complex social phenomenon concerned with a series of problems with which all human groups would appear to be confronted, and for which solutions must be devised' and showed 'how the case method, employed both as a field technique and as a tool of analysis, and applied in different ways, may serve to illuminate these problems. The discussion has concentrated on law as a body of rules, as a set of procedures of inquiry and adjudication, and as an instrument of social control.' Epstein makes a further point about law that it 'may also be regarded as embodying a system of values; moreover, as a social institution it is itself subject to evaluation. We are concerned here with the basic assumptions or postulates that underlie the social life of a community, and the ways in which the task and purpose of law may be perceived.'

In the light of what Epstein has said above, provide a case in the field of law, culled from any source of sociological inquiry (or any case described in a newspaper report) and explain how that particular case exhibits the features of case method as explained by Epstein.

25.8 Life Histories

The life history approach to social research and theory subsumes several methodological techniques and types of data. These include case studies, interviews and use of documents, including letters, diaries, archival records, oral histories and various kinds of narratives. It was used extensively in the 1920s and 1930s and was identified with the Chicago School. But later, an increased use of quantitative techniques coupled with survey data collection led to a relative decrease in the life history approach. In the 1970s however, there began a resurgence of interest in life history research not only in the USA but also in Europe. The main assumptions of this approach are that the actions of the individual and groups are simultaneously emergent and structured and that the individual and group perspectives must be used for analysis. Thus, any materials that served those perspectives can and should be regarded as essential to the empirical study of social life.

The first such study was Thomas and Znaniecki's *The Polish Peasant in Europe and America*. In this five-volume 2200-page book they presented almost 800 pages of life history data in support of their conclusions and generalisations. Those data included newspaper articles, letters to family members, records from courts and social work agencies, and a 300-page biography of one person as a representative case. This approach was used in research on race relations, delinquency, mass media, migration, occupation and other issues centred primarily in the veers of ethnic and urban studies. Current uses of life history research display considerable variation as well as more precise conceptual distinctions. Terms such as "life story", "bibliography", "discourse", "history", "oral history", "personal experience narratives", "collective narratives", and "sagas" are now distinguished from one another and frameworks for linking types of verbal accounts to types of generalisations have been developed.

It is now common to regard life histories as a legitimate form of data. Through the propositions contained in narrative theory, some researchers have developed what is called the narrative interview. This approach focuses on establishing event sequences across the life course on the basis of interview data. Bertam (1981) has long been an advocate of the life-history approach. The collaborative research on social movements (1990) used life-history data from the members of student's movements in the USA, England, Ireland, Italy, West Germany, and France. He shows the application of this method in large-scale comparative research projects.

Dolby-Stahl (1989), a folklorist©, has developed a variation of the life history approach she calls "literary folklorist" which focuses on personal narrative data. She uses the reader response theory to develop an interpretive method for studying the interdependence of personal narratives (stories) and collective narratives (ethnic group folklore). The

assumption of this approach is that personal and collective narratives are inherently connected and thus a personal story has a collective dimension. "Interpretive Biography" is designed to study the turning points or problematic situations people find themselves in during transition periods. The basic question he asks concerns how people live and give meaning to their lives and capture those meanings in written narrative and oral forms.

In the Indian context, Dalit sociology is making use of the life histories of selected Untouchables. The scheduled castes have constructed through writings of untouchables – be it poem, short story, biography or autobiography - lives that have the essential element of social and economic liberation. The life history of Muli, a Dalit, written by Freeman (1978) provides an insight into the nature of caste oppression in Indian society. According to the author many incident in his life show striking similarities with events in other cultures and his case stands as an indictment of stratified systems like caste and others.

25.9 Oral History

Most contemporary social scientists make use of written and oral sources for documentation and substantiation in social research. Diaries, letters, written documents, personal papers, autobiographies and biographies, archival material and today even films, advertisements, news, fiction, creative art forms like dance, music and paintings etc., are used as texts. The latter forms of texts are constructed by fieldworkers based on often first hand information collected in field research by interviews, asking people to write down about themselves or collecting life histories. Anthropologists have long adopted this method of elicitation especially in societies where no written records existed.

Oral histories are less focused on whole life and more focused on a topic or a part of a life. Besides contributing significantly to historical data previously collected, this method can be used to give voice to minority groups, to pay attention to the minds of great individuals or to permit inclusion of usually silenced groups in a population like D*alits*, women, tribals, the disabled etc. And it has even been used as a form of therapy (O'Reilly, 2005).

Historians today are making use of oral histories to supplement historical understandings. Feminists especially insisted on using oral histories of women to recast histories. Subaltern school historians have used this method in reconstructing histories of peasant movements and protests.

25.10 PRA and RRA Techniques

Organisations, which adhere to participatory paradigm (very often NGOs), have developed a number of techniques for effective interaction with

communities. Two of them are Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA). PRA and RRA were developed in response to disappointments and criticism of the assumptions upon which earlier developmental work was based.

RRA and PRA are two closely related families of approaches. They emphasise a re-orientation in the relationship between the outsider and subjects of developmental activities and research. Thus, a reciprocal learning process in the relationship has replaced the one-way "transfer of know how" idea.

The term PRA describes a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, to plan and to act. PRA flows from and owes much to the activist. Participatory research, agro-ecosystem analysis, applied anthropology, field research on farming systems and rapid rural appraisal in RRA information is more elicited and extracted by outsiders; in PRA it is more shared and owned by local people. The one most important principle is "use your own best judgment at all times" which implies improvisation.

The distinction between RRA and PRA has been described by Robert Chambers (1992). RRA leads to learning by outsiders in a cost effective way. PRA, on the other hand, enables rural people to unravel and analyse their own situation in ways they do not normally do, and in optimal cases to plan and act on their own premises.

Both RRA and PRA have been referred to as data economising or data optimising approaches. The experience gained with RRA during the first years of application in 1980s showed that it was susceptible to the criticism that it had levelled at "quick and dirty" development work and "development tourism".

Participatory assessment and activities are methods for creating a dialogue and for collecting information. They are characterised by ingenuity and flexibility, and the methods to be applied depend on the specific context. PRA techniques have proved to be of much use in diagnosing specific problems and highlighting possible solutions. Here is a catalogue of selected PRA methods, techniques and tools.

1) Review of secondary resources
2) Direct observation
3) Key indicators
4) Semi-structured interview
5) Ranking and scoring
6) Construction and analysis of maps, models and diagrams
7) Diagramming
8) Case studies and stories
9) Drama, games and role-plays
10) Possible future and scenario workshops
11) Triangulation

12) Continuous analysis and reporting
13) Participatory planning, budgeting, monitoring, evaluation and self-surveys
14) Do-it-yourself

A PRA technique essentially complements more formal methods. More often than not these techniques are preliminary exercises. They generally serve the purpose of dialogue with the people, information generation, analysis in some cases and mobilisation of people around certain issues like land rights, water, public distribution system, etc. Since the NGOs involve multidisciplinary teams, the PRA exercises take a multidisciplinary perspective.

The practitioners themselves have recognised three major dangers, weaknesses and challenges of using PRA.

- ❖ Rate of spread
- ❖ Practitioner aptitude, and
- ❖ Backsliding.

The speed of spread must not exceed the capacity for individual institutions to conduct social and organisational experiments to discover what is most appropriate for them. The practitioner's personal attitudes are difficult to control.

The problem of not reaching all interest groups persists, especially among women, the landless, ethnic minorities, the poorest, etc. Higher-level planning targets disrupt bottom-up demands and desires.

PRA does not produce the final answers. It is a process that contributes to a better understanding of the situation.

Reflection and Action 25.4

Read carefully the following excerpt from Schönhuth (2002:152-153) and discuss the merits and demerits of PRA/ RRA approach to field research. Explore the possibility of carrying out a one-day experience of applying the method to gain a quick understanding of access to school education by girl children of your neighbourhood. If not on this topic, you may select some other topic to carry out a one-day PRA exercise in order to get a feel of this method.

The Excerpt

Here is the excerpt from Michael Schönhuth's article on Negotiating with Knowledge at Development Interfaces: Anthropology and the Quest for Participation.

> From my experience, if used in a culturally suitable way, visualising tools can be extraordinarily useful for the outsider as a means of gaining a quick picture of the local situation and people. Far from being objective, these pictures provide an excellent basis and act as a catalyst for elucidating discussions on local features, local knowledge and local views of reality within homogeneous groups, and between different groups. On a methodological level, anthropology could profit from making more use of visual cues to focus group discussions and to elicit cultural maps of reality. Research results, which are normally analysed at home by the anthropologist after fieldwork, could be discussed and corrected in the field with the local people.

25.11 Conclusion

Unit 25 discussed some of the common methods which sociologists/ anthropologists use during their field researches. You may need to use one or the other of these methods in your mini research project assignment of MSO 002. Our suggestion is that you need to include in the discussion of methodology of your project report the method(s) you have used and also provide the reasons why you have opted to use the same. Do select from Further Reading and read more about the methods you decide to use.

Further Reading

Barnes, J. A. 1961. *Physical and Social Kinship. Philosophy of Science* 28: 296-299 (about genealogical method)

Das, Veena 1999. *Contemporary Methods in Narrative Analysis.* IN R. L. Kapur (ed.) Qualitative Methods in Mental Health Research. National Institute of Advanced Study: Bangalore (for narrative analysis method)

Du Boulay Juliet and Rory Williams 1984. Collecting Life Histories. IN R. F. Ellen (ed.) Ethnographic Research: A Guide to General Conduct. Academic Press: London, pp. 247-257 (for life histories method)

Jain, Shobhita 1999. *1.Participatory Approaches; 2. Types of Participation; 3. Constraints and Problems of Participation; 4 The Rhetoric of Participation; 5. Leveling the Playing Fields: Recognizing Local Know-How;* IN Participatory Forest Management, Indira Gandhi National Open University, New Delhi (for PRA/ RRA techniques)

Jain, Shobhita and Neeti Bhargava 2001.*1.Participation: Philosophy, Nature and Approach; 2.Operationalisation of Participatory Processes; 3. Data Collection Techniques for Mobilising Participation; 4. Techniques of Data Analysis and Modes of Analysis, Units in MRR 02 of Participatory Management of Displacement, Resettlement and Rehabilitation*, Indira Gandhi National Open University, New Delhi (for PRA/ RRA techniques)

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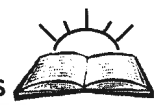
Unit 26

Reliability, Validity and Triangulation

Contents

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Learning Objectives



It is expected that after reading Unit 26, you would be able to ensure that

- Data you have collected are reliable in terms of their consistency, precision and repeatability
- While being reliable, data collected are at the same time valid in the sense of giving a true description/ measurement of "social reality"
- Application of triangulation technique/ methodological pluralism/ multiple methods has enabled you to make an accurate measurement/description of the social reality.
- As a researcher you keep in mind ethical considerations to protect the subject of your research from physical/psychological harm, breach of privacy and confidentiality of the subject and acquire the informed consent of the subject for carrying out field research.

26.1 Introduction

In this chapter, we are concerned with the issues of reliability, validity and triangulation[¥]. In other words, we study the criteria for evaluating qualitative research that has been conducted by an investigator. We will examine various techniques that enable the researcher and the reader to evaluate the extent to which the data gathered and analysed represent the ground reality. We will also introduce you to certain method-specific criteria for evaluating qualitative research that have gained popularity in recent years. We will discuss the technique of triangulation to further ensure accuracy of the data collected and then conclude by examining some key ethical issues that need to be kept in mind while embarking upon a qualitative study. Basically moral and ethical questions come up at all stages of research, from selecting the topic, area of study, source of funding, to publication of research findings.

26.2 Concepts of Reliability and Validity

The aim of qualitative research is to bring to light facts about the phenomena. In that sense, it is "objective". According to Kirk and Miller (1986: 12-13),

It is our view that qualitative research can be performed as a social science. Understanding the workings of a scientific endeavour, whether it is of the natural or social variety, entails an appreciation of its objectivity. By this convention, the objectivity of a piece of qualitative research is evaluated in terms of the reliability and validity of its observations.

By reliability is meant the extent to which a measurement procedure yields the same answer however and whenever it is carried out. Validity is the extent to which it gives the correct answer. Kirk and Miller give an example from the physical world. Suppose a thermometer shows the same reading of 82°C every time it is plunged in boiling water. It is obviously a reliable thermometer. But a thermometer that gives different readings near about 100°C each time it is placed in boiling water may not be reliable, but it is certainly quite valid. In other words, validity refers to the truth-value of a finding. For a piece of research to be judged as "objective", it has to be both reliable and valid. Let us fully grasp one by one each of the two concepts.

Reliability: You can clearly state that reliability is about consistency. Your research would be reliable if, when repeated, using the same methods, it brings the same results. Sociologists need to establish the usefulness of the data they gather to ensure answers of the following questions.

- How accurate a profile of social life one is able to get
- Whether the conclusions reached are representative enough to be applicable to everyone
- Is it possible to repeat the research if others want to carry it out and will there be similar results if they did?

We can ensure the above kind of usefulness by using the two concepts of reliability and validity. Reliability of the data is our main concern because if we do not have reliable data, the conclusions reached on their basis will be quite useless.

Box 26. 1 What is Data Reliability Concerned With?

The following ideas figure in making data reliable.

Consistency: It is important to obtain consistently similar responses to the same questions in similar circumstances.

Precision: One has to know how systematic is the form of data that is based on asking people questions about things that they know little about.

Repeatability: If others want to carry out the same research as you have completed, would they get similar results? If the answer is "yes",

then your research has repeatability of the data collection method.

As per the formulations of Kirk and Miller (1986), there are three types of reliability. Basing on Kirk and Miller, we will discuss each type in the following section.

26.3 Three Types of "Reliability"

Kirk and Miller discuss three kinds of reliability. Understanding the difference between them will help you to figure out whether the data you have gathered in your qualitative study is reliable.

i) **"Quixotic"© reliability**: This refers to the circumstances in which a single method of observation yields the same measurement over and over again. In an ethnographic study, this kind of "reliability" of data indicates that the investigator has managed to elicit "rehearsed" or "politically correct" information. For example, a study is conducted on gender discrimination, and the subjects are asked the question "Do you believe in the equality of men and women?" Unfailingly, the answer obtained is "Yes". However, the reality observed around us is actually quite different. We may then conclude that the finding has only "quixotic reliability", because people are giving the answer they think is "correct", because they do not wish to offend anyone. So, it is probably a good idea to ask a different kind of question, like, "Do you think that women professionals are as competent as their male colleagues?" Perhaps the answers to this question will be more varied and reflect reality better.

ii) **"Diachronic"© reliability**: This refers to the stability of an observation over time. Some examples include the "test-retest" paradigms of experimental psychology and survey research, in which surveys are conducted afresh after a gap of time to see if the results are the same. However, in the context of socio-cultural phenomena in which the rate of change is rapid, obtaining similar results over a period of time is unlikely. Continuing the example of gender discrimination, it is seen that over the past few years, women's participation in the work force has changed, they are no longer ignored for selection for certain kinds of jobs, and in fact are given preference over males in areas of telemarketing and the hospitality services industry.

iii) **"Synchronic"© reliability**: This refers to the similarity of observations within the same time period, which can be evaluated by comparisons of the same data by different methods. Unlike quixotic reliability, synchronic reliability involves observations that are consistent in nature. However, Kirk and Miller sensitise us to a very interesting paradox; synchronic reliability is often more useful if it is absent. In other words, if different methods or approaches to a problem throw up different results, it may alert the qualitative research to certain aspects of the problem that he had not considered before.

26.4 Working towards Reliability

How can a qualitative researcher go about increasing the reliability of his data and their interpretations? A key factor is the quality of recording and documenting data. The field notes taken by the researcher must be documented in such a way that they can be compared and shared with other fieldworkers and colleagues. Berreman (1966) recommends "extensive, explicit and perceptive field notes, self-analytical reporting of research procedures and research contexts, documentation of sources, documentation of the bases for inferences and documentation of the ethnographer's theories of society and his biases". To make your field notes accessible to others, certain guidelines must be followed that enable others to separate the concepts of the observed from those of the observers.

Flick (1998) has adapted a format for conventionalisation of field-notes which is given in the table below:

Table 26.1 Format for Conventionalisation of Field Notes

Sign	Convention	Use
" "	Double quotation marks	Verbation quotes
' '	Single quotation marks	Paraphrases
( )	Parenthes	Contextual data or fieldworker's interpretation
< >	Angled brackets	Emic concepts (of the member)
/ /	Slash	Etic concepts (of the researcher)
____	Solid line	Beginning or end of a segment

Reliability for interview data can be increased by training the interviewers and by checking interview guides in test interviews or after the first interview.

In the case of observation, training before entering the field and regularly evaluating what has been observed can promote the reliability of findings.

In a nutshell, reliability in qualitative research demands that the data are presented in such a way that the reader can clearly differentiate the voice of the subject from the interpretations of the researcher. It also demands that the procedures used by the researcher constantly be re-checked and tuned so that the data obtained may be considered dependable.

Reflection and Action 26.1

Suppose a fellow learner of MSO 002 at your Study Centre wants to study the status of education in a State and draw conclusions after interviewing at a school function whoever s/he could find willing to talk. What would you advise her for making the data reliable as an indicator of what is going in the education? Write your answer in 300 words.

After completing Reflection and Action 26.1, let us move on to the criterion of validity. Validity as mentioned earlier, refers to the "truth value". In the context of qualitative research, validity refers to the extent to which the data reflect the thoughts, views, actions and experiences of the subjects in an accurate manner.

26.5 Procedural Validity

Validity refers to the accuracy of the data generated by the research instrument, whether it is an interview or questionnaire or some other means of research. If we ask the questions: Have the methods that I used colour the results of my research? Were there other factors that came in the way?

Answers to such questions refer to the internal validity of a research.

Validity of a research is also about answering the questions: How valid is one's conception of the situation? How generalisable are one's results?

Answers to these questions refer to the external validity of your research.

Face validity means statistical measure of validity. For example, Type I error will require rejection of the hypothesis when it is true. Type II error will require acceptance of the hypothesis when it is false.

A qualitative research is more likely to be valid than quantitative research. As long as there is adequate sampling and precision of observation, and subtle changes in environment and people are observed carefully, it is not difficult to establish the validity of one's data collection method. You can safely say that the concept of validity refers to the extent to which your data provide a true measurement of social reality. Take an example of shortage of power supply. You may be quite sure of the statistics about power shortage, week by week. You also have to be sure how valid or accurate a picture of power shortage in the whole town or the state your statistics represent. If you were to compare your figures with those collected by a government agency, its figures may be reliable but the government's definition of power shortage may not be the same as is used in your research. If this is the case, then the two sets of statistics are not valid for the purpose of comparison because the comparison is not between two things alike and therefore not valid. How do we achieve validity in our research? Let us look at procedural validity.

Guidelines to Procedural Validity

To bring about validity in the research process, Wolcott (1990a) has suggested the following guidelines.

i) Refrain from talking. When you are in the field, listen as much as possible.

ii) Produce field-notes that are as exact as possible.

iii) Begin to write early, so that you will not forget the little detail that separate good research from the ordinary.

iv) Write in such a way that your readers can see for themselves the points you are trying to bring out. In other words, provide enough data to enable readers to draw out their own inferences and follow the ones you are making.

v) Your report should be as complete as possible.

vi) It should be as candid as possible.

vii) Seek feedback on your findings and presentations from your colleagues.

viii) Your presentation should be characterised by a balance between the various aspects you have studied rather than leaning too heavily on one or the other aspect.

ix) Your presentation should display accuracy in writing.

How can you use field research as a means of checking the validity of your research? For answering this question go to the next section.

26.6 Field Research as a Validity Check

The very nature of fieldwork is its flexibility and openness, which will enable you to study your data in a variety of ways. In a field situation, routine contact with people on a day-to-day basis over an extended period of time will help you to test your emerging hypotheses. This method is very sensitive to discrepancies between meanings presumed by investigations and those understood by the target population.

The field is a zone controlled by those investigated rather than the investigator; the researcher is at the mercy of his subjects and not vice versa as in a controlled experiment. The more disciplined your engagement with the field and the greater your receptivity to the different, sometimes contradictory, inputs you receive, the greater are the chances of your data having validity.

The process of communicative validation process involves taking the subjects/actors into confidence and involving them in the research process, so that you are able to ensure that what you have understood is actually what they meant. By showing your interviewees the transcriptions of your first interview with them, you can ask them to judge whether you have accurately reported what they said or felt. The danger is, of course, that they may later deny saying things, which they may perceive as showing them in a "bad" light. Your ability as a researcher is then called into play; you have to separate the "real" response from the "released" one.

26.7 Method Appropriate Criteria

Are the criteria of "reliability" and "validity" adequate or appropriate to evaluate qualitative data? A number of social scientists have opined that these criteria, if applied alone, fail to understand the basic nature of

qualitative research. They have attempted to evolve more "method appropriate" criteria that enable a researcher to look critically at his data. We shall briefly present the formulations of Lincoln and Guba (1985), who have included in their scheme such criteria as trustworthiness, credibility, dependability, transferability and confirmability. Let us discuss only the first two criteria, namely, trustworthiness and credibility as these two are most crucial in Lincoln and Guba's scheme. They suggest the following measures to increase credibility.

i) **Prolonged engagement and persistent observation**: Prolonged engagement refers to the amount of time spent by the researcher in the field. It enables the researcher to learn about the culture of a social setting over an extended period of time and to build a relationship of trust and establish rapport with respondents.

If the investigator spends a very limited time in the field, then distortions are likely to come. If research is being conducted in a residential school setting, the fieldworker will find the month before the summer break a very atypical one, as students and teachers are under tremendous pressure due to examinations, evaluation and declaration of results. By observing just this one-month in the life of the school, the researcher would get a very distorted picture. However, if he does not observe the activities of this month, then he would not understand the totality of this social setting.

Other distortions include those brought in by the researcher's own "biases", e. g., s/he may only listen to the views of those teachers whose views match her/ his own world view; some respondents may deliberately want to please the investigator or even to confuse or deceive her/ him. Prolonged engagement helps the researcher to sift fact from "fiction" (see Box 26.2 on persistent observation).

Box 26.2 Persistent Observation

Persistent observation refers to detailed observation that provides depth to research, helping to sort out relevancies from irrelevancies. Persistent observation involves looking out for any odd incidents or atypical behaviours that may shed light on the problem. To continue the example of the school, a researcher may observe behaviour patterns of the childern in the residential school and draw a hypothesis that childern who have spent a longer time in the school display greater levels of confidence and independence. However, while accompanying the students on a school trip to another town, the researcher observes that one of the "old" students who he had judged as "confident" and "independent", clings to the hand of the teacher. This rather "atypical" response may lead the sensitive researcher to explore the possibility that the "confidence" and "independence" of these children is displayed in familiar settings of their school, and outside that familiar setting they are as vulnerable as any other child who may have joined school very recently.

As a further measure, Lincoln and Guba recommend "triangulation" of different methods, researchers and data (see Section 26.8).

ii) **Peer debriefing**: This refers to regular meetings with other

people who are not involved in the research, in order to discuss findings, hypotheses and results and gain their insights as well.

It is important that the debriefer should be a peer and not an authority figure (eg. a professor in one's department) in order to prevent views being "imposed". Friends and colleagues are ideal debriefers. The researcher studying the residential school may have as a debriefer a friend who also is a parent of a schoolgoing child. The debriefer would then be able to understand, challenge and contribute to the findings of the researcher by introducing a parent's perspective.

iii) **Member checking**: According to Lincoln and Guba (1985), this technique is the most important in establishing credibility. It refers to the process by which members of stakeholding groups are allowed to test the categories, interpretations and conclusions. They thus have a chance to recognise whether the investigator has imposed his constructions upon them or whether their views have been adequately expressed. Member checking is basically communicative validation referred to in the previous section on "validity".

iv) **Maintaining a reflexive journal**: According to Lincoln and Guba (1985), a reflexive journal is a kind of diary in which the investigator records information about herself/ himself on a regular basis. It provides information about the researcher's schedule, methods and insights, and provides a valuable guide to understanding the direction the research process takes.

v) **Analysis of negative cases in the sense of analytic induction** : Analytic induction refers to the process by which a hypothesis formulated to understand a phenomenon is applied to a specific case. If it does not fit the case, then it is reformulated and applied again. Each individual negative case helps to further refine the hypothesis. Further cases are studied until the stage arrives when a universal relationship is established. Hence each negative case calls for re-definition or reformulation of the problem, thereby enhancing credibility.

To check the dependability of the research, the concept of "auditing" is used, based on the procedure of audits in the field of finance. Briefly, the auditing trail that has to be checked includes:

- the raw data, their collection and recording;
- data reduction, i.e. summaries, short descriptions of cases, memos, etc.;
- the reconstruction of data into themes, definitions and relationship and the findings inferred from them;
- process notes, and decisions regarding methods;
- personal notes about one's intentions, one's ideas about research and expectations of the participants; and
- the pilot study and preliminary plans of the research.

The auditing trail helps to account for the manner in which the research was conducted and its outcome.

As said previously, qualitative research includes the subjectivity of the researcher. And yet, it is ultimately judged in terms of its 'objectivity' (i.e. its ability to bring to the forefront the lives, experiences and relationship of people).

Unlike other scientists, qualitative researchers do not report on studied objects, rather they report on their **interaction** with the objects they study, namely, cultures. That is why objectivity is difficult and yet essential, according to Kirk and Miller (1986). In this context, the views of Harvey Sacks (1992) may be cited. Sacks believes that serious work includes paying attention to details, and if something matters, it should be observable. For Sacks, "observations study" meant observing the activities that members of a society did, rather than speculating about their motives and inner thoughts.

We will now look at the use of multiple methods in sociology. It is also referred as triangulation/ methodological pluralism. But we will go to the topic of triangulation after completing Reflection and Action 26.2.

Reflection and Action 26.2

Take an example of your friend studying the problem of unemployment in your State. She collects unemployment statistics from the Employment Exchange. We may take the statistics to be quite reliable, recorded year by year. She considers her sample of figures pertaining to one decade to be adequate to perceive a trend. But you find that in a period of one decade, there were several changes in definitions of what constitutes unemployment. In such a situation, what sort of problems do you find in her research method? Write a note to help your friend to see the problem with her research and suggest how she can get, in terms of research method, a more accurate picture of unemployment in your state.

26.8 Triangulation

You would have by now realised that various methods of gathering data have different advantages and disadvantages. Apparently as a researcher you would like to use methods with more advantages than disadvantages. You would also like to avoid a weakness in one method and use a second method, which is strong in the sphere in which the first is weak. Take the example of interview method. You can say that the interview method has a weakness in the sense that we are not always sure that the interviewee is telling the truth. In order to avoid this weakness of the interview method, you may decide to cross-check the information you have gathered by using the method of observing the everyday life of the interviewee to find out what the person actually does and what she/he tells.

The use of multiple methods for assessing the validity of your research data may be more specifically called between-method or cross-

method triangulation.

In this fashion you are able to combine different methods and obtain a better picture of the subject of your research. Generally surveyors use the technique of triangulation in their work. The theory behind the concept of triangulation is quite simple. The aim of triangulation is to obtain accuracy in measurement between two points for which you require a way of measuring that is reliable. You can obtain reliability by replication, but repeating the same procedure does not ensure complete reliability. Here mathematics helps us. If we take three different measurements between three points, we can ensure that the measurement of the distance between point A and point B is absolutely correct by using the mathematical principle that each angle of an equilateral triangle is always 60 degrees. So we just triangulate our measurement by taking three different measurements. The theory of triangulation provides us in social research some degree of control over the accuracy of the data we gather.

There are two types of triangulation, namely, methodological triangulation and theoretical triangulation.

- ❖ Methodological triangulation refers to the way we use different methods in the research process.
- ❖ Theoretical triangulation is the way we use various theoretical perspectives in our research.

Let us briefly discuss each type.

Methodological triangulation

In *Doing Sociology: A Practical Introduction*, Harvey and MacDonald (1993) describe the following three types of methodological triangulation.

- ❖ One researcher uses two or more research techniques.
- ❖ Two or more researchers use the same research technique.
- ❖ Two or more researchers use two or more research techniques.

You may use methodological triangulation for the following purposes.

- ❖ To gather different types of information, for example qualitative and quantitative
- ❖ Two or more researchers use the same method and then compare their results to find out if they agree that they have similar findings
- ❖ To check that material collected in one form is both reliable and valid.

Theoretical triangulation

This form of triangulation is not popular among sociologists. It is of course possible to study a social group from theoretical perspectives of a structuralist and an interactionist. The structuralist perspective would require you to look at institutional relationships that exist in a social

group, for example "the family". From an interactionist perspective you would look at family life from the point of view of individual members of different families or of particular family groups.

Generally, sociologists working from the point of one perspective would not be inclined to look at the subject of their researches from another theoretical perspective. This is why we find that theoretical triangulation is quite uncommon.

Clearly, by using multiple methods or more than one method, you can enjoy the benefit of each method and the different types of data they generate, for example both statistical and oral accounts. The advantages of one method help to overcome the limitations of another method.

Let us now examine some of the key ethical considerations that a qualitative researcher must keep in mind. Before going on to the next section, complete Reflection and Action 26.3.

Reflection and Action 26.3

Consider if it is feasible always to combine various methods in one research. State what kinds of problems you are likely to face as a researcher when you attempt to combine quantitative and qualitative methods?

26.9 Ethical Considerations in Qualitative Research

Field work is one of the key methodological tools employed in qualitative research Fieldwork raises some unique ethical issues because the researcher is participating in the lives of the people under study. It often becomes difficult to draw the line between the researcher's role as a "participant" and as on "observer". Some social scientists believe that the researcher should make it clear to her/ his subjects what s/he is doing and under no circumstances should the subject withhold her/ his true intentions. In other words, s/he should make it clear that s/he is conducting a research inquiry.

However, in reality this is easier said than done. Suppose a researcher is attending a wedding in the community s/he is studying. This is an excellent opportunity to interact with several members of the community and elicit information. If the researcher announces her/ his intentions on such an occasion, she/he is likely to alienate members or cause a lot of discomfort to them. Shils (1959) tries to draw a distinction between the "observations of everyday life" and the "observations of field" research. The former refer to observations that result from the social relationships that arise out of intentions other than observations. The observer has not created the relationship merely for the purpose of doing research. What happens, however, when observations from daily life, where there is no intention of "doing research", later acquire significance for research? Kidder and

Judd (1986) cite the instance of a researcher working as a volunteer with rape victims in a hospital emergency ward. Her work as a volunteer helped her gain insights in the victims' methods of coping that appeared to contradict the current psychological theories of coping and taking control. Could she use her findings? The women she had talked to had not been informed that she was doing research, because at the time she was working with them she was not in fact conducting research but doing voluntary work (see BOx 26.3 for another example).

Box 26.3 Example of Ethical Concern in Research

Another example quoted by Kidder and Judd (1986) pertains to a white American woman researcher who participated extensively in the lives of black women she studied in an economically poor neighbourhood. Since the researcher had a car, she was often asked to run errands by the black women (e.g. taking sick children to the clinic, collecting provisions, laundry etc.) She also developed genuine friendship with many women there. Did her friendships and the help she gave these women make her observations more ethically correct or less so? It takes a great deal of maturity on the part of the investigator to avoid misusing information gathered and not treating all kinds of sensitive and personal information as "data".

Erlandson et al (1993) identify the following ethical considerations that a researcher must bear in mind:

i) Protecting the subject from physical or psychological harm;
ii) Protecting the subject's privacy and confidentiality;
iii) Protecting the subject against unjustifiable deception; and
iv) Acquiring the informed consent of the subject.

The above points are interrelated. For example, in order to protect the subject from physical/psychological harm the researcher must also protect his privacy and not deceive him. Erlandson et al (1993) quote the example of a researcher studying a prison system. Because some staff and inmates were in highly sensitive situations, revealing their identities could seriously harm their personal safety and career. The same apples to research pertaining to homosexuals, sex workers etc., who are stigmatised in our society. The researcher should take into account the potential risks the participants face if they are identified. The prison researcher decided to use pseudonyms and omitted information that was potentially damaging. He also made the decision not to disguise his own role or the reason why he was in the organisation. The issue of "deception" (or concealing one's identity) is a very tricky one. It is argued that sometimes, a researcher can gain access to society's "darker side" by gaining entry into it and becoming "one of the group". One reads of journalistic "coups" in which writers "pretend" to be prisoners and live in a prison in order to gain the "inside information", or pretend to be potential clients of sex workers, or massage parlours operating as "sex shops" in order to write about their sensational exposes. However, serious social science is not journalism. Erlandson et al (1993) opine that deception is subversive to

the research effort and counterproductive to the search for multiple social constructions that individuals hold.

To obtain the "informed consent" of the participants, the researcher must explain to them clearly the goals of her/ his research and allay their natural fears. Suppose a researcher is studying inter-religious marriages, and is trying to obtain the consent of couples that have had such marriages. Some of the natural fears the potential participants might have could include the following: Is the researcher working on behalf of some politico-religious organisation that wishes to "identify" and "expose" them? Will their privacy be guarded? Will their families be subject to social embarrassment or censure? Will parents have problems in arranging the marriage of a younger sister or brother if it is known that the older sister married into another religion against her parents' wishes?

By discussing these issues frankly and clarifying the strategies by which their privacy and confidentiality can be protected, the researcher may be able to obtain their "informed consent", and thus accord them due respect and safeguard their dignity and human rights. In order to further appreciate the point of ethical concerns of ethnographers, complete Reflection and Action 26.4.

Reflection and Action 26.4

Beteille (1975) opted to identify himself with the resident Brahmins of the village where he carried out his field research in Tamil Nadu. He had access to their homes and temples. When his Harijan informants came to visit him, the Brahmin neighbours and also his host objected and Beteille then changed the mode of his contact with them. In this example you may be able to find the evidence of the problem of conforming to the value-system of the people one is studying. Find at least two more examples of respect for the interests of the citizens one is studying. You would be able to find examples in Betelille and Madan (1975).

26.10 Conclusion

The issues of validity and reliability are problematic ones in qualitative research precisely because qualitative methods demand a lot of personal engagement from the researcher. The risk of the researcher "going native", i.e. identifying herself/ himself so completely with the people under study that s/he then becomes a spokesperson for their issues and interests is also significant. The researcher must at one and the same time be both a participant and an observer, doing research and yet interacting with subjects in their own territory, on their own terms. Several techniques have been identified by which the researcher keeps a scrupulous and detailed record of the work done, separating the views of the actors from one's own. This includes the technique of triangulation. Interwoven with these methodological considerations is the moral imperative that the need to recognise and respect the fact that

the "subjects" of research are human beings who must be treated with respect and accorded the dignity that every human being deserves.

Further Reading

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Unit 27

Qualitative Data Formatting and Processing

Contents

27.1 Introduction
27.2 Qualitative Data Processing and Analysis
27.3 Description
27.4 Classification
27.5 Making Connections
27.6 Theoretical Coding
27.7 Qualitative Content Analysis
27.8 Conclusion



Learning Objectives

It is expected that after reading Unit 27, you would be able to proceed with data formatting and processing of the field material gathered by you on the topic of your mini research project in terms of the Circular Process of Qualitative Analysis as formulated by Ian Dey (1993).

27.1 Introduction

The previous units of this block have familiarised you with some of the key methods of gathering data employed by qualitative researchers. The process of discovery and learning embarked upon whilst gathering data is no doubt an exciting and memorable one. However, there comes a point when field notes and interview pages gathered by you must be formatted, processed and analysed. Some of the questions that confront the researcher at this point are: how can I make sense of all this material? How can I organise it to make it meaningful to others and myself? How do I put it all together so as to present a concise and thoughtful formulation of the topic under study?

Hardly any researcher would initiate the process of investigation without a at least a mental checklist of the type of material that is to be gathered. A systematic listing of the topics to be covered is always very useful. Ellen (1984: 275) has mentioned the following three forms of checklists.

- Checklists encoded in questionnaire forms
- Checklists employed in the context of semi-informal interviews
- Background checklists for occasional reference and to provide guidelines for research in general

The idea of mentioning these checklists in the introduction of Unit 27 is to remind you that in order to format and process your field material you need to refer to these checklists to find out if you have actually

completed what you had set out to find out. Only after this initial exercise are you to proceed with qualitative data processing and analysis.

27.2 Qualitative Data Processing and Analysis

The key word that this process entails is analysis. Qualitative analysis requires dialectic between ideas and qualitative data. You may ask: What are qualitative data? For an answer to this question see Box 27.1.

Box 27.1 Definition of Qualitative Data

Qualitative data are materials gathered using field research methods already discussed in Unit 26. Openness and inclusiveness characterise these methods. A researcher applies such methods with the objective of capturing people's lived experiences of the world and the meanings they attach to these experiences from their own worldviews. More often than not collection of qualitative data entails a variety of methods and techniques rather than a single one. The result is that data types include in-depth or unstructured interviews, field notes, unstructured field diaries, personal documents, photographs and so on. Qualitative research in its initial stages means producing a large mass of data even though a researcher may have used a relatively small sample size.

We cannot analyse our qualitative data without ideas, but our ideas must be shaped and tested by the data we are analysing. You cannot make an omelette without breaking and then beating together eggs. Analysis also involves breaking down data into bits and then beating the bits together, so that the data is resolved into its components, and its characteristic elements are revealed. In this sense you can say that we split data processing into two activities, namely,

- Checking and converting the data (breaking eggs) and
- Generating metadata (beating together).

The first activity comprises a) checking out the completeness and quality of data, the relationship between data (for example interviews, field notes, audio/ visual recordings etc) and anonymisation and b) converting data or transferring data to a format that is appropriate for dissemination. At this time apart from checking out the completeness and quality (in terms of its physical condition, readability/ audibility, re-usability) a researcher needs to bring to light any problems relating to confidentiality/ anonymity, re-using, suitability for digitisation, etc.

We have mentioned above the term anonymisation. Let us explain what this term means. It refers to maintaining the confidentiality of the respondent or any other person or entity. It is important to discuss the level of anonymisation you arrive at in your research. In some cases, it is not easy to disguise the identity of the subjects of research without bringing about an unacceptable distortion to the data. This implies that the particular data can hardly be re-used for any purpose. The level of anonymisation you use for a dataset depends on the nature of the study and each case has its own unique set of concerns. Here come in issues of

an ethical and legal nature with respect of maintaining confidentiality where requested. In practical terms, all this means that you remove all identifiers and replace them with pseudonyms where appropriate. Care should be taken to use the same pseudonyms throughout. It is strongly advised to delete from the data any slanderous or libellous comments.

The second processing activity of generating metadata refers to the contextual information that a researcher obtains during processing, for example you may create lists of data giving biographical inputs that would make it easier to identify transcripts or make sure that interviewee and interviewer names and questions/ topic guide headers are put in place. The main function of this exercise is to make it easier for the researcher to locate transcripts or particular items in a data set (see below Section 27.6 on theoretical coding). You will find a definition of metadata® types in Box 27.2. Further, please note that about digitisation of data you will read in detail in the units of Block 8 and we will not include this factor in the scope of Unit 27.

Box 27.2 Definition of Metadata types

The researcher has to wade through the sea of raw data. In order to make the process of wading easier, it is better to prepare i) a data list and ii) a catalogue of records. In addition, one may also prepare iii) a user guide so that anyone can use the data. These three types of data are called metadata. It is always a good research practice to document one's research and the material produced during field research from its beginning and throughout analysis. The data list provides the key characteristics of the data. It helps the researcher to identify specific types of interviews or transcripts. For example, in the case of data which are based on a sample of interviews with individuals, metadata listing would include their date of birth, gender, employment, geographical location and any other key feature that the researcher has defined for sampling.

How do we carry out the above two processes without getting into a mechanical mode of processing? We need to proceed to analysing our data. The aim of analysis is not just description, but interpretation, explanation, understanding, and possibly, prediction. Description provides the basis for analysis, which then lays the base for further description. We break down our data in order to draw concepts from it, which we then use to classify the data. We draw connections between different concepts and these connections form the basis of further description. Ian Dey (1993) presents the following diagram, which succinctly represents the circular processes involved in qualitative analysis.

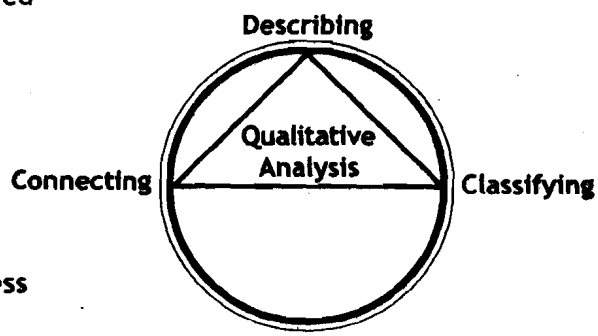


Figure 27.1 Circular Process of Qualitative Analysis

Let us briefly consider each of the processes mentioned on the previous page.

27.3 Description

The first step in qualitative analysis is to develop comprehensive descriptions of the phenomenon under study. Geertz (1973b) coined the term "thick description". Unlike "thin description", which merely states facts, thick description includes information about a) the context of an act, b) intentions and meaning attributed by the actor to the action and c) the process in which the action is embedded.

Let us briefly dwell on these points.

❖ **Context:** By "context" we mean situating the action within the social, cultural and historical backdrop against which it takes place. Contexts are a key to meaning since meaning is conveyed "correctly" only if the context is also understood.

❖ **Intentions:** In qualitative analysis there is a strong emphasis in understanding the subjective meanings imbued by actors to the way in which action is organised.

❖ **Process:** The idea of process is linked to that of change. In focusing on process, we shift our attention from context and intentions to the consequences of the action. For example, you are probably familiar with the policy of "perestroika"© unleashed by Mikhael Gorbachev in the erstwhile Soviet Union in the mid-1980s. The context was growing disenchantment with and ineffectiveness of the state controls on economy and society. The intentions of Gorbachev were probably the creation of a more just, liberal order. But the consequences were the disintegration of the Soviet Union and the movement towards a unipolar world order governed by the U.S.A.

27.4 Classification

This involves sorting out our mass of data into "classes" based on certain characteristics, which will then aid us in the development of a conceptual framework through which actions and events can be rendered intelligible. You have surely done jigsaw puzzles. Consider your data as hundreds of little bits of the jigsaw, which must be carefully put together so that the resultant picture gives an accurate representation of the social reality you have studied. How do you assemble the picture? By grouping the bits into like classes. Perhaps all the "blue bits" together will form the sky, the "green bits" the forest, and the brown ones the earth. Organising the data into groups based on certain characteristics is essentially the process of categorisation. At the stage of writing up your study the same categories may take the form of index of your book (for indexing see Box 27.3). Categories are the organising tools, which help us to sort out the heap of bits of the jigsaw puzzle according to relevant

characteristics. Classification and categorisations should always be guided by the research objectives. The points mentioned above will be taken up in greater detail when we talk about "coding".

Box 27.3 Indexing

There are three elements found in an index, i) mnemonics, ii) reference and iii) structure. Mnemonics are short forms for information. References show where you are to find the information and the structure is the arrangement for organising mnemonics. Most often you may find that categories in mnemonics overlap. In such a situation ideally you would need to put the overlapping pieces of information in both categories. With regard to references you would require a fair degree of precision for identifying the location of information. You may take recourse to modern information technology (see the units in Block 8). The structure of mnemonics is usually in alphabetical order with substructures. Many categories mention cross-references to take care of overlapping information. Making such indexes complete in the above three respects is of course useful at the stage of data analysis and of writing up the research material. It is also useful if you or someone else was to re-study the same topic in the same region.

Let us now discuss briefly about making connections, the third process of Ian Dey's diagram (Figure 27.1).

27.5 Making Connections

Describing and classifying are not ends in themselves but serve a more important purpose, namely, to produce an account of our analysis. The concepts we develop are like building blocks, which must be connected together with the mortar of ideas. We have to look for associations between different variables and try to see the patterns within the data, so that we can discern regularities and also variation and exceptions.

We can now discuss the subject of "coding". But before proceeding to this discussion let us first complete Reflection and Action 27.1.

Reflection and Action 27.1

Read the following excerpt and work out what kinds of data does one require to understand the rituals in their social context and to grasp their significance for the practitioners of those rituals?

> Religious behaviour does not exclusively depend on religious contexts but it is generally a human form of behaviour which is realised under the stimulus not of transcendental objects but of their motivations... . Even in its autonomy, religious life contains elements that are not specifically religious but social... only when (these elements) are isolated by means of the sociological method, will they show what within the whole complex of religious behaviour may legitimately be considered purely religious, that is, independent of anything social (Simmel 1950: 15).

You can take help of Victor Turner's (1967: 181-204) article on "Aspects of Saora Ritual and Shamanism" for answering the questions raised above. Here, Turner has shown the kind of data required and the connections that need to be made in order to understand and explain the "phenomena of mysticism, asceticism, conversion and holy mendicancy in the higher religions".

27.6 Theoretical Coding

In order to analyse our data, we have to read it in an interactive way, and constantly ask the questions "Who"? "What"? "When"? "Where"? and "Why"? This will open up our data for us and help us think about it in a creative way. The processing of field material, once it has been gathered, invariably implies hard work for researchers who are inexperienced in handling field data. Many information and communication technology aids are now available for them and we have discussed them in Block 8. Here we will be mainly concerned with the theoretical coding of field material.

The key function of this exercise is to convert the material on the schedules into suitable code form. Coding is considered a tedious and demanding job. Further, this is an area where methods of analysis of quantitative and qualitative data complement and supplement each other. For example, Turner (1957 and 1961) has used the quantitative material about village composition in his description of Ndembu® social structure.

Let us now look at some techniques and procedures, which will help make sense of qualitative data. The first procedure discussed is "theoretical coding" in order to develop a "grounded theory"®. This procedure was introduced by Glaser and Strauss (1967), and further elaborated by Glaser (1978), Strauss (1987) and Strauss and Corbin (1990). Coding represents the operations by which data are broken down, conceptualised and put back together in new ways. A grounded theory is, "a rich, tightly woven, explanatory theory that closely approximates the reality it represents" (Strauss and Corbin 1990: 57). Analysis in grounded theory comprises three major kinds of coding, viz.

- ❖ Open coding
- ❖ Axial coding and
- ❖ Selective coding.

Let us briefly review each of them. But before you get into details of coding in grounded theory, it is a good idea to read in Box 27.4 a bit more about grounded theory.

Box 27.4 Grounded Theory According to Glaser

The following is a discussion on Grounded Theory (GT) according to Glaser (for more details on GT see glossary that is placed at the end of Book 3 of MSO 002).

Goals of grounded theory

The goal of a GT is to formulate hypotheses based on conceptual ideas that others may try to verify. The hypotheses are generated by constantly comparing conceptualised data on different levels of abstraction, and these comparisons contain deductive steps. GT does not aim for the "truth" but to conceptualise "what's going on" using empirical data. GT is thus a systematic generation of theory from data that contains both inductive and deductive thinking. In a way GT resembles what many researchers do when retrospectively formulating new hypotheses to fit data. However, in GT the researcher does not pretend to have

formulated the hypotheses in advance since preformed hypotheses are prohibited (Glaser & Strauss 1967).

In most research endeavors persons or patients are units of analysis, whereas in GT the unit of analysis is the incident (Glaser & Strauss 1967). The number often amounts to several hundred in a GT study since every participant normally reports many incidents. When comparing many incidents in a certain area, the emerging concepts and their relationships are in reality probability statements. Consequently, GT is not a qualitative method but a general method that can use any kind of data, according to Glaser (2001). However, although working with probabilities, most GT studies are considered as qualitative since statistical methods are not used, and figures not presented. The results of GT is hence not reporting of facts but probability statements about the relationship between concepts, or an integrated set of conceptual hypotheses developed from empirical data (Glaser 1998). Validity in its traditional sense is consequently not an issue in GT, which instead should be judged by fit, relevance, workability, and modifiability (Glaser & Strauss 1967, Glaser 1978, Glaser 1998).

Fit has to do with how closely concepts fit with the incidents they are representing, and this is related to how thoroughly the constant comparison of incidents to concepts was done.

Relevance. A relevant study deals with the real concern of participants, evokes "grab" (captures the attention) and is not only of academic interest.

Workability. The theory works when it explains how the problem is being solved with much variation.

Modifiability. A modifiable theory can be altered when new relevant data is compared to existing data. A GT is never right or wrong, it just has more or less fit, relevance, workability and modifiability, and readers of Paper V are asked to judge its quality according to these principles.

The goal of a GT is to discover the participants' main concern and how they continually try to resolve it. The questions you keep on asking in GT are "What's going on?" and "What is the main problem of the participants and how are they trying to solve it?" These questions will be answered by the core variable and its sub-cores and properties in due course. If your research goal is accurate description then another method should be chosen since GT is not a descriptive method. Instead it has the goal of generating concepts that explain people's actions regardless of time and place. The descriptive parts of a GT are there mainly to illustrate the concepts.

We can now go back to our discussion of the three kinds of coding in grounded theory.

❖ Open coding

Open coding refers to close examination of the data so that phenomena may be named and categorised. An observation, a sentence, a paragraph from an interview transcript is taken apart and given a name which stands for or represents the phenomenon. We ask questions, like "What is this?" "What does it represent?" On the way, we make comparisons so that similar phenomena may be given the same name. Suppose, you are doing a study of how children play together. You see one child pulling away a toy from another and you label it as "grabbing". You may then observe another child "hiding" her toy, a third "avoiding" interacting

with the others in order to protect his toy. Now you can go on endlessly labelling, but this will get you nowhere. You have to start grouping your concepts together as categories. You may ask yourself what the "grabbing", "hiding" and "avoiding" represent, and come to the conclusion that these are all "strategies to avoid sharing a toy". After generating categories, Strauss and Corbin (1990: 70) recommend that their properties be identified and then dimensionalised, i.e. located along a continuum in order to define the content more precisely. Let us look at the category of "colour". Its properties include shade, intensity, hue and so forth. Each of these properties can be dimensionalised; that is, they vary along the continuum. This colour can vary in intensity from high to low; in hue from darker to lighter; and so forth.

There are various ways of doing open coding. Strauss and Corbin recommend analysing the first interview, line-by-line, so that concepts and categories are freely generated. Subsequently, this can be done paragraph-wise or in terms of an entire document or case. It is important not to lose touch with the aims of coding, namely, breaking down and understanding a text in order to generate categories, which can be used for comparing. The result of open coding should be a list of codes and categories written alongside the text itself, along with "code notes" that explain the content of the codes. "Memos" which contain observations on the material and your thoughts about it also go a long way in developing grounded theory.

❖ **Axial coding**

The next step is to refine and differentiate the categories generated in open coding. Those categorises are selected which hold out promise for further development. Strauss and Corbin (1990: .99) suggest a coding paradigm, which is given in the figure below:

A	Causal Condition
	↓
B	Phenomenon
	↓
C	Context
	↓
D	Intervening Condition
	↓
E	Action/Interaction Strategies
	↓
F	Consequences

Figure 27.2 Coding Paradigm as per Strauss and Corbin (1999: 99)

In axial coding, categories are developed in terms of the causal conditions that give rise to the phenomenon, location of the phenomenon in terms of its properties, the context, the action/ interactional strategies used to handle, manage, respond to the phenomenon with regard to the context and the consequences of any action/ interaction that is taken.

In axial coding, the categories that are most relevant to the research question are selected from the developed codes and the related code notes. Many different passages in the text are then sought as evidence of these relevant codes.

❖ Selective coding

The third step, selective coding, continues the axial coding at a higher level of abstraction. It aims at laying bare the core category around which the other categories can be arranged. In other words, it reveals the "story of the case". The story of the case is to be set down briefly, before developing the story line (see Box 27.5 on identifying a story). You will note that the coding approach is essentially an inductive one. From studying the content and meaning of the text, the researcher uses his/her interpretative abilities to formulate code and categories, takes them to a higher level of abstraction and then constructs a story or an account, which is applicable to the whole data. The researcher is able to say, "under these conditions, this is what occurs" (Strauss and Corbin 1990: 131).

Box 27.5 Identifying the Story (from Strauss & Corbin 1990: 119-120)

The following example has been taken from Strauss and Corbin (1990), using data collected by Corbin. Corbin studied how 20 women with chronic illnesses managed their pregnancies. The women she studied had illnesses like diabetes, heart disease, kidney disease and lupus erythematosus. Whilst interviewing these women, Corbin came to realise what an active role they played in managing their high-risk pregnancies. The "story" she identified is as follows.

"The main story seems to be about how women with pregnancies complicated by chronic illness manage the risks they perceive to be associated with their pregnancies. Each pregnancy/ illness can be said to be on-course, indicating that the risks are being managed, or off-course, indicating that they are not. Women are managing the perceived risks in order to have a healthy baby. This desired outcome seems to be the primary force motivating them to do whatever is necessary to minimise the risks. However, they are not passive recipients of care but play a very important role in the management process. They not only are responsible for monitoring their illnesses and pregnancies at home, but also make very active decisions about the regimens they are told to follow. In the latter case they consider the harm that might come to the baby from procedures like amniocentesis or from taking high doses of certain medications while pregnant. They carefully weigh the risks and make judgments about the right thing to do. If they think the doctor is wrong, then they do what they (the women) think should be done."

Let us now move on to another technique of formatting and processing data, namely, qualitative content analysis. Before reading about qualitative content analysis let us complete Reflection and Action 27.2.

Reflection and Action 27.2

Glaser and Strauss's (1967) grounded theory supports a generalist approach to social research and does not like any preconceptions about theoretical formulation of research. Such an approach has a clear process of coding. You need to read Section 27.6 carefully and provide examples of the three types of coding from your own mini research project.

27.7 Qualitative Content Analysis

Content analysis is one of the classical procedures for analysing textual

material, be it interviews or media products. It differs from coding in the sense that rather than generating categories from the data themselves, it uses categories brought from the outside and "fits" the empirical material against them, of course, modifying the categories wherever necessary. The aim of qualitative content analysis is to reduce the material so as to make it manageable. The following material drawn from Clive Flick's (1998) description of the techniques of qualitative content analysis is based on the work of Peter Mayring (1983) on the experience of teachers regarding teaching.

- **Summarising content analysis**: Here, the material is paraphrased, that is, omitting less relevant passages or those having the same meaning reduces it (first reduction). Similar paraphrases are summarised together (second reduction). Thus the material becomes more coherent, economical and manageable. It is a kind of editing of the material in order to draw out its essence.
- **Explicative content analysis**: This works in the opposite way. Here, statements which are puzzling, contradictory or unclear, are explained or clarified by keeping in mind their context, or by looking for clues in other parts of the text that would help make their meaning clear.
- **Structuring content analysis**: Here, the researcher looks for types or formal structures in the material by applying categories that emerged at the stage of formulating the research question itself, and organising the material accordingly. Thus, qualitative content analysis helps the researcher to reduce to manageable level large masses of text, using a uniform scheme of categories, which also helps in the comparison of different cases to which it is applied throughout.

See Box 27.6 for examples of qualitative analysis.

Box 27.6 Examples of Qualitative Content Analysis (from Flick 1998: 194)

The following examples are quoted in Flick (1998) and pertain to data gathered by Peter Mayring (1983) on the experiences of teachers regarding teaching practice.

Example: Summarising content analysis

From an interview with an unemployed teacher, the statement 'and actually, quite the reverse, I was well very-very keen on finally teaching for the first time' (Mayring 1983: 104) is paraphrased as 'quite the reverse, very keen on practice' and generalised as 'rather looking forward to practice' (1983: 59). The statement 'therefore, I have already waited for it, to go to the seminar school, until I finally could teach there for the first time' (1983: 104) is paraphrased as 'waited to teach finally' and generalised as 'looking forward to practice'. Owing to the similarity of the two generalisations, the second one then is skipped and reduced with the other statement to 'practice not experienced as shock but as big fun' (1983: 59). Thus, skipping those statements that overlap at the levels of the generalisation reduces the source text.

Example: Explicative content analysis

In an interview, a teacher expresses her difficulties in teaching by stating that

she – unlike successful colleagues.—.was 'no' entertainer type (1983: 109). In order to find out what she wishes to express by using this concept, first the varied definitions of 'entertainer' are assembled from two dictionaries. Then the features of the teacher who fit this description are sought from statements made by the teacher in the interview. Further passage is consulted. Based on the description of such colleagues in included in these passage, an 'explicating paraphrase can be formulated: an entertainer type is somebody who play the part of an extroverted, spirited, sparkling and self-assured human being' (1983: 74). This explication is assessed again by applying it to the direct context in which the concept was used.

Before we end Unit 27, we need to complete the last Reflection and Action exercise in order to check if you have fully grasped the idea of content analysis.

Reflection and Action 27.3

According to Sarantakos (1998: 280-81), content analysis entails similar steps as any other method of research. This means that it includes selecting the area of research, designing the research, gathering data and analysing them. The content of each step separates content analysis from other methods of research. Content analysis analyses the content (it may be qualitative or quantitative) of documents, books, journals, and other kinds of written text. The content in such an analysis may be explicit or implicit. An example of content analysis is the study of television serials to find out why certain categories of people continue to watch particular shows without missing a single episode. Can you give at least five more examples of studies which can use the method of content analysis to discover attitudes, motives and values of subjects of research?

27.8 Conclusion

Unit 27 has sought to acquaint you with some important techniques of analysing and interpreting your data. However rich and interesting your data, they will make sense only if they are rigorously analysed and cogently presented. The approach of Strauss and Corbian exemplifies how we can proceed step by step to integrating masses of data into a tightly woven grounded theory which will help to explain and predict reality. Qualitative content analysis demonstrates how pre-existing categories can be imposed upon data in order to select and edit what seems irrelevant and unnecessary so that the key research questions may be addressed and understood.

Further Reading

Silverman, David. 1993. *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. Sage Publications: New Delhi (for various dimensions and logic of qualitative research and for techniques of analysis of texts and interview data)

Singleton, Royce A. and Bruce C. Straits 1999. *Approaches to Social Research*. Oxford University Press: New York (about the set of questions a researcher has the interest in finding answers of)

Unit 28

Writing Up Qualitative Data

Contents

28.1 Introduction
28.2 Problems of Writing Up
28.3 Grasp and Then Render
28.4 "Writing Down" and "Writing Up"
28.5 Write Early
28.6 Writing Styles
28.7 First Draft
28.8 Conclusion



Learning Objectives

It is expected that after reading Unit 28, you will be able to grasp the following crucial inputs for the purpose of writing your own research findings.

- An understanding of the kinds of problems you are likely to face at the time of starting to write up your research results.
- It is always better to first understand what you have in mind and then try to express the same in writing.
- Do not delay the task of writing.
- Appreciate the different styles of writing.
- What you write the first time is always a draft only.

28.1 Introduction

Unit 28 is principally written for research students and the neophytes in sociological and social anthropological research. Such research writing happens to be largely qualitative in nature. With skilled, well-known writers and authors, it shares the issues of writing up qualitative research, handling the world of words, an area of apprenticeship on which not many people have written. This unit reflects upon the modus operandi© of creating a text, a piece of writing which is a product of field research.

28.2 Problems of Writing Up

How important is the issue of "writing up qualitative research" in a text of or a seminar on research methods? Perhaps not much, as can be gathered from a cursory glance at the contents of most books in research methods or from courses prescribed for pre- and post-fieldwork levels. These books and articles intuitively believe that writing is not a problematic area. One knowledgeable about language in which the text is to be written, with a good control over the technical vocabulary, can write

provided he has the relevant facts at his disposal and a satisfactory understanding of the theoretical apparatus. In this line of thinking, writing is not a problem; what is of concern is how to collect and analyse data. This is indeed a subject of serious study. Now we know why the overall emphasis of books on research methods is on techniques and tools of data collection, the procedures of analysis, and the presentation of data.

But have a look at the "quieter" side - I call it "quieter" because researchers, writers, and authors generally do not speak about it, at least in public. If writing were such an easy endeavour, then why is it that the open-ended questions in a questionnaire are left unanswered by literate respondents, or are often answered in two words, often written obliquely, "not applicable"? Survey researchers are frustrated on seeing this response to their questions. To combat the low response rate, they either often plan to increase the size of their sample assuming that some respondents would definitely answer all questions, or replace open-ended questions with close-ended thinking that the latter are answered with greater facility. Or else, as happens invariably, the questionnaire is administered as a schedule, in which the investigator reads the questions before the respondent and notes down his replies verbatim. Researchers who have worked with questionnaires and schedules have pointed out time and again that respondents find writing difficult, as some kind of an onerous burden. However, they take delight in talking about the topics on which the researcher needs information provided those areas are not considered taboo in their cultures. The observation that open-ended questions remain unanswered, or are callously answered, does not imply that the respondent does not want to answer them, or is less serious about answering them, but that s/he finds writing stressful, burdensome, difficult, or one which exposes her/ his level of education. Or, s/he may be afraid of writing the facts, because against the background of the legal value of "written records", writing is proof whilst speech may not be. But this is a separate issue, not to be broached here.

Writing can equally be a phase of trial and tribulation for researchers (see Box 28.1).

Box 28.1 Writing, a Phase of Trial and Tribulation

Srivastava describes the process in the following words.

"Although aware of it from the time (1977) I read for an M.Phil. Degree in Chinese studies, I became acutely aware of the problems of writing up qualitative research and the pangs through which the researchers pass while working on a doctoral dissertation (in 1988) in social anthropology at Cambridge. For those who had returned from fieldwork, the Cambridge social anthropology department those days had a seminar titled "Writing-up Seminar", in which the doctoral students presented their fieldwork experiences and the chapters of their dissertations they had written. As members of the teaching faculty often attended these seminars, the presenters of these papers were exceptionally nervous, but knew full well that academic interventions of senior scholars would profit them greatly. The informal conversation between the students this seminar group used to pivot on "how the writing was coming up". I avidly listened to their experiences

of writing up, and like fieldworkers, queried them on the "writing difficulties" they were facing. Was it vocabulary, the battery of technical terms? Or, the correct grammar? Or, the theory? Or, some other inhibition? In so far as the ethnographic facts were concerned, the researchers seemed to me confident, having stayed with people long enough to know them reasonably well. In fact, the Cambridge supervisors insisted on a long field stay, not less than one year, and the examples of students who stayed with the communities they had studied for longer duration - two years or more - were always given in pre-fieldwork seminars."

Surely, the students from China, Japan, Korea, Bangladesh, Spain, Russia, some African countries, and Iran lacked good command over English, thus failing to express their arguments well. Sometimes, they also registered their incompetence in handling and writing abstract pieces in English. They were also known for writing up their dissertations slowly. Because they could easily afford expensive education, quite a few of them went for private tuitions in English and engaged the services of professional editors. Thus, apparently, the problem of non-English speaking students lay in their inadequate command over English, the language in which they were expected to write their dissertations. In order to explore if the problem rested in their lack of ability over a foreign language or in some other factor, I often asked them how they would fare if they were to write their research works in their native languages. Most of them said that they could write letters in their mother tongues but not dissertations. One might think here that the native speakers of English would not suffer from "writing blocks", but that was not true. Like the others, I learnt from my interviews with them, they also described writing as a difficult process, be in their own language or foreign languages.

A conclusion one may draw from this is that although command over language in which the text would be written plays a significant role, its lack is not the only impediment to writing up qualitative research. Because people face genuine problems in writing, that could be one of the reasons why many of them resort to plagiarism. Perhaps, the researchers dealing with quantitative facts do not encounter the same problems of writing up as do qualitative researchers, a point to which I shall return later. It has been observed that certain set formats - thumbnail designs - are available for quantitative researches, which guide each piece of research. This is, however, not the case with qualitative research because the format, the chapters, and sections and subsections will emerge from the type of data the investigator has at his command. As each fieldwork is unique, so is each piece of ethnography.

Complete Reflection and Action 28.1 and discover the kind of problems you as a researcher are likely to face.

Reflection and Action 28.1

Write four pages on Field Research. After finishing the text, recount the problems you faced. Explain briefly the nature of each problem you encountered.

28.3 Grasp and Then Render

Clifford Geertz, in his famous article that advocated the idea of "thick description" (1973), says that the fieldworker first of all grasps, and then renders. Grasping is done using a set of techniques and methods, the tool-kit of anthropologists. In his standard textbook on anthropological methods, Pelto (1970) writes that the fieldworker does not have at his disposal a fixed assemblage of techniques, arrayed in a particular manner. What he knows are the generic types of fieldwork techniques and methods that he has acquired as a part of his theoretical training. But he also knows, as we have said earlier, that each fieldwork is not only unique; it is also an experiment with the basic fieldwork techniques and methods. Whether a specific technique or method is useful in a particular fieldwork situation will depend upon the conditions prevailing in the community under study at that point of time. Depending upon the context of study, the fieldworker will combine various techniques and methods. He may also improvise new techniques and methods or make a significant contribution to the already existing tool-kit. An important part of sociological writings is an account of one's experiences of handling the repertoire of techniques and methods in a fieldwork (see Béteille and Madan, ed., 1975; Srivastava, 1991; Thapan, ed., 1998; Srinivas *et al.*, ed., 2002).

"Rendering" is what we give to the world of academics, to the public, and to all those concerned. We can render through a broad range of activities, such as, we may write academic reports, articles, monographs; we may deliver lectures and make seminar presentations on our studies; we may show slides, pictures, films, videos that we have prepared on the people of our study; we may narrate stories about the people or recite poems we wrote on them or during the fieldwork; we may exhibit local material cultural artifacts and give their descriptions; we may appear on a T.V. talk show and talk about our field studies; we may write for newspapers and popular journals, or write a script for an ethnographic play or fiction; or just chat about our studies and the people of those studies in pubs. In other words, all these options are viable and fieldworkers often resort to them.

But of these, the most important, and also academically uplifting, is the realm of publications, which includes books, articles and monographs, the pieces of serious research. In the world of academics, no substitute exists for publications. There was a time when writing was the only thinkable way to present the results of one's fieldwork. Now, other ways have come into existence, and in recent years we also write for certain web sites, write e-books. Earlier, we wrote long hand or on the typewriter. Now, the technology of writing has changed - we write on the computer or use a Dictaphone, the taped text being transcribed later. We also tape our lectures, then transcribe, edit, and publish them. We create our "renderings of fieldwork" in classes and lecture theatres, and let

others jot them down for our benefit.

Films and photographs are valued, for they augment a standard ethnography, but they are not supposed to replace the latter. A picture may be highly expressive, worth a million words; but words come first and pictures are optional (Wolcott 1995). A coffee-table book, with dozens of pictures and their captions, is not counted as ethnography or a monograph on the people of one's study (see Box 28.2 on the place of pictures in the written up text for publication).

Box 28.2 Words come first and Pictures are Optional

Srivastava says that,

> One of the differences I have noted between anthropology textbooks done by British and American scholars is that the former are virtually without pictures whereas the latter carry a number of them. One may refer, for example, to the standard British texts such as John Beattie's (1964) *Other Cultures* or Lucy Mair's (1965) *An Introduction to Social Anthropology*. Pictures constitute the appendix, so do the material objects, which go to the museum. Doing visual anthropology is not taken seriously. I remember if a speaker in a Cambridge seminar relied greatly on showing slides, or films, or playing an audio, the audience thought that he had not "written up", or was shy of sharing his words with them. I am told in many universities there exists a word limit on the number of pictures one may include in one's dissertation. In some others, each picture is supposed to be equivalent to a certain number of words (say, three hundred). If the dissertation is not to exceed the word limit, then its author has to be really judicious about the selection of pictures, for they eat away the words. Moreover, the writer does not get any credit for the pictures, howsoever evocative they may be. The student gets a degree for words and not pictures. One may remember here an oft-quoted statement from Clifford (1990: 2): "No longer a marginal, or occulted, dimension, writing has emerged as central to what anthropologists do both in the field and thereafter."

It is abundantly clear from the above that the issues of writing up are as important and significant as are the issues of fieldwork, of rapport establishment and handling the methods and techniques of data collection. While a lot exists on how fieldwork was carried out, there is hardly anything available on one's experiences of writing up, on one's problems and crises pertaining to what has come to be known as "deskwork". Becker (1986) notes that teachers do not tell the students how the textbooks and monographs they read are actually written. Most students, he says, never have an opportunity to actually see their teachers, or professional writers and authors, or researchers at deskwork, and also, the authors and writers do not write on their "writing experiences" of producing a text.

However, in the last two decades, some authors have seriously attended to this topic. They clearly state that the aspects of writing up need to be discussed as explicitly as possible. Undoubtedly, some researchers are far more creative than others and have a flair for writing, but one can examine the matter of writing up objectively, suggesting useful points that one must bear in mind, notwithstanding one's level of creativity in

writing. That writing regularly can increase one's creative potential has time and again been emphasized in many of these works. In this connection, one is advised to consult the following two texts: Howard Becker's *Writing for Social Scientists: How to Start and Finish your Thesis, Book, or Article* (1986) and Harry Wolcott's *Writing up Qualitative Research* (1990). Wolcott's *The Art of Fieldwork* (1995) also has a chapter on writing up, which is highly recommended, and so is Laurel Richardson's paper (1994) titled "Writing: A Method of Inquiry".

Let us complete Reflection and Action 28.2 for discovering the actual process of transforming knowledge into communication.

Reflection and Action 28.2

You write or communicate what you know. The two are related in the sense that you can write only what you know. You would like to organize your material in order to transform knowledge into communication. As you are registered at a study center of IGNOU, you are likely to know about the IGNOU system of open and distance learning. In order to communicate to your family about your knowledge of the IGNOU system you need to organize what you know about it. Just carry out this exercise of organizing your knowledge and then transform it into communication. Describe the process in five hundred words.

28.4 "Writing Down" and "Writing Up"

Writing up is the *process* whereby the *world is transformed into words*. By the "world" is understood the ethnographic landscape where the investigator spends a lengthy period of time, generally not less than an annual cycle, observing and interviewing people in their natural habitat. During this period of fieldwork, the investigator sees, feels, hears, smells, and tastes the "other", the object of study. S/he also "imagines" many things about the "other", chances upon the tentative explanations of various phenomena, tests certain well-known theories on the facts at her/ his disposal, and records in the mind as well as on the paper her/ his experiences of collecting data. S/he also sends out from the field letters, and now e-mails, to supervisors, project directors, kinspersons, and friends. They all constitute a part of the data, a first-hand account of experiences of knowing the "other" (see Box 28.3 for the meaning of the term the "other"). Murray Wax (1980) says that writing is not simply an "adjunct" to fieldwork but is its "critical component".

Box 28.3 Meaning of the Word "Other"

A brief clarification is required here about the meaning of the word "other": the "other" refers to the object, externally situated, which is the focus of study. It could be one's own people, rather than those belonging to a different culture. The idea here is that one's own community can be studied with the same spirit of detachment that is employed in the study of, what anthropologists call, the "other cultures". The point to be made here is that writing begins the moment the fieldworker (or, the ethnographer) plunges into the study of the "other". It commences with the preparation of the research design or proposal.

But this writing is "writing down the notes, the observations, excerpts from interviews"; it is the pre-text stage. It is like collecting, gathering, and accumulating the ingredients, and transforming them into a "cuisine", if one takes an analogy from the culinary art. Researchers know that the "collection of data" and the "ethnographic writings" are not only analytically separable but also, can be distinguished into a number of ways. However, it is on the first (i.e., data) that the second (i.e., ethnography) is built up. We "write down" - the common expression is "note down" - the facts in our notebooks and field diaries, which constitute our data. In addition to the factual details that we have written down, a lot exists in our minds, in our memories, for which Simon Ottenberg (quoted by Sanjek, 1996) has used the term "head notes". The pieces of information embedded in our heads surface when we are in the process of writing. Our "head notes" help us in interpreting and understanding the facts that we have collected. That is why, when a sociologist "reads other ethnographers" notes he finds it difficult to understand them because he lacks the head notes that facilitate understanding" (Srivastava 2004: 34). When we are in the process of writing up a text, we realize that what we have collected in our notes and diaries is not really complete, for much exists in our memories and can always be called for at relevant places and times.

We "write down" field notes but we "write up" the ethnographic texts. Let us have a look at the distinction between "write down" and "write up". According to the Random House Dictionary of the English Language (1986), "write down" is "to set down in writing, record, note". Its other meaning is "to direct one's efforts in writings to a lower level, as to a less intelligent reader or audience"; the example given here is: "He writes down to the public". "Write up" is "to put into writing, especially in full detail"; the example appended is, "to write up a report" (p. 1520). Thinking in terms of these meanings, we can say that the facts are recorded; they are written down, scribbled, and scratched. In her writings, Margaret Mead discusses the pressure on the fieldworkers to prepare field notes from "scratch notes", and also the danger of the scratch notes turning "cold" and "uninteresting" when the process of writing them down is delayed, even by a day. She also notices the satisfaction that a fieldworker gets on catching up with the writing down of scratch and head notes (Sanjek, 1996; Srivastava, 2001; Srivastava 2004: 33-5). From the written down notes and the unwritten memories from the field, the investigator writes up the qualitative account, the piece of ethnography.

This distinction between "write down" and "write up" is clear from what Geertz has to say in one of his interviews (see Olson 1991):

> I've spent a lot of time in the field - almost a dozen years in Southeast Asia and North Africa - where I don't do any writing at all. I can't write in the field. I write a lot of field notes, but I can't compose anything...You do two or two and a half years" fieldwork in Java in which all you do is live with the people, write down

> everything, and try to figure out what the hell is going on; then you come back and write-out of the notes, out of our memories, and out of whatever is going on the field. So, for me at least, it's a fairly divided life. I don't write in the field; I write after I return. Mostly, *here* I write and *there* research.

"Write down" to "write up" is also a transition from fieldwork to deskwork, from the hurly-burly field to a quiet workroom (Geertz 1988). Through writing up, the first-hand field experiences are transformed into a text, a report, a monograph, or an article. At this juncture, we may ask a question: Is the transition from "write down" to "write up" as smooth as it appears? Furthermore, pursuing the analogy of a kitchen, as different cooks prepare different cuisines from the same raw ingredients, in the same way, different fieldworkers produce different ethnographies from the same reservoir of facts. It should also be remembered here that the social facts collected by two different fieldworkers from the same ethnographic situation are never the same, for different theoretical perspectives colour each one's vision (find out the same by completing Reflection and Action 28.3).

Reflection and Action 28.3

Form a team of four members from among the learners of MSO 002 at your study center. Each member of the team is to collect data about "learner participation in activities of your study centre" and write only a one-page note on the topic on the basis of the data collected. Compare the notes for similarities and differences and prepare a short note of two hundred words to list the same.

28.5 Write Early

Words come first. And, linking them up to form a cogent and a meaningful whole is a demanding task, often frustrating. I remember myself sitting at the desk placed in a corner of my room, with field notes, diaries, photocopies of relevant articles, books with markers on important pages, spread all around me, with a pencil in my hand, often striking it at the paper, waiting for the formation of proper sentences, cutting and erasing them, moving to the kitchen to prepare a cup of tea, or going out for a smoke, all to focus my concentration on my work. Some days, the scenario remained unchanged for hours, as I struggled with writing, a proper and correct expression of my ideas. At this point of time, many of us rush to the library to read more, or rush to the field area, if it happens to be situated nearby, thinking that we have not read enough or we do not have enough information to write up our accounts. Thus, we keep on postponing writing; we keep on accumulating readings, more and more references. Like the snowball process, one book or article leads to another, and so on; it is a ceaseless process.

Because we do not start writing up, besides suffering from tremendous stress, we are unable to discipline our thoughts. Lots and lots of readings, polemical viewpoints, confound us. The writing problems are so real and genuine that a cross-section of researchers in my sample, both young

and experienced, admitted to having passed through the crippling effects of not writing or "not writing well". I remember my own days as a research student: for hours together, I would not be able to write, or what I was able to write was of so poor quality that I would not like to share it with others. These failings would make me depressed and low, forcing me to look for more reading or discussion with fellow researchers, but I was able to cut the "glacier"© of not writing by remaining glued to my chair, attempting to write again, attempting to express the same idea again, and then, gradually, sentences would begin forming, ideas would begin flowing, and some kind of a first-draft of my work would start emerging. And, once I have a draft of my work before me, not only do I feel confident of my abilities ("I can do it"), but also, I think through my first draft, give it to the others to read and comment, edit it, make additions and deletions, sharpen the arguments, refer to other works, and add what is known as the "scholarly apparatus" (epigrams, quotations, footnotes, bibliography). In this context, one is reminded of Wolcott (1995: 216), who writes:

Simply stated, the only antidote for not writing is to write. You can always improve what you have written, editing the good stuff and tossing the rest. Until you have words in front of you to edit, thoughts can jump around forever in your head in so abstract a form that they can neither be communicated to others nor sharpened to your satisfaction.

The period of trial, tribulation, and ennui prevails when nothing significant seems to be coming out of our pen (or the keyboard), and this period is to be sustained, with a positive and optimistic outlook, for this is the transitional stage.

Further, writing is like any other workmanship or art that we must practice regularly in case we wish to excel in it in course of time. You may try to follow the general principles of preferring to write in the active to the passive voice and write as "I" and "you" in place of "we" and "one". Similarly, try and vary the length of your sentences. Connect sentences with "for", "since", and "nevertheless". Avoid the use of "It is" or "There is" to begin a sentence.

In the context of qualitative research, the sooner we begin with writing the better it is. It was said earlier that the writing of a "text" begins the moment we begin to write the research proposal. Throughout our fieldwork, we write notes and diaries; we transcribe audiotapes in case tape recorders are used. Research students are advised not to treat writing as the last phase of their research, an activity that comes after data have been collected. Richardson (1994) writes that writing should not be understood as a "mopping-up activity" at the end of a research project. Rather, it should be seen as a "way of knowing" - a "method of discovery and analysis". Similarly, Wolcott notes that writing should be "joined to research"; it is wrong to consider it as the "final step after everything is finished" (see Box 28.4 for writing early).

Box 28.4 Advantages of Writing Early

There are distinct advantages of writing "early". We write to discover what we have to say about what we are experiencing and how we are going to say it. We should consider writing before beginning with a field study and after the research proposal has been finalized. It is well known that we are advised to start our study without any preconceptions, prejudices, or stereotypes, but we do carry with us several theoretical ideas to the field. If we write about these ideas, we will be able to ferret out our biases.

Early writing should not be seen as influencing (or biasing) our train of thoughts, but as one that brings us face to face with our preferences and preconceived ideas. As a result, we are able to deal with them far more effectively than is the case otherwise. In disciplines like sociology and social anthropology, one has to deal with higher levels of empathy, which materialize principally because of a long-term stay (often, not less than one year or so) of the ethnographer with the people of his study. We treat our "subjects of study" as "fellow beings" in comparison to the other social sciences for which the subjects of study are the "objects" with whom any sort of a passionate relationship, a relationship of comradeship, is largely ruled out. Because of the special conditions obtaining in sociological and social anthropological work, the likelihood of our getting biased is far more than what may be the situation in other social sciences. Against this background, writing helps in a big way to make oneself aware of one's likes and dislikes, one's subjectivity, involvement with people, and the paradoxes of participant observation.

28.6 Writing Styles

One of the principal expectations from the fieldworker is not only that he would write up the ethnographic account, but would also write it well. Wolcott (1995: 209) writes that readers are "twice-blessed"[◎] when an ethnography is not only insightful and of substance, but is also well written. Needless to say, well written and well composed works are read, and the more they are read, the more popular they become. Our biggest defeat is when our fieldwork accounts remain unread, notwithstanding our erudition, because they fail to captivate the attention of readers. My M.Phil. dissertation supervisor, Professor Krishna Prakash Gupta, taught me that a writer must not forget the reader, and while in the process of producing the text, the writer should critically read whichever chunks he has written by taking up the role of the reader. Whatever an idiosyncratic poet may say about his compositions (sometimes patchy, incomprehensible, and obscure), which he thinks he has written for himself, for his own aesthetic fulfillment, cannot be said about fieldwork accounts. The latter are meant for others, to be read, understood, and appreciated. We may say that the first draft we write may be for ourselves, but all the subsequent drafts are for our readers.

It has been observed that several young students try to emulate the style

of writing of some well-known authors. Being an admirer of the writings of a scholar and imitating his or her style of writing are two different things. I have come across many admirers of anthropologists such as Bronislaw Malinowski, E.E. Evans-Pritchard, Margaret Mead, Claude Lévi-Strauss, and Clifford Geertz, and among sociologists, Talcott Parsons, Robert K. Merton, M.N. Srinivas, André Béteille, and Anthony Giddens. Of these admirers, several have tried to emulate the styles of their favourite scholars, but in the end, they have not succeeded. As each actor's role performance is different from the others occupying the same position (or "status" as it is technically called), in the same way, each author or writer develops his or her own style, which is a product of hard work of several decades and also of several other highly individualistic factors, such as the type and quality of schooling, hobbies, flair for reading and writing, etc. Therefore, my submission is that we should try to develop our own style, keeping in mind that we would be known not for being a "copycat"© but for our own manner and style of handling the world of words. All the same you can study the writings of other sociologists/ anthropologists to find out about main characteristics of their writing styles. You can critically examine them for their capacity to communicate (see Reflection and Action 28.4).

Once I was sharing my ideas on writing skills with a group of students, when one of them asked me: "But, what to write?" Yes, for this we need to have a writing task at hand: a dissertation, book, article, comment, project report, review, field notes and diaries, etc. Before we begin with writing, we need to develop a proposed outline or table of contents. We should also have in mind the basic story we are going to tell. Also, we should keep in mind the number of pages in which we will be able to tell the story.

Fieldworkers know that in a fieldwork carried out for one year, a lot of data is collected, including on those areas that were not originally chosen for investigation. This is one of the main differences between survey research and intensive fieldwork. In the former, data come only on those topics that are part of the survey, but the latter yields so much of data that the investigator may bring out of that not one but several texts over a period of time. In the context of a book, or article, which in any case will have a focus, the most important thing is to get rid of as much of extraneous data as possible so that the corpus of data with which we actually deal is manageable, to the point, and illustrates an argument satisfactorily. Whichever data have been kept out of one text can be used in another. That is why we need to keep in mind the approximate length of each chapter, section, or subsection. We should also remember that the space available in a text for the description of ethnographic details is necessarily limited, because we have also to include in it sections on methods, theory, the review of literature, analysis, interpretation, recommendations and implications, references cited, and bibliography (or sometimes, annotated bibliography).

An important piece of advice that the texts mentioned earlier on writing up qualitative research give is: "one should try to write everyday". On this suggestion, in one of the lectures that I delivered on writing up in a psychology seminar, the comment of a female participant was that it would be difficult for many married women with children, and several household chores demanding their urgent attention, to keep a particular time reserved for writing everyday; also, in many cases, they may not be able to write everyday. In this context, Wolcott's suggestion (1990) may be considered: we should try to "sandwich" writing in our busy work schedules or earmark "writing days". The point is that we should try to maintain some kind of regularity with respect to writing. In one of the issues of the *Reader's Digest* (1998: 16), a contributor with the name Jeremy Daniel had the following to say:

Writing a 300-page book is a formidable task; spinning out two pages daily is easy enough. Repeat this process 150 times and you have a book. This principle can be applied to any task.

If I write five hundred words everyday, by the end of the year I shall have a book to my credit. In one of his interviews mentioned earlier, Geertz said that he usually wrote a paragraph a day, but he never left a sentence or paragraph until he was satisfied with it (see Olson 1991). I was told that Edmund Leach used to come to his department in the late morning hours after having finished his quota of writing of that day. Wolcott (1990) writes that when he busied himself writing, his answering machine had the following taped message: "Sorry, Harry is writing; he can't speak to you now." An asceticism of this type is essential for maintaining writing schedules. If we do not spread out our writing over several days or weeks, then the pressure of finishing it would start mounting up when the deadlines draw closer. To my mind, this is the most critical time, for we may be tempted to plagiarize in order to meet the deadline, or produce a work of abysmally inferior quality.

Reflection and Action 28.4

Read the following excerpts from the writings of expert fieldworkers and show the advantages and disadvantages of each type of giving a description of a particular event. This exercise will give you an idea of how to present your descriptive data.

The first act is ... the driving into the ground of a tethering peg and the tethering of the animal to it. ... Sometimes, after the victim has been staked, a libation of milk, beer or water is poured over, or at the foot of, the peg (Evans-Pritchard 1956: 208).

In the late afternoon another ceremony was performed - the *kava* of the canoe. Food from a large oven was brought into the chief's house, a series of libations poured, and offerings made to the gods of the vessel and of the chief. About a dozen men were present inside, but the expert and some of the workers refused an invitation to come in (Firth 1939: 123).

One of the excerpts has the indirect style of writing while the other one has the direct style. First examine which of the two excerpts you followed better and then work out why you grasped one better than the other one. After doing this preliminary work, write down advantages and disadvantages of writing in direct and indirect styles.

28.7 First Draft

So, the initial hurdle is to overcome the state of inertia, when nothing is being written down, and get something written without being discouraged by the quality of writing. Here, we should always remember that the quality of our writing would improve, as we shall work over the draft against the background of our own comments and the observations of others whom we have requested to read our works. Here, I remember the words of one of my teachers: "You should not be shy of showing your rough work to others, because what we produce in the beginning and what is published in the end are two qualitatively different drafts and each draft improves with one's own reading of it and the others" comments" (see Box 28.5 on different patterns of writing).

Box 28.5 Should you always Write First Draft?

However, we should not assume that all writers and authors follow this pattern, producing several drafts of the same text. Geertz, for example, says that he does not write drafts (see Olson 1991):

Sivastava says, "I write from the beginning to the end, and when it's finished, it's done. And I write very slowly...and except for a few touch-ups at the end, I write essentially one draft...Once in a while people ask me for early drafts, but these drafts just don't exist...I have an outline, especially if it's a book, but I hardly pay attention to it. I just build it up in a sort of craft-like way of going through it carefully, and when it is done it's done. The process is very slow.

I also know about Professor André Béteille whose first draft is his final draft, and invariably, he does not change a word, because he writes very carefully, stretching the writing of a text over several days and weeks. But these are individual styles that take a long time with sustained effort to develop. But the point here is that one should exercise great care in writing and handling "words like precious stones" (Srinivas 1973: ix)".

Once I have a completed draft in hand, I know where it is going. From then on, I start "playing with the text", which means, I start editing and revising it. The comments of fellow-scholars and supervisors, if any, start pouring in. I examine all these comments with unexceptional judiciousness and make changes in my draft. My language also improves; common mistakes are corrected. Remember, from the state of "not a single word written down", I have a manuscript, ready for submission. I discovered it during the course of writing up my doctoral work, and later I read about it in Wolcott's book (1995), that one is able to discover ambiguities in one's work when one reads one's sentences loudly, to hear what they are. I was able to eliminate several sentences that appeared to me superfluous and replace many words with more suitable ones.

Thus, unless we have a draft before us, our thoughts may jump around in abstract forms. Neither can they be communicated to others convincingly nor their relationship with other thoughts explored. Wolcott (1995: 216) writes:

I mull things over before I write, and I constantly jot down ideas, phrases, and questions as they pop into my head. But my best "mullings", like my best scanning for related ideas and relevant citations in the literature, seem to come after I start to capture my thoughts on paper, not before.

During the process of writing, we chance upon many new ideas about which we had not thought of earlier. I remember in 1992 as a doctoral candidate, about to submit my dissertation, the pre-fieldwork seminar group asked me to speak on an aspect of ethics in fieldwork. The moment this offer came, I told the organizer of the seminar group that I would speak on the role of payments to respondents in fieldwork. That time, I really did not know what I would say, what would be the line of my argument, except that I would introspect my fieldwork experiences. It was in the course of writing up this paper (1992) that I chanced upon many new ideas that I developed in detail. I am here reminded of Howard Becker (1986) who says: Writing is thinking.

It was observed earlier that quantitative researchers do not face the problems of writing up that qualitative researchers face, because for them, some kind of, relatively speaking, fixed designs of writing are available. For instance, a typical article in physical anthropology will have the following sections: introduction, the review of literature, materials and methods, results and discussion, and summary and recommendations. This may also be the list of contents of a dissertation. Although it may be true to some extent, it should not be forgotten that numbers and the correlations obtaining between them by themselves mean nothing. They need to be interpreted, for which imagination is required. The interpretations are expressed in qualitative terms, for which the same sort of writing that is central to typical qualitative research is expected. The difference between qualitative and quantitative research with respect to writing is one of degree, and not of kind.

However, an important difference between the texts that are overwhelmingly quantitative and those that are overwhelmingly qualitative may be noted here. In the former, the findings (the "conclusions") are of crucial significance and what is unimportant in these texts is the way in which they have been written down and the style they have adopted. They are largely "author-nascent" texts, by comparison to the ethnographies and pieces of qualitative research that sociologists and social anthropologists produce, which are "author-saturated". One cannot fully understand these texts until the reader knows who the fieldworker was; what were his or her prominent social characteristics; and how did he or she carry out his or her fieldwork. The diaries of the fieldworker are extremely important for having an idea about why the ethnography is of a particular tenor and type. At the end of our discussion it is a good idea to complete just one more Reflection and Action exercise.

Reflection and Action 28.5

Write four pages on Comparative Method and next day read what you have written. Do you feel the need to change the text? Do you feel that shifting around words and sentences the text may read better? Do you find that adding a bit more or deleting a word here and there or modifying certain expressions would communicate better what you intend to express? You may go ahead and make changes and give the draft to you friends/ fellow learners of MSO 002 at your study center. After getting the feedback from them, you may want to make further changes in your text. Oh, you are writing up!

28.8 Conclusion

Finally, let me submit that in this chapter I have not discussed the role of theory in writing up dissertations, because that can be fruitfully discussed in the section on the analysis of data. But, it may be noted that the technical terms an author would use more frequently in his text flow from the theory to which he subscribes. My main submission here is that writing is central to the art of fieldwork. Our field notes are the "bricks" of our ethnographic texts; the leaves from our diaries are reproduced in our monographs. One of our main obligations to the people whom we study and the scientific community of which we are a part is to write up the fieldwork accounts as early as possible and as meticulously as possible. This needs to be emphasised because a common observation is that many field studies remain unwritten and unreported (Wolcott 1995:226; Srinivas 1996:194).

Further Reading

Galtung, J. 1967. *Theory and Methods of Social Research*. George Allen and Unwin: London (deals with all aspects of analyzing data for writing up)

Mills, C. Wright 1959. *The Sociological Imagination*. Oxford University Press: Oxford (for its classic statement on social inquiries and the presentation of results)

Sellitz, C., M. Jahoda, and S. W. Cook 1966. *Research Methods in Social Relations*. Holt, Rinehart and Winston: New York (especially the section on the writing of research reports)

Introduction to Block 8

Data Analysis and Presentation of Research Findings

Transforming one's data gathered from different sources into research findings to be presented in a written form is a major task of a research process. The two processes are related with each other. We write only what we know and what we know is only that which we are able to gather by observing, communicating and interacting in the world around us.

Mills (1959: 5-7) said,

The sociological imagination enables its possessor to understand the larger historical scene in terms of its meaning for the inner life and the external career of a variety of individuals. It enables him to take into account how individuals, in the welter of their daily experiences, often become falsely conscious of their socialpositions. Within the welter, the framework of modem society is sought, and within that framework the psychologies of a variety of men and women are formulated. By such means the personal uneasiness of individuals is focused upon explicit troubles and the indifference of publics is transformed into involvement with public issues.

> That in brief, is why it is by means of sociological imagination that men now hope to grasp what is going on in the world, to understand what is happening in themselves as minute points of the intersections of biography and history within society

Mills explained why we become curious and how we come to inquire in the social aspects of our being. Further, Mills (1959: 195) pointed out.

> To the individual social scientist who feels himself a part of the classic tradition, social science is the practice of a craft. ...As a social scientist, you have to ... capture what you experience

> and sort it out. .. you must set a file, which is, I suppose, a sociologist's way of saying: keep a journal. Many creative writers keep journals; the sociologist's need for systematic reflection demands it. Under various topics in your file there are ideas, personal notes, and excerpts form books, bibliographical items and outlines of projects.

This is how C Wright mills advised sociologists to build their capacity to understand social reality. The purpose of giving these classical views C. Wright Mills is to point out that the craft of "doing sociology" is multi-dimensional and without undermining collection of data as per methodological orientation, it is important to also focus on its analysis and presentation. In Block 7 we had units focusing on field research and formatting and analysis of qualitative research data. We now turn application of newly available tools of information technology.

Block 8 on Data. Analysis and Presentation of Research Findings has five units. The first four units deal with the use of information and communication technology in analyzing the data gathered during social research and then also with the ways of presenting the research findings. The fifth unit contains guidelines for carrying out a fieldwork-based research project. Let us took at the content brief of each of the five units of Block 8.

Unit 29 on **Using Internet and Word Processor** tells us how to understand the basics of the Internet and its various utilities. It distinguishes between different types of resources available over the Internet and provides a list of Internet sites that can support social research.

Unit 30 on **Using SPSS for DataAnalysis** describes how to understand the use of SPSS in analyzing the data collected from different sources. Next, it tells us how to start and exit the SPSS programme and also to enter the data into a SPSS Data Editor. In addition, the Unit explains

how to import a data file from the Excel programme and use SPSS for simple statistical analysis of data.

Unit 31 on **Using SPSS in Report** Writing explains how to edit the SPSS output tables to suit the needs of writing a research report. It tells about creating and editing charts for graphic presentation of one's data analysis. It spells out how to copy the SPSS edited tables and charts directly in the research report.

Unit 32 on **Tabulation and Graphic Presentation** provides a general structure for presentation of research findings and explains the role of ICT in presentation of research findings. Next, it offers case studies and steps for report presentation.

Unit 33 on **Guidelines to Research Project Assignment** contains an overview of the course material of MSO 002 for building up guidelines for the research work to be undertaken by the learners. It provides the procedure to follow a research project in terms of its objectives and various stages of planning, executing the research and finally writing it up and submitting the same at the Study Centre for evaluation.

UNIT 29 USING INTERNET AND WORD PROCESSING TOOLS

Structure

29.1 Introduction

29.2 Objectives

29.3 What is Internet and How Does it Work?

29.4 Internet Services

29.5 Searching on the Web: Search Engines

29.6 Accessing and Using Online Information

29.7 Online Journals and Texts

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29.9Data Sources

29.10Uses of E-mail Services in Research

29.11Conclusion

29.12 Further Reading

29.1 INTRODUCTION

In the Units of Block 7 we mentioned that information and communication technology (ICT) provides a fair bit of aid to a sociologist who is engaged in studying social reality. Unit 29 explains how to use the features of the new technology. This Unit explains what is the Internet and how it helps a researcher in various ways. It is quite possible that you are already aware of such inputs and in that case the contents of this Unit would appear to you quite elementary but for

those who are yet to become familiar with this revolution in the way we learn, Unit 29 will be of great use and help. With the increasing availability of inexpensive personal computers and the State's efforts to provide easy connectivity to the Internet at an affordable price, it is hoped that more and more users in India will be conducting formatting and processing of their researches with the help of ICTs.

Information and Communication Technology (popularly known as ICT) has revolutionized each aspect of human life. The well-known abbreviation "www" (or the "World Wide Web") is an individual's gateway to the whole world. Gone are the days when accessing a library used to be a full fledged event in itself, from seeking permission to getting cards then the long exercise to find out what one needed. All this was compounded if it required travel to another city. Accessing libraries and resources outside the country was a dream. Now, all this and a lot more are available at our desk. With the click of a button, we have all that we need provided we are skillful in using computers and accessing the Internet.

29.2 OBJECTIVES

After studying this Unit, you should be ableto:

- Distinguish between different types of resources available over theInternet;
- Build up a list of Internet sites that can support social research;
- Explain use of statistical software for data analysis; and
- Use in your research the Internet and the word processing tools.

29.3 WHAT IS INTERNET AND HOW DOES IT WORK?

The Internet is a network of networks, linking computers to computers. It is the transport vehicle for

the information stored in files or documents on another computer. It can be compared to an international communications utility servicing computers. It is sometimes compared to a giant international plumbing system. However, the Internet itself does not contain the information. It may not be correct to say that a "document was found on the Internet." Rather, we should say that it was found *through* (or by using) the Internet.

Users of computers may use through the internet one or all of the following internet services.

- **Electronic mail (e-mail):** It permits one to send and receive mail. It provides access to discussion groups through e-mails.
- **Telnet or remote login:** It permits one to log onto another computer and use it as if one were there.
- **FTP (or File Transfer Protocol):** It allows one's computer to rapidly retrieve complex files intact from a remote computer and view or save them.
- **The World Wide Web (www or "the Web"):** The largest and the fastest growing activity on the Internet.

How does the Internet work?

Every computer connected to the Internet is part of a network. For example, you may use a modem and dial a local number to connect to an Internet Service Provider (ISP). At work, you may be part of a local area network (LAN), but you most likely are still connected to the Internet using an ISP that your institution has contracted with. When you connect to your ISP, you become a part of their network. The ISP may then connect to a larger network and become part of their network. As said earlier, the Internet is simply a network of networks.

A typical Internet website address or a URL looks like http://www.ignou.ac.in.In this name http://denotes that the computer will use Hypertext Transfer Protocol for communicating. WWW or World Wide Web is the source where this website would be located; ignou denotes the unique name given to the particular website and ac.in represents the Domain Name Server which will handle the request and provide the requested website page (for an example see Box 29.1)

Box 29.1 Example of How Does The Internet Work?

Let us say that you type the URL http://www:ignou.ac.ininto your browser[@]. The browser contacts a DNS server to get the IP address[@]. A DNS server would start its search for an IP address by contacting one of the root DNS servers. The root servers know the IP addresses for all of the DNS servers that handle the top-level domains (.COM, .NET, ORG, etc.). Your DNS server would ask the root forwww.ignou.org and the root would say, "1 don't know the IP address for www.ignou.ac.in but here's the IP address for the ac.in DNS server."

Your name server then sends a query to the ac.in DNS server asking if it knows the IP address for www.ignou.ac.in.The DNS server for the ac.in domain knows the IP addresses for the name servers handling the www.ignou.ac.in domain, so it returns those.

Your name server then contacts the DNS server for**www.ignou. ac.in** and asks if it knows the IP address for www.ignou.ac.in. It actually does, so it returns the IP address to your DNS server, which returns it to the browser, which can then contact the server for www.ignou.ac.into get a Web page.

Accessing Internet

Individuals and companies desirous of using Internet access services have a range of options available, which vary considerably in terms of service quality, and price. There are several free dial-up Internet Service Providers that provide a basic level of access at no cost. For a company intending to engage in a substantial amount of e-commerce involving high bandwidth content, a specialized solution is required at the other end of the range. The company would lease a line with a certain capacity (e.g. 20Mbps) with the Web site professionally hosted. The variables to consider are:price, type of connection (dial-up, instant, dedicated), ancillary servicesavailable (Web site hosting, intranet/extranet provision, services), download speed (the speed that information travels to you) and upload speed (the speed of information sent by you).

The most common Internet access procedures are:

- **Dial-Up Internet:** This is the most commonly used service for individuals, and for small businesses with e-mail and a Web site. Awide range of operators exist providing national and regional services,most offering Web site hosting (some included in the monthly, access fee)and helpdesk services. It requires a modem and a telephone line through which it can be connected to ISP using unique user identification and password.

In India, the major Internet Service Providers for dial-up connections include VSNL, MTNL along with other regional level providers. When you purchase an accountfrom any of these ISPs, you get a unique username and a password, along with a dial up number. When you connect the modem to the telephone line and dial-up, it asks for the username and password after which it connects to the ISP from where you can access the Internet.

- **ISDN**(Integrated services digital network): ISDN allows a customer to have a 64kbps Internet

circuit and telephone/fax line at once or a dial-up connection at speeds of up to 128 kbps. This service is suitable for a business that may have a small number of users on-line at the same time or needs to transfer files of substantial size (suchas graphics),which would be too slow over a dial-up connection. In most cases forISDN Internet access, a customer needs to have an ISDN line installed to the premises.

- **Cable modem:** While using different technologies, these two products deliver high speed Internet access on an "instant connection" basis (no dial-up required). The download speeds vary from 512 kbps to 2 Mbps and upload speeds are of 128-740 kbps.

Specific Advantages of Internet

Compared to traditional sources of information for research, the Internet offers the following additional possibilities:

- **More up-to-date material:** Official publications are often publishedonto the Internet before they arrive in the library, and news services are updated throughout the day.
- **Increased access to material:** It is absolutely impossible for any single library to hold paper copies of all the information that isavailable on the Web. Also you have access to the Internet 24 hours a day.
- **Interactivity:** Some sites have e-mail discussion forums whereyou can debate issues and send comments.

Let us complete Reflection and Action 29.1 and assess the level of our understanding of the help ICTs can provide in social research.

Reflection and Action 29.1

ICT has a vital role to play in social research as it provides access to a large resource of books, journals, data sets and software for analysis. Find out what type of access to the Internet is available at your Study Centre. If the Study Centre has no access to the Internet, visit the nearest cyber cafe in your locality and after discussing with the cyber cafe in-charge, find out which of the following types of Internet access is available at that café.

- Dial-up Internet;
- ISDN (Integrated services digital network; and
- Cable modem.

Try to use this facility at least once to find out a few items of information necessaryfor your research project and then write a note of ten lines to tell whether this method of seeking information is useful. Mention the problems, if any, faced in the process.

29.4 INTERNET SERVICES

The following description provides us information about the various typesof Internet services now commonly available to all researchers and the general public.

World Wide Web (www)

The WWW incorporates all the Internet services. You can retrieve documents, view images, animations[@], and videos, listen to sound files, speak and hear voice, and view programmes that run on practically any software in the world, providing your computer has the necessary hardwareand

software[@] to do these things.

When you log onto the Internet using Netscape or Microsoft's Internet Explorer or some other browser, you are viewing documents on theWorld Wide Web.The current foundation, on which the WWW functions, is the programming language called HTML. It is HTML and other programming embedded within HTML that makes possible Hypertext. Hypertext is the ability to have Web pages containing links, which areareas ina page or buttons or graphics on which you can click your mousebutton to retrieve another document into your computer. This "clickability"[@] using Hypertext links is a feature, which is unique andrevolutionary about the Web.

Every document or file or site or movie or sound file or anything you find on the Web has a unique URL (Uniform Resource Locator) that identifies the thing on the computer, where it is, and its specific file name. Every Hypertext link on every web page in the world contains one of the URLs. When you click on a link of any kind on a Web page, you send a request to retrieve the unique document on some computer in the world that is uniquely identified by that URL. URLs are like addresses of Web pages. Awhole cluster of internationally accepted standards (such as TCP/ IP and HTML) makes possible this global information retrieval phenomenon that transcends political and linguistic boundaries.

Electronic Mails or E-mail

The most basic and perhaps one of the most useful components of the Internet is the one that came first---electronic mail (or e-mail), which enables rapid local and global information exchange and has forever rebranded its much slower manual cousin as snail mail. E-mail is a particularlyeffective

way of communicating not only with friends but also with business partners and groups of people you may be working with. It allows for rapid updates on progress and for questions to be asked and answered in double quick time. Within a decade a host of rival and proprietary e-mail formats have been devised for use on different computing platforms, which mostly could not talk to each other. However, as the Internet became more widespread and standards were implemented to enable different e-mail systems to communicate transparently, the use of e-mail has remarkably increased. It is not only a key part of internal communication within and between businesses but is used by virtuallyeveryone who has a personal computer (PC).

UsingE-mail

Now e-mail comes as an integral part of your browser software (for example Outlook Express with Microsoft's Internet Explorer). On setting up your browser software you are also asked to establish your connection to the Internet Service Provider (ISP). You will be asked to enter your e-mail address. The first part of the e-mail address is your choice but itshould be unique with your ISP; then comes the sign "@"followed by the name of your ISP. Your ISP will provide you with essential codes to create a new account. The software will also ask you to provide a name by which you would like to be identified when someone receives an email from your account. You will also need to key in your user name and a password agreed on with your provider.

Sending e-mail is a simple task. You can write your correspondence directly in the email software or in another word processing programmeand attach it to the e-mail so that the formatting remains intact. If you want to send your e-mail to several people you can easily do that by using the carbon copy (cc:) option. If you want to keep the identities of the other parties receiving the e-mail secret then you can enter their addresses into the blind carbon

copy (bcc:) field. Once finished, hit the 'send'button and the e-mail goes from your computer. You can opt to keep copies of every message sent in the "sent box" which acts as a good record for future reference or you can begin to organize mail sent and received by category or project in files within your mail software (see Box 29.2 to understand how e-mail works).

Box 29.2 How Does E-mail Work?

1. Once you have composed an e-mail and hit the send button, your e-mail programme sends your mail to the SMTP server where your account is.
2. The SMTP server breaks the address someonelse@theirdomain.com into two parts: someone else (the account name) and theirdomain.com (the domain). The SMTP server then contacts the DNS server, and asks for the IP address wheretheirdomain.com is located.
3. The DNS server sends the address back to the SMTP server.
4. The SMTP server then sends the e-mail message to the SMTP server where theirdomain.com islocated.
5. The second SMTP server delivers the e-mail message to someone else's account.
6. Someone else logs on to the computer and opens the email software, which then connects to the server. The software then requests the server to send all e-mail from their account to their computer.

E-mail is an amazing communications tool once you have mastered it and learnt the basic rules. However no one likes to receive a spam or unsolicited e-mail unless they have opted to be part of your network of contacts or potential customers. Spam is a frustrating reality

on the Internet and those who persist in sending it are not regarded as good net citizens. With personal or business messages one is advised to read and re-read one's e-mails carefully before hitting the send button as misunderstanding and embarrassment can arise quickly through hasty responses.

29.5SEARCHING ON THE WEB SEARCH ENGINES

Search Engines for the general Web do not really search the World Wide Web directly. Each one searches a database[@] of the full text of Web pages selected from the billions of Web pages out there residing on servers. Search engine databases are selected and built by computer robotprogrammes called spiders. Although it is said that they "crawl" the Web in their hunt for pages, in reality they stay at one place. They find the pages for potential inclusion by following the links in the pages they already have in their database (i.e., already "know about"). They cannot think or type a URL or use judgment to "decide" to go look something up and see what's there on the Web about it.

Using search engines

This is the most common form of text search on the Web. Most search engines do their text query and retrieval using keywords. A keyword can be any word on a Web page. It is important to use keywords relevant to the topic you are searching. Combinations of words or multiple words can be used as keywords and the Search Engine will display all the Web pages in its database that contain most of the keywords used by you. For example, if you wish to find out statistical software materials that aredownloadablefree from the net, the key words could be "Statistics Software Free". Remember some search engines index every word on every page, while others index only a part of the document. Also, some of the search engines discriminate upper case

from lower case; others store all words without reference to capitalization.

Keyword searches have a tough time distinguishing between words that are spelled the same way but mean something different (i.e. hard cider, a hard stone, a hard exam, and the hard drive on your computer). This often results in hits that are completely irrelevant to your query. Search engines also cannot return hits on keywords that mean the same but are not actually entered in your query. A query on "heart disease" would not return a document that used the word "cardiac" instead of "heart."

Most sites offer two different types of searches---"basic" and "advanced." Advanced search options differ from one search engine to another, but some of the possibilities include the ability to search on more than one word, to give more weight to one search term than you give to another, and to exclude words that might be likely to confuse the results. You might also be able to search on proper names, on phrases, and on words that are found within a certain proximity to other search terms.

Many search engines allow you to use the so-called Boolean[@]operators to refine your search. These are the logical terms AND, OR, NOT, and the so-called proximal locators, NEAR and FOLLOWED BY

- **AND** means that all the terms you specify must appear in the documents, i.e., "heart" AND "attack."
- **OR** means that at least one of the terms you specify must appear in the documents, i.e., bronchitis, acute OR chronic.

.

- NOT means that at least one of the terms you specify must not appear in the documents. i.e., statistics AND calculator, NOT mathematics.
- **NEAR** means that the terms you enter should be within a certain number of words of each other.
- **FOLLOWEDBY** means that one term must directly follow the other.
- **PHRASES:** The ability to query on phrases is very important in a search engine. Those that allow it usually require that you enclose the phrase in quotation marks, i.e., "heart attack."
- All the search engines have different methods of refining queries. The best way to learn them is to read the help files on the search engine sites and practice.

Some of the most commonly used Search Engines are:

- **Google** (http://www.google.com)

Google provides the option to find more than web pages. Using on the top of the search box on the Google home page, you can easily seek out images from across the Web, discussions that are taking place on Usenet newsgroups, locate news information or perform product searching. Using the More link provides access to humancompiled information from the Open Directory, catalogue searching and other services.

- **Yahoo** (http: / /www.yahoo.com)

Launched in 1994, Yahoo is the Web's oldest "directory", a place where human editors organize Web sites into categories. In addition to excellent search results, you can use tabs above the search box on the Yahoo home page to seek images, Yellow Page listings or use Yahoo's excellent shopping search engine. Or visit the Yahoo Search home page, where even more specialized search options are offered.

- **Ask Jeeves** (http://www.askjeeves.com)

Ask Jeeves initially gained fame in 1998 and 1999 as being the "natural language" search engine that let you search by asking questions and responded with what seemed to be the right answer to everything.

- **AllTheWeb.com(http://www.alltheweb.com)**

Powered by Yahoo, you may find AllTheWeb a lighter, more customizable and pleasant"pure search" experience than you get at Yahoo itself. The focus is on Web search, but news, picture, video, MP3 and FTP search are also offered

- **AOL Search** (http:// aolsearch.aol.com (internal) and http:/ /search.aol.corn /(external)AOL Search provides users with editorial listings that come from Google's crawler-based index. Indeed, the same search on Google and AOL Search will come up with very similar matches.
- **HotBot** (http://www.hotbot.com)

HotBot provides easy access to the Web's three major crawler-based search engines: Yahoo, Google and Teoma. Unlike a **meta search engine,** it cannot blend the results from all of these crawlers together. Nevertheless, it is a fast, easy way to get different Web search "opinions" in one place.

Some other options for Search Engines are:

Teoma(http://www.teoma.corm)

Gigablast(http://www.gigablast.com)

LookSmart(http://www.tooksmart.com)

Lycos (http://www.tvcos.com)

MSN Search(http://search.msn.com)

NetscapeSearch(http:/ / search. netscape. com)

Open Directory (http://dmos.org)

About.com (http://www.about.com)

Britannica.com(http://www.britannica.com)

Excite (http://www.excite.com)

Won (http://www.iwon.com)

PepeSearch thttp://www.pepesearch.com/)

SearchKing (http://www.aearchking.com)

Complete Reflection and Action 29.2 and find out if you are able to make use of the ICT aids available at present.

Reflection and Action 29.2

Find out what type of access to the Internet is available at your Study Centre. If the Study Centre has no access to the Internet, visit the nearest cyber cafe in your locality and carry out the following tasks.

- Open an e-mail account if you do not already have one.
- Send an e-mail to your friend who should have an e-mail account and you should know your friend's email address.
- Access any of the above-mentioned search engines to obtain some items of information necessary to your research project.
- Visit a couple ofwebsites, for example one to give you information about the current jobs available; another one about natural disasters currently occurring all over the world.

After completing the above tasks, write a short note on advantages and disadvantages of

using ICT tools.

29.6 ACCESSING AND USING ONLINE INFORMATION

If you are a researcher dealing with any of the social sciences, you would be more interested inusing the social science research reference sites. Here is some information about them.

Social research reference sites

Using commonly available Search Engines (e.g. Google, Yahoo etc.) is not one of the best and recommended ways to initiate research through the Internet. Given the limitations of search engines, there are several other options available where the search results can be far more precise. The search for Social Research can be classified in the following categories:

Directories and gateways

These provide an entry point for resources collated specifically for a chosen area, which you may search and browse. Unlike search engines, which automatically collate a list of sites, which match your search criteria, directories and gateways can provide a more fruitful search for your chosen topic. Gateways are an excellent place to find high quality Internet sites that can support academic work. Some of the advantages of using directories and gateways are:

- Gateways are compiled by academic and library experts after devoting considerable time to scanning the Web for items of interest.
- Gateways are classified in structured and useful ways so that one can access the resources more easily.
- Gateways are regularly updated.

A fewexamples of effective gateways for social science researchersare:

- **The Social Science Information Gateway (SOSIG)** (http: /www.sosig.ac.uk/)This gateway has links to online papers, discussion lists and courses. It contains Web pages of several departments and organizations. It has a complete section for social research methods,including both quantitative and qualitative resources.
- **Sociosite:** Research Methodology and Statistics (http:// www.pscw.uva.nl_sociosite-/TOPICS/Research.html)-This is a sociological information system that provides access to a comprehensive and international listing of all sociology related resources on the Internet and has a special section devoted to research methodology and statistics
- **Social Science WWW Virtual Library** (http://www.clas.ufl.edu/users/gthursby/socsci/index.htm)-This keeps track of online social science information as part of the World Wide Web Virtual Library.

Article reference and abstracts databases

One always needs to keep oneself aware of the latest publications in one's field. The Internet offers ways to find about these publications via online catalogues of references and abstracts. While access to some of these sites is free, some require initial membership, which is generally provided to libraries and institutions. It is likely that your institution (or library) has the membership of some of these databases and you can access these after obtaining the Password from your institution/library.

Some popularly accessed databases are:

- **Social Science Citation Index (SSU)** (http://www.isinet.com/products/ citation/ ssci/) It contains around 5,000 journals spanning 50 social science disciplines. It covers most

of the major journals, which address social research methods dating back to 1973. From a search you can obtain titles and for over half the author abstracts you can also retrieve titles of citations references.

- **International Bibliography of the Social Sciences (IBSS)** (http://lse.ac.uk/ibss/)

  This provides easy access to over 1.5 million references tojournal articles, bookreviews and monographs from 1951 onwards.

- **Sociological Abstracts** (http://www.socabs.org/detailsV3/socioabs.html)

It indexes and provides abstracts from many publications coveringsocial research methods.

29.7ONLINE JOURNALS AND TEXTS

Most journals in the social sciences have Web sites where both current and backdated research articles and papers are available for reading and downloading. Gaining access to full text in most of the online journalsrequires subscription. On obtaining it, a password is provided for fullaccess. However, most of these journals provide abstracts and/or tableof contents free. There are a few directories that provide lists and linksto electronic journals. Two such directories are:

- **Directories of Electronic Journals** (http://gort.ucsd.edu/ejournal/dir.html)---contains links to electronic journals and newsletters accessthe world.
- **The Journal Locator in Psychology and the Social Sciences**(http://www.wiso.uni-augsburg.de/sosio/hartmann/psychojournals.html)--- It lists over 1,600 online journals and provideslinks to their home pages.

Examples of online journals covering social research methods

- **Sociological Research Online** (http: / /www.socresonline.org.uk/---This is an online journal that publishes high quality applied sociology articles, focusing on theoretical,empirical and methodological aspects.
- **Social Research Update** (http://www.soc.surrey.ac.uk/sru/sru.html)- This is a quarterly electronic journal which covers new developments in social research. Each issue covers different research methods topics spanning qualitative and quantitative methods.

While full text articles can be browsed free of charge from the online journals mentioned earlier, the following only provide free access to abstracts and table of contents:

- **International Journal of Social Research Methodology, (IJSRM)** (http://www.tandf. co. uk/journals/tf/13645579.html---It is a new journal of methodological articles and articles relating toresearch practice in professional and service settings.

There are also some specialized sites available that archive full texts of paper deliberated or presented during Conferencesand Seminars. One such site of interest is **Education Online:Electronic Texts in Education and Training** (http://www.teeds.ac.uk/educot/).

Library catalogues

Several libraries across the world provide online-access to their catalogues. Library catalogues are sometimes referred to on the Web as OPACS which stands for Online Public Access Catalogues. Sometimes these catalogues can only be accessed through passwords, which are available through free registration on site. Some of the relevant sites are:

- **The British Library Catalogue** (http://blpc.bl.uk/)

This is an online resource for materials in the major reference and document supply centres of one of the world's largest libraries.

- **Worldwide Index of Library Catalogues**(http://www.libdex.com/)More than 18,000 libraries can be reached through a specialized search from this website.

Assorted useful websites

- **Glossary of Research Terms** (http://www.mori.com/rmu/glossary.shtml) provides explanations of topics and technical terms for researchers.
- **Social Science Research Methods:** Resources for Teachers (http://www.siu.edu/%7Ehawkes/methhome.html) has links to courses on research methods and teaching materials as well as other materials of interest.
- **The Centre for Applied Social Surveys (CASS)** http://www.socstats.soton.ac.uk/cass/)offers a programmeof short courses on social survey methods, covering all aspects of quantitative survey.
- **Index to Theses** (http:// www. theses. com/registered_users/simple. html)provides a searchable database of abstracts of masters and doctoral theses accepted by Universities in Great Britain and Ireland from 1970 till date.

Reflection and Action 29.3

It is always better to decide on the needs and identify the broad category underwhich the information necessary for your research project might fall.It helps inpinpointed search and provides the desired results in relatively lesstime. It is true that general search engines are of limited help in social research. There are specialized Search Engines created for Social Research.

Try to obtain the information needed by your research project from one of the sources mentioned above and then write down in one page how you obtained the information and the time you

spent in getting it and how you are going to use that information in your research.

29.8 STATISTICAL REFERENCE SITES

- **The CHEST Directory** (http://www.chest.ac.uk/chestdirectory/intro.html) contains a wide range of software, including those for data and statistical analysis. There are several other subject specific sites (e.g. foranthropology, psychology) that provide free access to software required for quantitative and qualitative analysis. Some examples are:
- **Computer Assisted Qualitative Data Analysis Software (CAQDAS)** Network (http://caqdas.soc.surrey.ac.uk/)
- **Directory of Psychology Software** (http: / /www.psychology. Itsn.ac.uk/)
- **Free Statistical Software**(http://members.aol.com/johnp71/javasta2.html)

Software for Statistical Data Analysis Computer software is used to perform any level of complex statistical analysis with any amount of data available. There are three ways through which software can be obtained for performing these tests:

1) Purchasing licensed software from the companies

SPSS (or Statistical Package for Social Scientists) is the "most preferred software to carry out any level of statistical analysis (you will read more about this package and its use in Unit 30). With SPSS, one can generate decision-making information quickly using powerful statistics, understandand effectively present results with high-quality tabular and graphical output, and share the results with others using a variety of reporting methods. All this enables the user to make smarter decisions more quickly byuncovering keyfacts, patterns andtrends.

SPSS is highly priced. Generally institutions and organizations purchase multiple user licensed version of this software and provide access to its studentsandemployees. Purchasing SPSS by anindependent user is generally not economically viable. However, there are other moderate/low priced software available for single users. One such software available is "StatCalc". It simplifies common statistical calculations, allowing quick analysis of raw data whether you enter it yourself, use a spreadsheet, or maintain a database. A 30 day trial version of this software is available from their website (http://www.acastat.com/prod01.htm)

2)Downloading free software from the Internet

There are several committed professionals whose aim is to popularize the use of statistics by making it simple and affordable. These people have created software that can perform a wide range of statistical analyses, requiring minimal computer proficiency. The software can be downloaded from the Internet in about 30 to 90 minutes with reasonable Internet speed. No licensing is required to use such software.

Such a popular and free statistical software is "Openstat". This software is similar to SPSS in appearance and operation. Though not as comprehensive as SPSS, it provides a wide range of options to a social researcher. It has the capacity to handle large data; it can import from and export data to other software and can perform all commonly used statistical tests. Someone conversant with Openstat can effectively use SPSS for all similar applications and vice versa. The software can be downloaded from the URL (http:/www.statpages.org/miller/openstat/).

3) Online web pages

These are quick solutions to small statistical problems. These may or may not be downloadable but provide free access. Several of these Web pages provide options for data import. In the

majority of the situations these work as handy scientific calculators but are certainly advanced from being simply calculators as they can perform multiple tasks including data entry and producing charts, etc. Before clicking on to any of these calculators, one should have analyzed the problem and identified the exact test that is to be applied.

Statistical calculators for descriptive statistics and charts

1) Descriptive sampling statistics(http://home.ubalt.edu/ntsbarsh/Business-stat/otherapplets/Descriptive.htm)---This page can calculate some basic descriptive statistics, like mean, variance, SD, CV, skewness@and kurtosis.@ It can analyze a maximum of 80 numbers. In the matrix that appears on the web page enter the numbers into each of theColumns on top of the matrix and hit "Calculate". All the calculations mentioned below appear. In case a Histogram is required, provide Class Width and "Number of Classes" in the boxes and hit "Histogramming". The histogramwill be drawn that can be selected, cut and pasted in any document for further use.

There are several other such online calculators available on the Internet. To provide some more examples, the following links may be attempted:

2) Descriptive statistics (mean, SD, SEM, and CI of mean) (http://graphpad.com/quickcalcs/clmean1.cfm)--One can either enter or paste raw data, or enter mean,SD or SEM, and N to get Class Intervals.

3) StatCalc (http://math.uc.edu/statistics/statbook/java/StatCalc.html)---This calculator computes summary statistics for onevariable, draw a crude histogram, and sort a list of values. Given pairsof values it computes the least squares regression line and Pearson correlation coefficient. It can also perform Chi Square test. The can be either directly entered or pasted from other worksheets like Excel.

4) Statiscope (htpp://www.df.lth.se/~mikaelb/statiscope/statiscope.shtml)---This can be used for calculating and displaying a large number of descriptive statistics from a set of numbers that can entered directly into the calculator.

Reflection and Action 29.4

There are several options available for carrying out statistical analysis. This includes online calculators as web pages that can quickly run the calculation and give results.

There are several statistical packages that can be downloaded free of charge through the Internet andcan be used for almost all basic statistical tests.

You need to remember that ICT and computer software packages have a limited use in qualitative data analysis. As all social researches have some component of quantitative data, we suggest that for analyzing quantitative type of data pertaining to your research project, you try to use the basic tools mentioned above. Aftermaking an effort to do so, it is important that you mention in your research project report all the ICT tools that you used in your research. In the evaluationof your assignment this will be taken into special consideration..

29.9 DATA SOURCES

There are several websites that provide real data (both raw and tabulateddata). These websites provide country-specific data. Access to datafrom these websites is generally not free and membership is required.

Statistical Data on the Web

(http://www.lib.umich.edu/govdoes/stforeig.html)provides baccess to select socio-economic data from various countries in the world. A few websites for Indian data are:

- Census Data Online (http://www.censusindia.net/cendat/)
- India Stat.com (http://www.indiastat.com/)

Statistical and research methods

There are several sites dedicated to tutor or guide researchers on Research Methods and the latest developments in upgrading these methods. of the popular sites in this category are:

SRM (Social Research Methodology)---Documentation Centre (http://www.niwi.knaw.nl/nlsrm/srm.htm)---contains a searchable database of resources on research methodology and statistics for social and behaviouralsciences on an international scale.

Sociological Methodology [http://www.blackwellpublishers.co.uk/journals/SM/contents.htm] is an annual volume on methods of research in social sciences. Sponsored by the American Sociological Association, it publishes materials that advance empirical research in sociology and related disciplines.

Qualitative research

[http://qrj.sagepub.com/]provides a forum for the discussion of research methods, in particular qualitative research.

International Journal of Social Research Methodology (IJSRM)[http://www.tandf.co.uk/journals/tf/13645579.html]

Public Opinion Quarterly (POQ)

[http://www.poq.oupjournals.org/] is the official publication of the American Association for Public Opinion Research (AAPOR) and focuses on theories and methods

underlyingopinion research (such as survey validity, questionnaire construction, interviewingand interviewers, sampling and analytic approaches).

The CASS Question Bank

This question bank provides free access to questionnaires from major social surveys and associated commentary to assist survey design:

29.10 USES OF E-MAILIN RESEARCH

Usinge-mail as a research tool potentially offers researchers many advantages such as easy access to world-wide samples, low administration costs (both financially and temporally) and its unobtrusiveness and "friendliness"to respondents. However, e-mail's application as a research tool is constrained by its, as yet, limited and biased population of users(in terms of age, income, gender and race). Response rates to e-mail questionnaires appear favourable as does the ease of distribution and response times. Nevertheless, ensuring respondents' anonymity is virtually impossible. Using e-mail as an interview tool takes away the conventional constraints of spatial and temporal proximity between interviewer and respondent and offers the considerable practical advantage of providing "ready-transcribed" data. However, e-mail interviews suffer from a lack of tacit communication.

The principal feature of using e-mail as a research tool is its speed and immediacy. An almost instantaneous dialogue between the researcher and the subject takes place. In particular, electronic communication sets up a "democratization of exchange" that eludes more conventional research methodologies. Furthermore, the potential for asynchronous communication that e-mail offers is an attractive feature when considering its use as a research tool. Subjects are

not constrained to synchronous communication but can respond when and how they feel comfortable. E-mails are most commonly used to fill in electronic questionnaire and conduct electronic interviews.

However, as electronic communication becomes more common, therewill be *information overload* and research via e-mail runs the risk of becoming marginalized as a form of electronic "junk mail". Unsolicited attempts to gain information via e-mail by genuine researchers may be ignored by the recipient at the other end of the line.

The proliferation of e-mail, along with the increasing ease of carrying out e-mail and Internet-based research, suggests that the use of electronic methodologies is likely to increase in popularity in the near future. However, as said earlier, there remain significant problems in using email in social science research. Despite the rapid expansion of e-mail, its use as a research toolwill reflect the demographically based biases of current usage patterns of the medium, in much the same way that early telephone surveys were also hindered by the clear social class bias resulting from an unequal ownership of the facility.

Accessing newsgroups and e-mail lists

Suppose you have a question for which you are sure that someone knows the answer, but how do you find that person? With the Internet you can not only search Web sites for information, but also communicate with people you may never meet, getting answers to obscure questions that only they may know.

Newsgroups also referred to as forums have been around almost since theInternet came into

existence. They help scientists to post questions (and answers) to each other. Today, newsgroups resemble virtual coffeehouses, where people get together to discuss subjects of mutual interest. The only difference is that with newsgroups, the communication is written, not verbal. Newsgroups revolve around specific topics, such as effectiveness of computer analysis in qualitative research. You can read what others have written and post your own comments.

There are thousands of newsgroups covering almost every topic, from computers, social issues, literature and science, to recreation, entertainment, hobbies and current affairs. In newsgroups, you can find job postings, business and health care advice, announcements about events, referrals, political and religious discussions. You may download pictures also. See Box 29. 3to find out how to access a newsgroup.

Box 293 How to Access a Newsgroup

To access a newsgroup, you need a newsreader programme. Most Internet explorers have these programmes built in. Next, determine which newsgroups interest you and subscribe to them. Keep in mind that newsgroups were once the only way to have so-called. threaded discussions, where related messages are grouped together. Today, many Web sites have discussion group postings. When you are looking for a discussion to join, look at Web sites as well as newsgroups.

Mailing Lists

Mailing lists use a different strategy. Rather than collecting each messageand displaying it in a central location, each message is sent as an electronic mail message to every member of the list. The advantage of mailing lists is that you don't need to use a separate software programme to

read messages posted to the newsgroup. The disadvantage is that you can receive dozens, sometimes even hundreds, of messages per day from a given mailing list.

Newsgroups and mailing lists generate an incredible amount of text each day. Some of them contain detailed analyses of issues and events by contributors who range from interested members of the general populace to acknowledged experts in particular fields. If you subscribe to mailing lists, you can reduce the number of messages you receive each day by using the *digest* command, which tells the computer running the mailing list to send you one message containing several messages. You can learn how to use the *digest* command by sending a message to the computer running the list with the word *help* in the subject line. Remember to send the message to the computer's main address, rather than to the list itself.

If you are working on a research project on a current issue or event, you can locate relevant newsgroups and mailing lists by visiting the Google Group at www.google.co.in or Deja News Web site at http://www.dejanews.com or Yahoo's directory of newsgroups and newsgroup posts at http://www.yahoo.com/News_and_Media/Usenet/Newsgroup_Listings/. To search for mailing lists dealing with a particular topic, visit the Lisst Web site at http: //www.lisst.comor the Catalist Web site at http://www.lsoft.com/catalist.html. If you want to analyze a list, discussion, or track back a series of messages, go to Lisst's Email List Archives Search at http://www.lisst.com/read/.

To learn more about researching newsgroups, you can view an interactive demonstration. Limiting a Search with Publication Information, which provides a demonstration of searching the Deja News Web site. Deja News, located on the Web at http://www.dejanews.com, focuses on the

contents of newsgroups on the Internet.

Reflection and Action 29.5

In Reflection and Action 29.4 we mentioned that ICT and computer software packages have a limited use in qualitative data analysis but here is a source that can help you even in the qualitativeresearch aspects of your project.http://qrj.sagepub.com/ provides a forum for the discussion of research methods, in particular qualitative research. Try to access this website and find out if it is of any help to your research. Write a short note on your positive or negative findings.

29.11 CONCLUSION

Provided thata researcher is clear about the needs of research, ICT can be effectively used to gain information about any research topic in a social science from across the world. With further advancement in technology, using statistics is no more tedious. It does not require complex mathematical skills and can be easily handled through various software packages available. ICT provides excellent and reliable options for managing, storing, retrieving and use of data by several persons at any given point in time. The exchange of information is swift and fast, and it is possible to access any amount of information which is physically lying anywhere in the world. ICT has a lot of potential for use in social research and if used appropriately, can save a lot of time, energy and other resources. And, as one starts using the Internet, many more potentialities it has for research become clear. The Internet provides an abundant opportunity to mine information, data and insights.

29.12 FURTHER READING

MacFarlane, A. 1977. *ReconstructingHistorical Communities.* Cambridge University Press: Cambridge (especially pp. 207-214)

Nie, N. H., C.H. Hull, J. G. Jenkins, K. Steinbrenner and D. H. Bent 1979. *Statistical Package for the Social Sciences.* McGraw Hill: New York

Unit 30

Using SPSS for Data Analysis Contents

Contents

30.1. Introduction
30.2. Starting and exiting SPSS
30.3. Creating a data file
30.4. Univariate analysis
30.5. Bivariate analysis
30.6. Multivariate analysis
30.7. Tests of significance
30.8. Conclusion



Learning Objectives

It is expected that after going through Unit 30, you will be able to

- ❖ Understand the use of SPSS in your data analysis
- ❖ Start and Exit SPSS program
- ❖ Enter the data into a SPSS Data Editor
- ❖ Import a data file from Excel Program

30.1 Introduction

SPSS (Statistical Package for Social Sciences) computer software program provides access to a wide range of data management and statistical analysis procedures. This program can perform a variety of data analysis including tables, statistical analysis and graphical presentation of data. Also, SPSS is particularly well suited to sample survey research.

It is assumed here that you have a basic understanding of the basic concepts and techniques of statistical analysis (see the Units of Block 5 in Book 2). You have also learned how to collect, edit and code data for analysis. In Unit 30, you will learn how to use the SPSS to perform data analysis.

You can run SPSS program on a Personal Computer (PC) within the Windows (95, 98, 2000, XP, or NT) operating system. Since it is a windows based program, you can use the program without any difficulty and more interactively like Word, Excel, or PowerPoint programs. The command instructions given and examples shown in this Unit are Windows based SPSS version 11.5.

Please note that Unit 30 does not carry any information in boxes as it has plenty of graphics to understand the details without the aid of boxes. For Reflection and Action exercises, there are some straight questions for you to answer as the reflection part of the exercise is going to take place during your reading of the text along with its graphics. It is a good idea for you to repeat the viewing of these graphics as many times as

possible and practice using them for carrying out first simpler and later more complex tasks.

30.2. Starting and Exiting SPSS

Normally, SPSS program will be located in the **Programs** folder of your PC. To start the SPSS,

1) Click the left mouse button on the **Start** button located at the lower left of the screen. A number of items will be listed on the screen.

2) Select **Programs**. The program menu will open.

3) Select **SPSS for Windows** from the programs menu and then select **SPSS 11.5 for Windows** from the SPSS menu. Click and release the mouse button. Symbolically, these actions are shown as: select **Start→Programs→SPSS for Windows→SPSS 11.5 for Windows** command from the Start button of your PC. (Throughout this Unit and Unit 32, we will be showing the symbol→to indicate the director (steps)you have to move your cursor with mouse.).

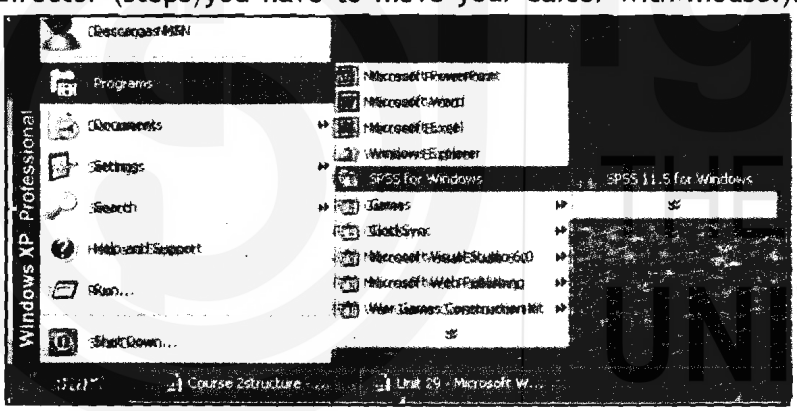


Figure 30.1 SPSS for Windows

4) After a few moments, you will see the **Data Editor** window dialog box along with a **SPSS for Windows** menu dialog box asking you "What would you like to do?".

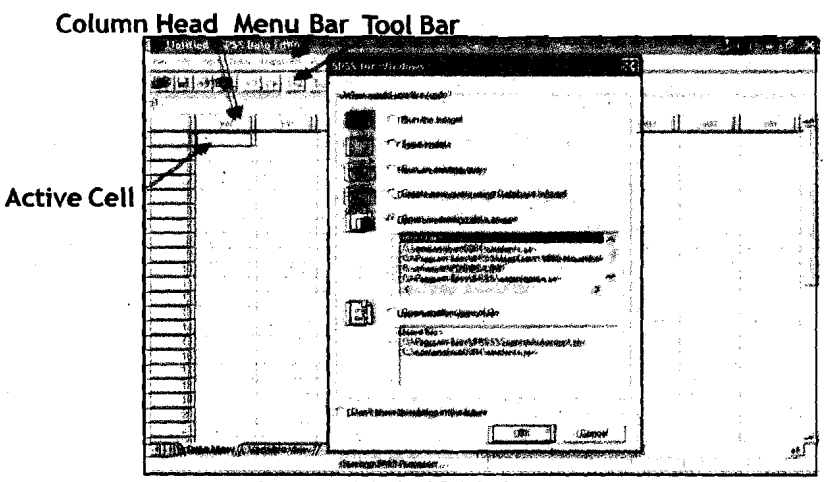


Figure 30.2 SPSS for Data Editor

Exit SPSS Data Editor: Whenever you have finished using SPSS and want to quit it, then select File?Exit command on the menu bar.

30.3 Creating a data file

Normally, the first thing you would like to do is to create a data file. For this, check mark on the [redacted] box and then click OK button on the SPSS for Windows menu dialog box. The menu dialog box disappears from the screen leaving the **Data Editor** on the screen.

Data Editor: The Data Editor helps you:

1) To enter a series of data you have in a specified format required for data analysis.

2) Open an existing file.

3) Edit the data.

4) Converting other data files into SPSS data files.

5) Will be active throughout your session of using SPSS data entry and data analysis.

The Data Editor looks like a worksheet made up of a series of rows and columns. The intersection of a row and column is called a cell. The cells may contain numbers or text. Each column will contain information/ data for each variable. Similarly, each row contains information/data for each case.

The first row of the cells located at the top of each column is shaded and contains a faint Var. These cells contain the names of variables. Similarly, the first shaded column contains faint numbers (1,2,3,...). These are called case numbers.

The Data Editor dialog box contains a Menu bar at the top of the window. The menu bar identifies broad categories of SPSS's features called commands. This menu bar helps you in defining and selecting commands.

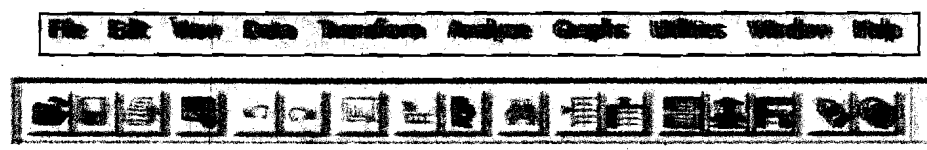


Figure 30.3 Menu bar and Tool Bar of SPSS Data Editor

The Toolbar is below the menu bar and allows you to quickly access basic SPSS commands. By clicking on the respective buttons you can access some commands which will interest you quite often.

Observe the cell at the intersection of row1 (Case 1) and column1 (Var 1) with a heavy border. The heavy border cell indicates that the cell is an active cell. You can enter or edit data in the cell. You can activate any cell in the worksheet by simply pointing the mouse cursor® at it and clicking once.

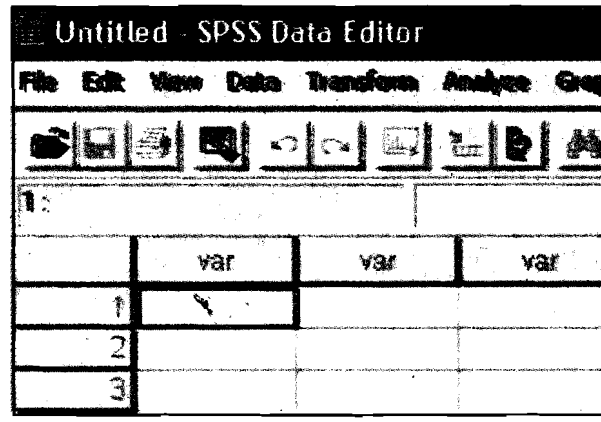


Figure 30.4
Untitiled SPSS Data View

There are two views available in the Data Editor: Data View and Variable View. In the Data View, you can see the data the way you have typed. In the Variable View, you can see the properties of each variable defined. To access these views click on the respective buttons located at the left bottom of the Data Editor screen.

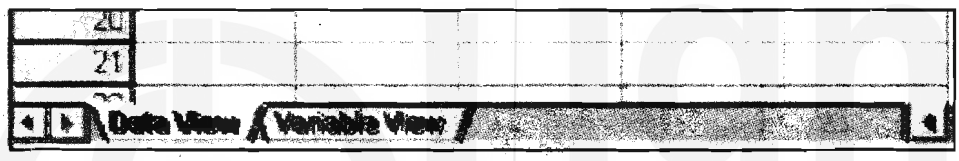


Figure 30.5 Untitiled SPSS Variable View

Entering data into Data Editor

As you have learned earlier, your data may contain a number of variables. Examples of variables are sex (male or female), marital status (married, unmarried, widowed, etc.), income, attitude (likes, dislikes, etc.), a score, etc. Again, for each variable you may have a number of observations called cases. You have also learned in an earlier unit how to assign the codes to the qualitative data. For example, you have a data set containing information of 30 people on sex distribution, age, marital status, and income. You also assigned the following codes for the data set.

Sex distribution: male = 1, female = 2
Age in years
Marital status: married = 1, unmarried = 2, widowed = 3
Income in Rs.
The data you might have collected may look like as follows:

Table 30.1
Data Set by Sex, Age, Marital Status and Income for 30 Persons

Case Number	Sex	Age	Marital Status	Income(Rs.)
1	2	24	1	150000
2	1	52	1	345000
3	2	65	3	45000
4	1	35	3	245000
5	1	42	1	23000
6	1	25	1	670000

7	2	23	2	345000
8	2	63	1	156000
9	1	41	2	65300
10	2	48	1	150000
11	1	34	2	354000
12	2	55	3	23000
13	1	28	1	452000
14	1	43	2	120000
15	1	23	2	456000
16	2	65	1	765000
17	2	67	3	235000
18	2	32	2	54000
19	1	30	2	200000
20	2	25	2	180000
21	1	47	1	210000
22	2	36	3	350000
23	2	70	1	42000
24	1	67	3	175000
25	2	24	2	45000
26	1	32	1	234000
27	1	20	2	125000
28	2	25	1	36000
30	2	40	3	560000
30	2	45	1	234000

The process of data entry into the Data Editor involves four basic steps:

1) Define variables
2) Define labels
3) Define missing values
4) Enter the data into the cells

We will explain these steps with the help of the data given in our earlier example. For this move your cursor to the left bottom of the Data Editor and click on Variable View button, if the Data Editor is not in the Variable View.

Step-1: Define Variables: You need to define a variable to name it, specify the data type (qualitative, quantitative, number of decimal places, etc.), assign labels to the variable and data values, define missing values, and specify levels of measurement (nominal, ordinal, interval/ratio scale). In addition, you can also define the column format. For this,

1. Activate a cell in the first column by clicking on it.
2. Click on the Variable View button. The grid will change to a new format as shown below. For each variable you create, you need to specify all or most of the attributes described by column headings.
3. Activate the first cell in row 1 under **Name** column heading to

change the variable name. Type the name of the variable say Sex and then press enter key. Observe that the variable name Sex replaces with the default variable name Var and in the other cells of the first row the default properties of the variable will appear.

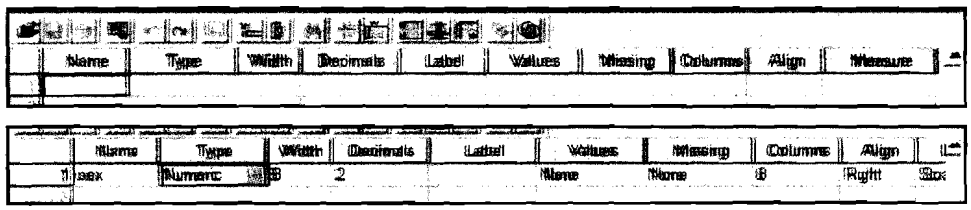


Figure 30.6 Changes in Data Grid and Data Variable

Remember that a variable name can have a maximum of 8 characters containing only letters or both letters and numbers. The first character of a variable name should start with a letter when it contains numbers. There should not be any special characters (like &, ?, !, ',*) in the variable name. Also, in the same data file no two variables should have the common names.

4) To change the type of a variable, move the cursor to the second cell of the first row under **Type** column heading. A small grey button marked with three dots will appear. Click on it. The **Variable Type** dialog box appears on the screen. Notice that Numeric is the default Variable Type. If you have only numeric values for that variable (say Sex variable) check mark the **Numeric** box. You can enter the width of the number (the default width is 8 characters) in the **Width** text box. Sometimes you may need to enter numbers with decimal places. Enter the number of decimal places in the **Decimal Places** text box. The default setting is 2 decimal places. If your data contained only integer values, type 0 in the **Decimal Places** text box. If you have a variable string characters (like names of people, places, etc.), check mark the String button in Variable type dialog box and enter the maximum number of characters that particular string variable can hold. Similarly, other data variable types such as date, currency, etc., can also be defined.

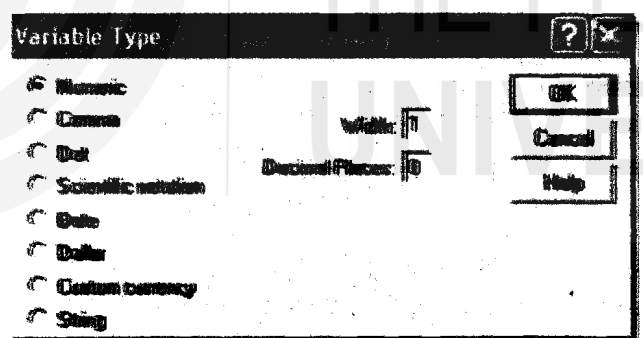


Figure 30.7 Variable Type

5) Specify the level of measurement for the variable (for example, Sex is a nominal variable). By clicking the cell under **Measure** column heading.

Step-2: Define Labels: Now you can assign the text labels to the coded values of the variables. A variable label is a longer description of the

variable that can be included in the variable name you have defined earlier: This may be necessary since the variable name is restricted to only 8 characters and at later stages to understand the characteristics of that variable. To define labels,

1) Type the name of the label (say Sex distribution of persons) in the cell under Label column heading.

2) Move on to the cell under **Values** column heading. Click the grey box with three dots. **Value Labels** dialog box appears on the screen. Type the numerical value assigned for the label under Value text box and type label name for that value under **Value** Label text box. For example, you may type **1** in the Value text box and **Male** in the **Value Label** text box. To add the label, click **Add** button. Again type 2 in the Value text box and Female in the Value Label text box and then click Add button.

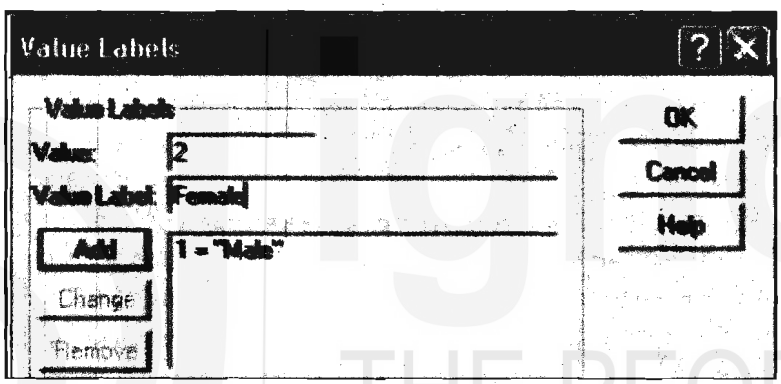


Figure 30.8 Variable Labels

3) Continue this process until you add all the values and the respective labels.

4) Click **OK** button to close the Value Labels dialog box.

Remember that you need to define Value Labels only for categorical data. For the continuous data this is not required.

Step-3: Defining Missing Values: Sometimes, your data may contain missing responses for a variety of reasons. Assign a missing value to the variable if necessary. For example, if the Sex category of a person is not available, you may assign the value 9 to indicate the missing value. The missing value indicates to SPSS that the response is not available and should not be included in the data analysis. To define the missing values to the variable,

1) Click on the cell under **Missing** column heading. The **Missing Values** dialog box appears on the screen.

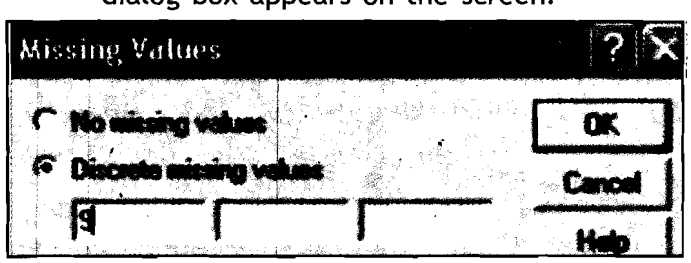


Figure 30.9 Missing Values

2) If there are no missing values in the variable, check mark **No missing values** button. Otherwise check mark **Discrete missing values** button. You can type a number assigned by you as Missing value. For example, you may assign 9 if Sex category of a person is not available. If you have check marked for missing values, type the assigned missing value (say 9) in the text box.

3) Click **OK** button to close the dialog box.

Remember that the missing values you have assigned for a variable are present in their respective positions in a data file.

You can also specify the width of each column in the cell under **Column** column heading and the alignment (Right, Left, and Center) in the cell under **Align** column heading. Specify the type of measure in the cell under Measure heading.

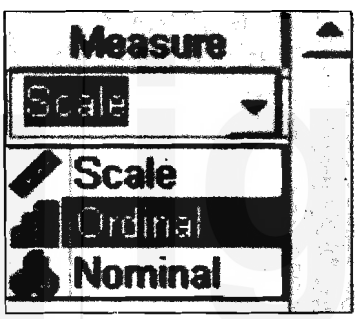


Figure 30.10
Specifying under Measure

Now you have defined all the information for the variable. Move on to the second row (to define 'age' variable), the third row (to define 'marital status' variable), ...etc. to define the rest of the variables in that order.

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	sex	Numeric	1	0	Sex distribution	{1, Male}	9	8	Right	Nominal
2	age	Numeric	1	0	Age in years	None	99	8	Right	Scale
3	marital	Numeric	1	0	Marital status	{1, Married}	9	8	Right	Nominal
4	income	Numeric	5	0	Income in Rs.	None	99	8	Right	Scale
5										

Figure 30.11(a) Defining all the variables

you have defined all the variables, you may like to see the generated variable definitions. For this, select **Utilities→File Info** command on the menu bar. This will generate file information in the output window that can be printed if you need for future reference.

File Information

List of variables on the working file

Name
Position

SEX **Sex distribution of persons**

1) Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F1
Write Format: F1
Missing Values: 9

	Value	Label
	1	Male
	2	Female

AGE **Age in years**

2) Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F1
Write Format: F1
Missing Values: *

MARITAL **Marital status**

3) Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F1
Write Format: F1
Missing Values: 9

Value	Label
1	Married
2	Unmarried
3	Widowed

INCOME **Income in Rs.**

4. Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F6
Write Format: F6
Missing Values: 99

Step-4: Entering the Data into the Cells: Once all the variables for your data file are defined, the data can be directly entered into the cells. For this, first change the view to Data View by clicking the **Data View** button.

1) Click on cell 1 of the (Sex) variable to activate the cell.

2) Type the value of the variable (say '2') and then press **Enter** key.

Observe that now number '2' appears in cell 1 and cell 2 (the cell below cell-1) becomes active.

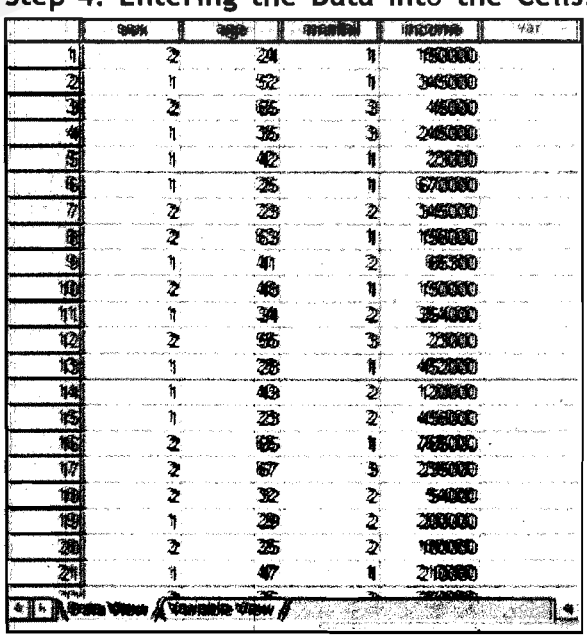


Figure 30.11(b)
Entering Values for Each Variable

3) Type 1 and press Enter key. This indicates that the value for case of the sex variable is also entered. Continue this procedure until all the values of the 30 cases are entered for sex variable.

4) Activate the case 1 cell below Age variable (column) and start entering values for that variable. Continue this procedure until you enter the data for all cases and all variables.ng a data file .

Once you have entered the data, it is a good practice to save the data in a file. This will avoid not only repeating the data entry but also for all future uses of your data. SPSS distinguishes between two types of files: data files (with extension .sav) and output files (with extension .spo). The data files contain the data you have entered. The output files contain the output of the data analysis you have performed. You need to save these files in case you may need them for future use.

To save a data file,

1) Select File→Save As... command from the menu bar. The :Save Data As dialog box appears on the screen.

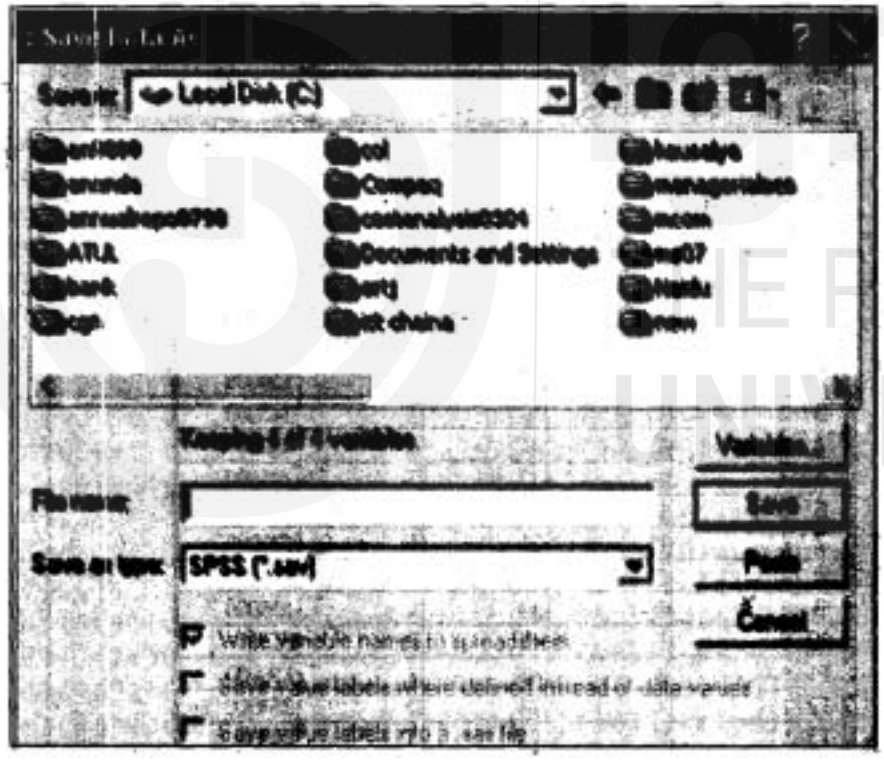


Figure 30.12 Saving a Data File

2) Select the drive and folder where you are interested that your file should be located.

3) Type the file name in the text box under File name box. Click Save button.

Importing a data file from Excel worksheet

Often you might have entered data in an Excel worksheet and want to use the same data set for analysing the data using SPSS. SPSS can easily

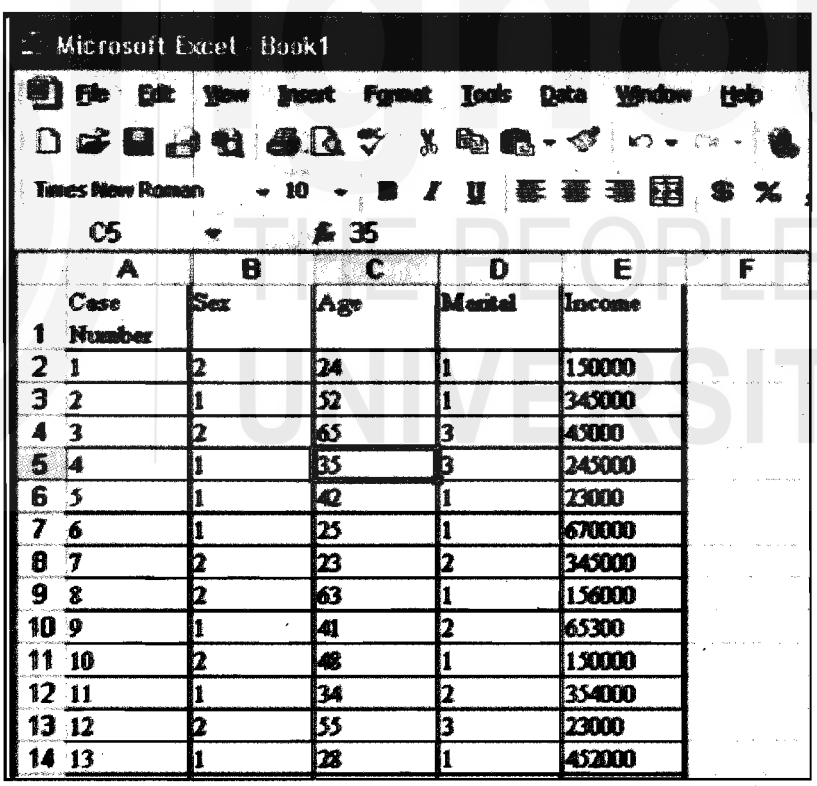
open an Excel data file and some other types of data files. To open an Excel data file,

1) Select **Start→Programs Microsoft Excel** command from the **Start** button on your PC screen. In a few moments the Excel worksheet dialog box appears on the screen.

2) Select **File→Open...** command from the menu bar. The **Open File** dialog box appears on the screen. Select the drive and folder where the data file is stored. Select (or type) the file name and click OK button. The Excel data file will open as shown here.

Observe that the variable names are at the top row. Let us assume that the worksheet has been saved as Excel (with extension .xls) file called Profile.

3) Select **File→Open→Data...** command in the SPSS Data Editor dialog box. The **Open File** dialog box appears. Choose the appropriate directory and folder in **Look in** File of type box. Select the file name Profile.xls in File name box.


Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window Help

Times New Roman 10

C5 35

	A	B	C	D	E	F
1	Case Number	Sex	Age	Marital	Income	
2	1	2	24	1	150000	
3	2	1	52	1	345000	
4	3	2	65	3	45000	
5	4	1	35	3	245000	
6	5	1	42	1	23000	
7	6	1	25	1	670000	
8	7	2	23	2	345000	
9	8	2	63	1	156000	
10	9	1	41	2	65300	
11	10	2	48	1	150000	
12	11	1	34	2	354000	
13	12	2	55	3	23000	
14	13	1	28	1	452000	

Figure 30.13 Microsoft Excel - Book1

Observe that the variable names are at the top row. Let us assume that the worksheet has been saved as Excel (with extension .xls) file called Profile.

4) Select **File→Open?Data...** command in the SPSS Data Editor dialog box. The **Open File** dialog box appears. Choose the appropriate directory and folder in **Look** in box. Choose the

Excel (*.xls) in the **File of type** box. Select the file name Profile.xls in **Filename** box.

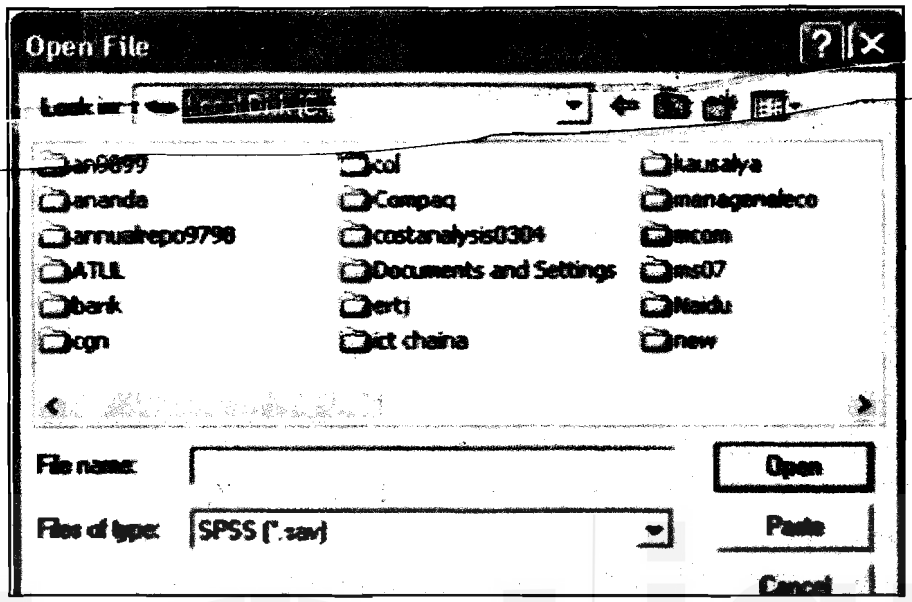


Figure 30.14 Open Files

5) Click **Open** tab in the Open File dialog box. The **Opening Excel Data Source** dialog box appears on the screen. If your Excel file contains variable names, check mark **Read variable names from the first row of the data** box. If you leave the Range box blank, SPSS will read all the available data in the Excel worksheet. If you wish to read only some rows and columns then type a range. For example, you may type **A1:D30** to select first 4 columns (A,B,C, and D) and 30 rows (1 to 30). Click OK button to close the Opening Excel Data Source dialog box and return to the Data Editor dialog box. Observe that the data is in SPSS Data Editor. Save the SPSS data file.

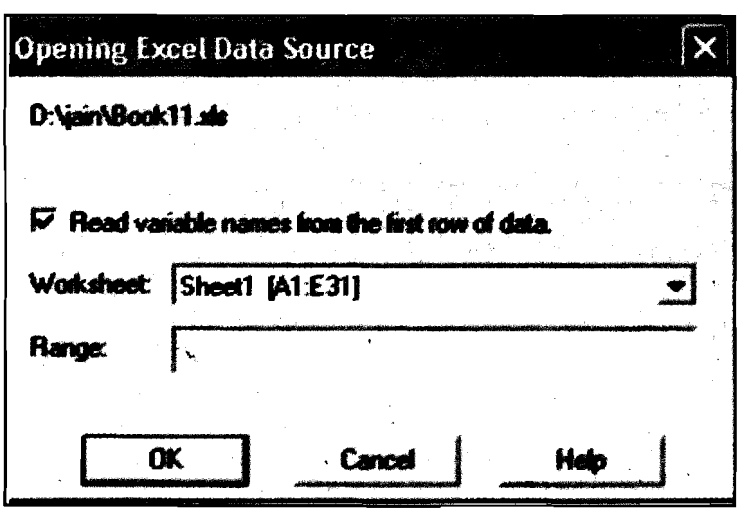


Figure 30.15 Opening Excel Data Source

Reflection and Action 30.1

Answer the following two questions after going through the text above and viewing the graphics. The idea about answering these questions is to make sure that you have understood the procedures.

1. Explain briefly various steps in creating a data file.
2. Differentiate between SPSS Data Editor and Output SPSS Viewer.

30.4 Univariate analysis

Data can be analysed in a number of ways. You can present the data in a simple frequency table or use statistical techniques. For the analysis of data, the data file should be opened first. If the data file is not already open, select the **File→Open** command from the menu bar. The **Open File** dialog box appears. Choose the file location and SPSS data file name and click OK button. The data may now appear in the Data Editor screen.

SPSS offers several tools to analyse the data. The tools are selected from the **Analyze** command on the menu bar. In this section, you will learn how to generate frequency tables and calculate the univariate statistics.

Remember that you can compute the same statistics in SPSS using alternative commands.

Frequency tables

To generate the frequency tables,

1) Select **Analyze→Descriptive Statistics→Frequencies** command from the menu bar. The Frequencies dialog box appears on the screen with two large boxes for variables selection/deselction.

   Observe that the left box contains a list of variables for which data has been entered. On the right side, there is an empty box for the variable(s) that you want to include in the analysis.

2) In the left side box, select the variable to generate a frequency table by clicking the mouse on the name of the variable. Click the arrow ◀ between the two boxes. The selected variable appears on the right side box. Follow these steps till all the variables you want to include for the data analysis appear on the right side box.

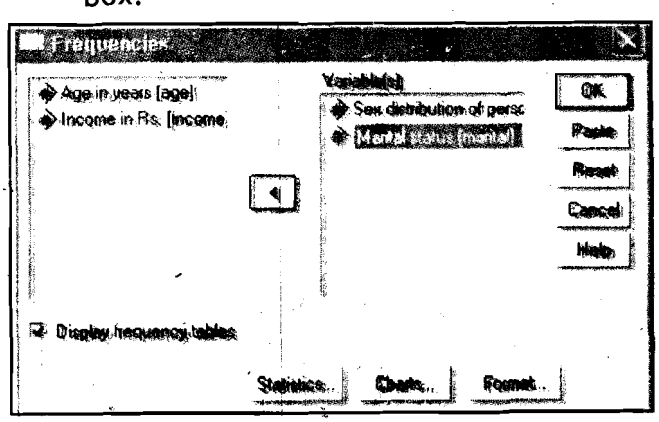


Figure 30.16 Frequencies

3) When the first variable is moved to the right side box an arrow in the opposite direction appears between the two boxes. If you commit a mistake by selecting a wrong variable, click this arrow to return the variable to the original list.

Remember that this Frequencies tool is appropriate only for the categorical data (like Sex and Marital status in our example). Therefore, do not select any continuous variables (like in Age and Income in our example).

4) When you have selected all the variables, you want to include for data analysis, click the **OK** button. In the **Output SPSS Viewer window**, you should now see the output shown below.

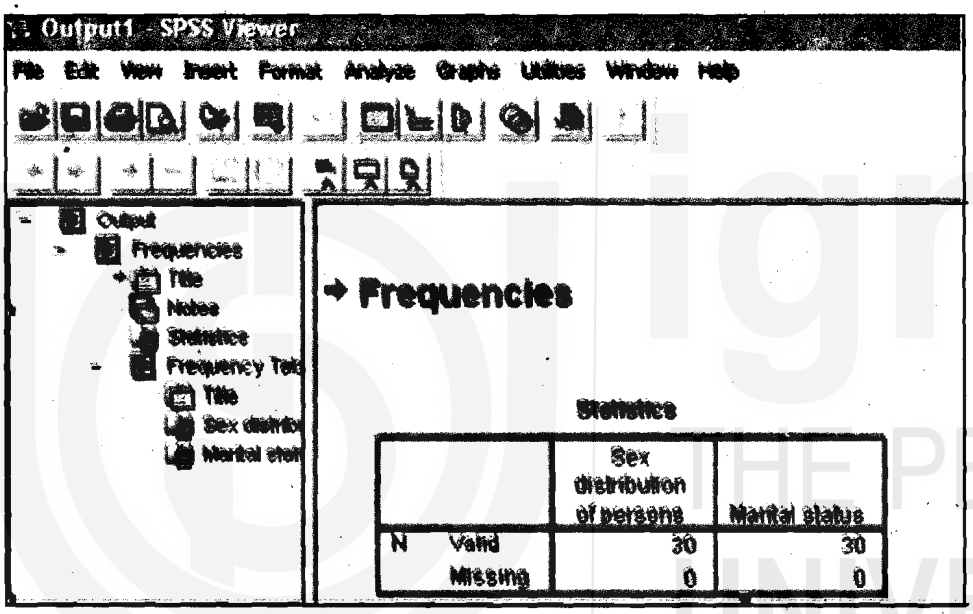


Figure 30.17 Output SPSS Viewer

Frequencies

Find below two tables (Table 30.4 and 30.5 on Sex \Distribution of Persons and Marital Status, respectively).

Table 30.2 Sex\Distribution of Persons

Statistics

		Sex Distribution of Persons	Marital Status
N	Valid	30	30
	Missing	0	0

Table 30.3 Marital Status

Frequencies table

Sex distribution of persons

		Fequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	14	46.7	46.7	46.7
	Female	16	53.3	53.3	100.0
	Total	30	100.0	100.0	

Table 30.4 Marital Status

Marital status

		Fequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	13	43.3	43.3	43.3
	Unmarried	10	33.3	33.3	76.7
	Widowed	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

Observe that the tables contain all the information you want. Also, you have information on the missing cases for each variable. You also have three types of percentages: one for all the cases including missing cases under the heading **Percent**, the second one for only valid cases under the heading **Valid Percent**, and the third gives cumulative percentage under the heading **Cumulative Percent**.

Printing/Saving Output: Now you may want to print on paper or save in a file all or part of the output available in the Output SPSS Viewer window.

1) To save the output in a file, follow the instructions given at saving a data file.

2) To print all the output click anywhere in the Outline pane located on the left side of the screen. Select **File→Print** command from the menu bar. Click OK button.

3) To print a part of output, move the cursor to the end of the portion you want to print. Press the **Shift** key on the keybord and click the left mouse button. Observe that the selection is highlighted. Select File→Print command from the menu bar. Click OK button.

Recode Data: you may want to recode your data for a variety of reasons. For example, the data values for the variable Age are continuous. Now you may want to group them like,

Old Value	New Value
Less than 19	1
20-30	2
30-39	3
40-49	4
50-59	5
60 and above	6

Table 30.5 Data values

To recode a variable, select **Tranform→Recode→Into Diffrent Variables** command from the menu bar. The **Recode into Different Variables** dialog box appears on the screen.

Select the variable you want to recode into different variables in the left side box. Transfer this variable to the right side box using arrow tab that lies between the two boxes. Type the name of the variable in the **Name** text box and label name in the **Label** text box.

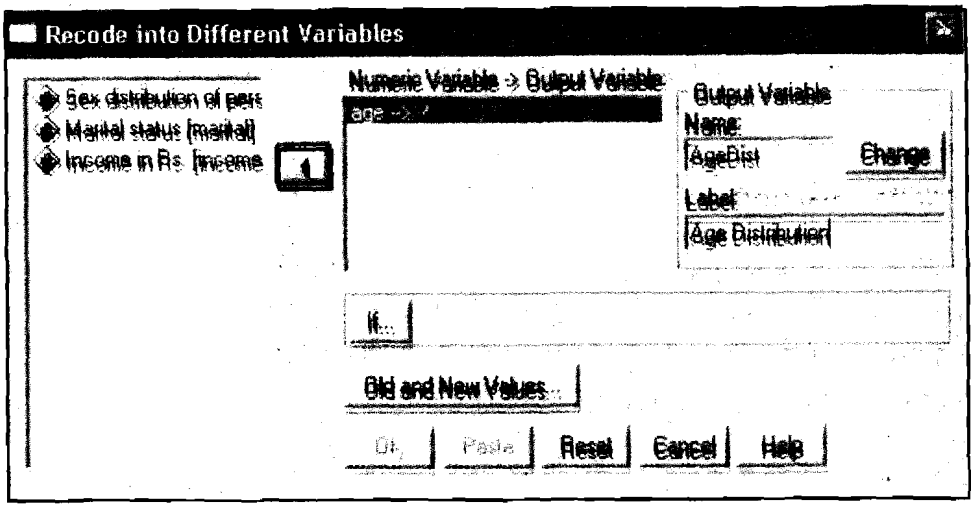


Figure 30.18 Recode into Different Variables: Old and New Values

Press the **Old and New Values** button in the Recode into Different Variables dialog box. The **Recode into Different Variables: Old and New Values** dialog box appears.

Check mark the **Range** button. Type the first range of values in the boxes under Range. Check mark the **Value** button under **New Name** heading. Press Add button to define Old and New values. Press **Continue** button to close the Recode into Different Variables: Old and New Values dialog box and return to the Recode into Different Variables dialog box.

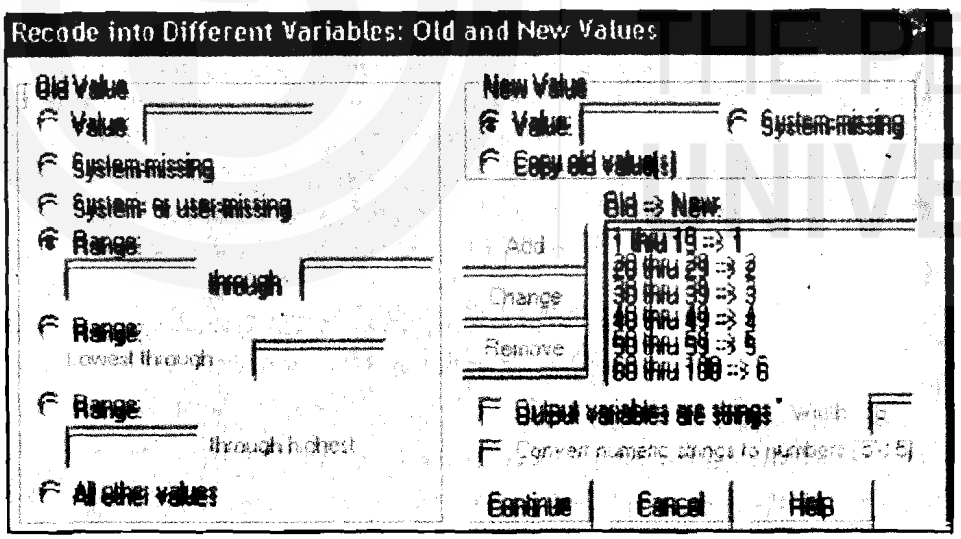


Figure 30.19 Recode into Different Variables

If you have more variable(s) to redefine, continue these steps for each variable. Otherwise press **OK** button to close the Recode into Different Variables dialog box.

Univariate© statistics

For each variable of your data set, you can calculate:

a) Measures of central tendency: Mean, Median, and Mode.

b) Dispersion: Standard deviation, Variance, Range, Standard Error of Mean, etc.

c) Distribution: Kurtosis and Skewness

Remember in SPSS there are some restrictions on the choice of measures of central tendency (Mean, Median, and Mode) that can be calculated on any data set. The choice of Mean, Median, and/or Mode is restricted by the level of measurement of a variable you have defined. If the level of measurement for a variable is nominal, you can calculate only mode. If the level of measurement of a variable is ordinal then you can calculate Mode and/or Median. If the level of measurement of a variable is interval/ratio, you can calculate Mode, Median, and/or Mode.

To calculate the univariate statistics,

1) Select **Analyse→Descriptive Statistics→Frequencies** from the menu bar. The Frequencies dialog box appears on the screen.

2) Transfer the variables on which you want to perform the data analysis from left side box to right side box (as you have done for frequencies analysis earlier).

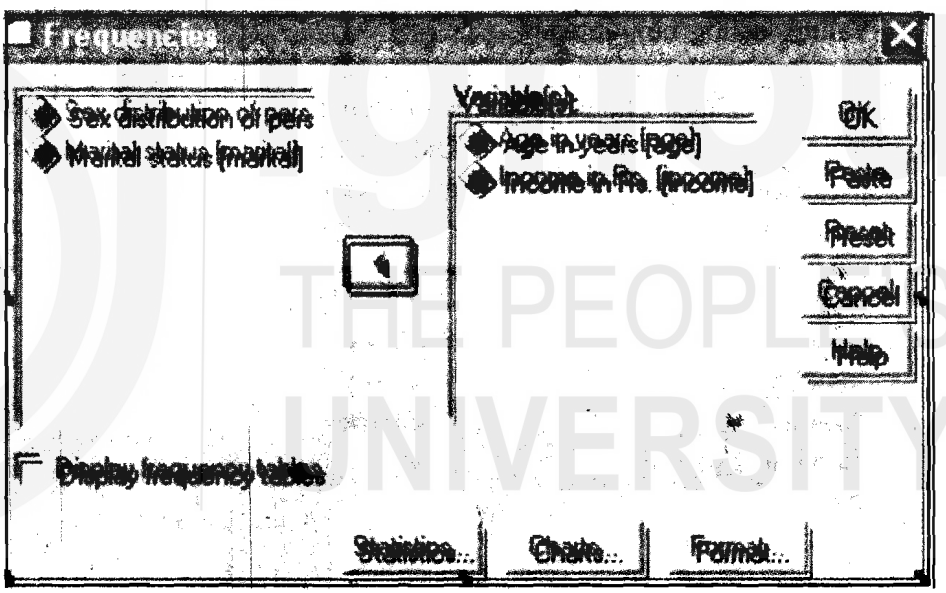


Figure 30.20 Frequencies Analysis

3) If you don't want to display frequencies, remove the check mark in **Display frequency tables** button by clicking. The **SPSS for Windows** dialog box appears asking you to confirm. Click **OK** button to close that window.

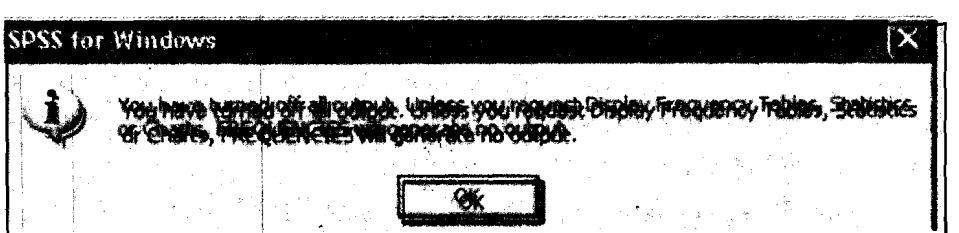


Figure 30.21 Closing SPSS for Windows

4) Click on the **Statistics...** button in the Frequencies dialog box. The **Frequencies:Statistics** dialog box appears on the screen.

5) In the area under **Central Tendency**, check mark the appropriate button to calculate Mean, Median, and/or Mode.

6) In the area under **Dispersion**, check mark the appropriate buttons to calculate Standard deviation, Variance, Range, Standard error or Mean, etc.

7) In the area under **Distribution**, check mark the appropriate buttons to calculate Skewness and/or Kurtosis.

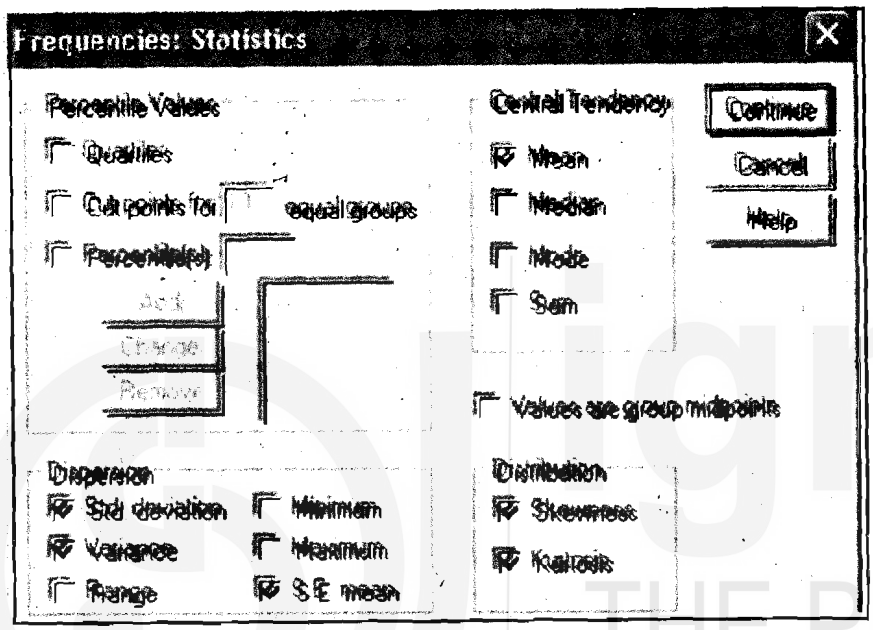


Figure 30.22 Frequencies Statistics

8) Click on **Continue** button to close the **Frequencies: Statistics** dialog box.

9) Click on OK button in the Frequencies dialog box to close it.

Observe that now the output is Descriptive Statistics.

Table 30.6 Statistics

		Age in Years	Income in Rs.
N	Valid	30	30
	Missing	0	0
Mean		40.83	234810.00
Std. Error of Mean		2.891	35206.370
Std. Deviation		15.836	192833.232
Variance		250.764	37184655414
Skewness		.531	1.182
Std. Error of Skewness		.427	.427
Kurtosis		−1.012	1.059
Std. Error of Kurtosis		.833	.833

Remember that you should opt for only appropriate statistics. For example, there is no meaning in opting for Mean of a sex Variable since there is nothing like mean of a sex distribution.

Reflection and Action 30.2

You have just finished reading about univariate analysis in which you worked on frequency tables and univariate statistics. In the light of this information answer the following questions.

- What is the command on the SPSS menu bar to perform frequencies data analysis?
- Once the data has been coded and entered into the SPSS Data Editor, is it possible to recode the data? If yes, what is the command to recode?
- You have defined the level of measurement of a variable as ordinal. Is it possible to calculate all the measures of central tendency for this variable using SPSS. Name the central tendency measures you can calculate.

30.5 Bivariate© Analysis

Often, you may be interested in comparing two sets of data or Variables to explore the relationship between two Variables. In this Section, you will learn how to cross-tabulate the data, coefficient of correlation, linear regression, and coefficient of variance to compare two variables.

Cross-tabulation of data

To capture any possible relationship between two variables measured with categorical data, you may use bivariate table, which is also known as cross-tabulation. To cross-tabulate two variables follow the steps given below.

1) Select **Analyse?Descriptive Statistics?Crosstabs...** command from the menu bar. The **cross tabs** dialog box appears on the screen.

2) Click on the Variable in the source list (from left side box) that will form the rows of the table. Shift this Variable to the box under **Row(s)** using arrow key.

3) Similarly, shift the variable that will form the columns of the table from source list to the box under column(s).

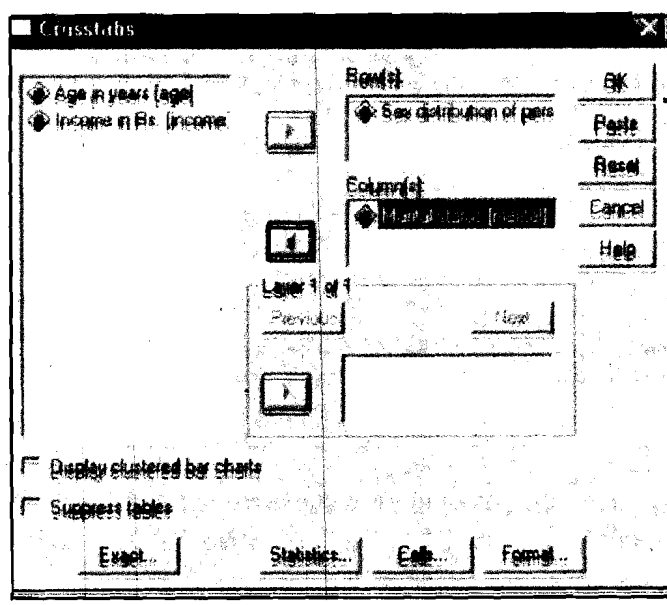


Figure 30.23 Crosstabs

4) Click **OK** button. You will find the table in the Output viewers window.

Crosstabs

Table 30.7 Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Sex distribution of persons@ Marital status	30	100.0%	0	.0%	30	100.0%

Count

Table 30.8 Sex distribution of persons' Marital status Crosstabulation

		Marital Status			
		Married	Unmarried	Widowed	Total
Sex distribution of persons	Male	6	6	2	14
	Female	7	4	5	16
Total		13	10	7	30

Sometimes, you may be interested in calculating the row/column/total percentages in a table. For this, click on **Cells...**tab in the cross tabs dialog box before step-4 above. The **Crosstabs: Cell Displays** dialog box appears on the screen.

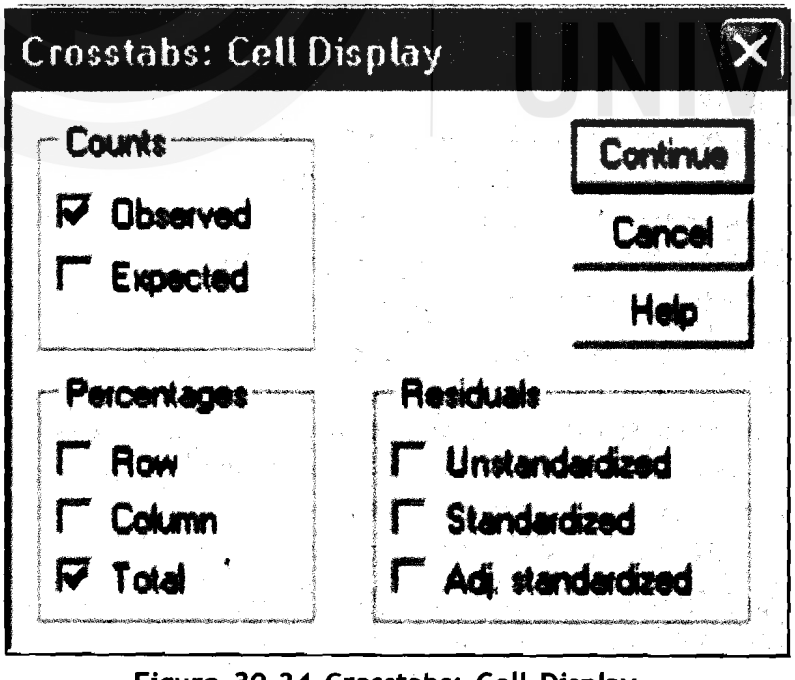


Figure 30.24 Crosstabs: Cell Display

Check mark the appropriate (Row, Column, and/or Total) button under **percentages** area. Click **continue** button to close the Crosstabs: Cell

Display dialog box. Click **Ok** button on the Crosstabs dialog box, to view the output (see Table 30.9 and Table 30.10).

Crosstabs

Table 30.9 Case Processing Summary: Output

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Sex distribution of persons* Marital status	30	100.0%	0	.0%	30	100.0%

Table 30.10 Sex distribution of persons *Marital status Crosstabulation: Output

			Marital status			
			Married	Unmarried	Widowed	Total
Sex distribution of persons	Male	Count	6	6	2	14
		% of Total	20.0%	20.0%	6.7%	46.7%
	Female	Count	7	4	5	16
		% of Total	23.3%	13.3%	16.7%	53.3%
		Count	13	10	7	30
		% of Total	43.3%	33.3%	23.3%	100.0%

Bivariate statistics

The statistical tools you often use to compare two Variables may be the coefficient of variance, correlation, and linear regression.

Coefficient of variance: As you are aware, the Coefficient of Variance (CV) is the standard deviation expressed as a percentage of the mean.

$$CV = \frac{\text{Standard deviation}}{\text{Mean}} \times 100.$$

Unfortunately, SPSS does not have a command to complete the Coefficient Variance for a variable in a data file. What we advise you is that you should calculate the respective Mean and Standard deviation of a Variable using the Descriptive dialog box as explained earlier and then calculate the CV by hand which is very simple.

Correlation coefficient: There are two types of correlation coefficients: Pearson's correlation coefficient and Spearman's rank correlation coefficient. The Pearson correlation is appropriate and applicable when you have interval/ratio data. The Spearman rank correlation coefficient is applicable when you have two ordinal scales with a large number of values or one ordinal and the other interval/ratio scale.

To compute the appropriate correlation coefficient for your data set, follow the instructions given below.

1) Select **Analyse→Correlate→Bivariate...** command from the menu bar. The Bivariate Correlations dialog box appears on the screen.

2) Select the variables by shifting from left side box to the box under **Variables** area.

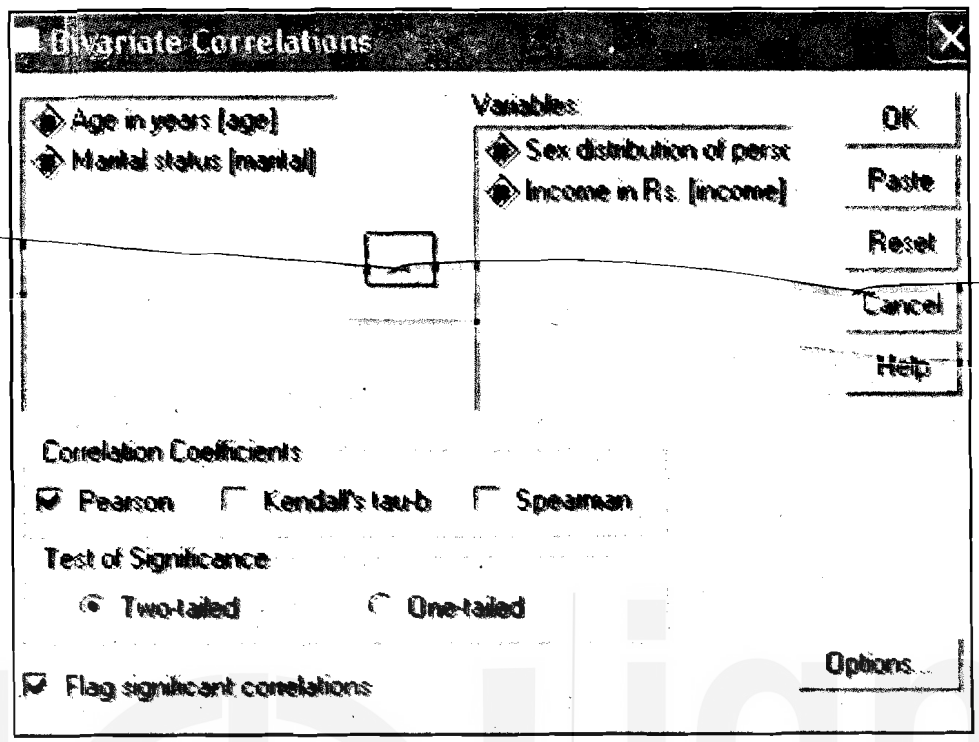


Figure 30.25 Bivariate Correlation

3) Check mark the appropriate (Pearson, and/or Spearman) button under **Correlation Coefficients** area to select the type of correlation coefficient.

4) If you want the associated tests of significance, check mark the appropriate (Two-tailed or one-tailed) button under Test of Significance area. You will see the results in the Output Viewer Window.

Correlations

Table 30.11 Correlations between Two Variables

		Sex distribution of persons	Inncome in Rs.
Sex distribution of persons	Person Correlation	1	−.136
	Sig. (2-tailed)	.	.472
	N	30	30
Inncome in Rs.	Person Correlation	−.136	1
	Sig. (2-tailed)	.472	.
	N	30	30

Linear regression: The linear regression technique is used to: (a) test the hypotheses concerning the linear relationship between two variables (b) estimating the specific nature of relationship; and (c) to predict the values of dependent variable when you know the values of independent variable. To run the linear regression procedure follow the steps given below.

1) Select **Analyse→Regression→Linear**...command from the menu

bar. The Linear Regression dialog box appears on the screen.

2) Click on the variable name that will be **dependent variable** in the left side box. Shift the dependent variable to the box under **Dependent** area using arrow tab.

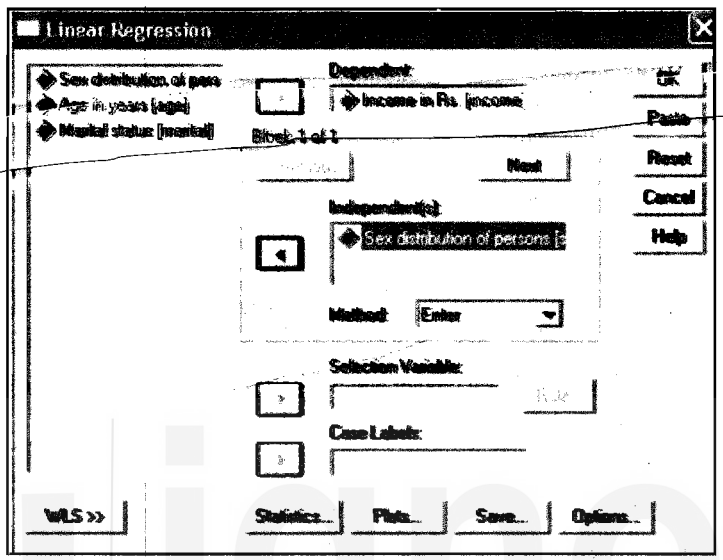


Figure 30.26 Linear Regression

3) Click on the variable name that will be independent in the left side box. Shift the independent variable to the box under **InDependent(s)** area using arrow tab.

4) Click **OK** button. You will see the results in the Output Viewer Window.

Observe that the output consists of four points: (a) a table of variables used in regression, (b) a model summary, (c) an ANOVA table; and (d) a table of coefficients. You may be interested in a portion of the output. We will explain how to select a partial output in another Unit on use of SPSS in report writing.

Regression

Table 30.12 Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Sex distribution of persons	.	Enter

a) All requested variables entered
b) Dependent Variable : Income in Rs.

Table 30.13 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.136[a]	.019	−.016	194413.110

a) Predictors: (Constant), Sex distribution of persons

Table 30.14 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.01E+10	1	2.005E+10	.531	.472[a]
	Residual	1.06E+12	28	3.780E+10		
	Total	1.08E+12	29			

a) Predictors: (Constant), Sex distribution of persons
b) Dependent Variable: Income in Rs.

Table 30.15 Coefficients[a]

Model		Unstandardzed Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	314275.0	114722.6	−.136	2.739	.011
	Sex distribution of persons	−51825.0	71147.913		−.728	.472

a) Dependent Variable: Income in Rs.

30.6 Multivariate Analysis

Sometimes, you may be interested in exploring complex relationships involving more than two variables. In this section, you will learn how to cross tabulate your data for the analysis of relationships between more than two variables. Similarly, how to compute multiple regression analysis has also been covered.

Elaboration of cross-tables

In the earlier section, you have learned the cross-tabulation of two variables. You can introduce a third variable by sub grouping one of the two variables. This can be done by introducing a variable as control variable. A control variable decomposes the data into sub-groups based on the categories of the control variable. To add a control variable for your cross-tabulation, follow the steps given below.

1) Select **Analyse→Descriptive Statistics→Crosstabs...**command from the menu bar. The **Crosstabs** dialog box appears on the screen as shown on the next page.

2) Click on the variable in the source list that will form the row(s) of the table. Shift this variable to the box under Row(s) using arrow key.

3) Similarly, shift the variable that will form the columns of the table from source list to the box under **Column(s)** using arrow key.

4) Click on the variable which will act as control variable l (this variable splits the variable selected at step-3 into sub groups). Shift the control variable to the box under **Layer 1 of 1** using arrow key.

5) For computing the row/column/total percentages in the table,

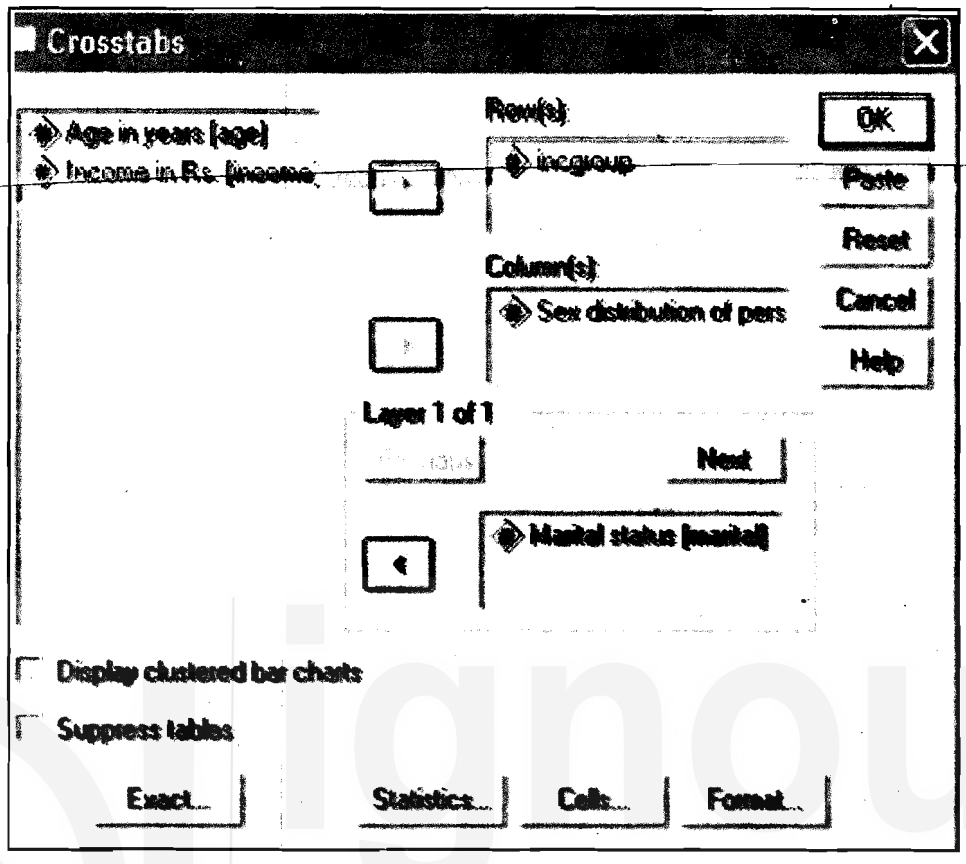


Figure 30.27
Crosstabs: Cell Display for Computing the Row/Column/Percentages

click on **Cells...**tab. The **Cross tabs: Cell Display** dialog box appears on the screen. Click the appropriate (Row, Column, and/or Total) button under **Percentages** area. Click **Continue** button to close the Cross tabs: Cell Display dialog box.

6) Click **OK** button to close the Crosstabs dialog box.

Crosstabs

Table 30.16 Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Income group * Sex distribution of persons * Marital status	30	100.0%	0	.0%	30	100.0%

Let's look at the table 30.17: Income Group and Sex Distribution of Persons' Marital Status Crosstabulation. You will find crosstabulation of marital status by income group of married, unmarried and widowed persons with their sex distribution. This is a good example that you can try and use in your own research work. Not only this but you can also use the other examples given in this unit for your research project.

Table 30.17 Income Group and Sex Distribution of Persons' Marital Status Crosstabulation

Marital status				Sex distribution of persons: Male	Sex distribution of persons: Female	Total
Married	Income group	Less than Rs. 50000	Count	1	2	3
			% of Total	7.7%	15.4%	23.1%
		Rs. 100001-200000	Count	0	3	3
			% of Total	.0%	23.1%	23.1%
		Rs. 200001-400000	Count	3	1	4
			% of Total	23.1%	7.7%	30.8%
		More than Rs. 400000	Count	2	1	3
			% of Total	15.4%	7.7%	23.1%
	Total		Count	6	7	13
			% of Total	46.2%	53.8%	100.0%
Unmarried	Income group	Less than Rs. 50000	Count	0	1	1
			% of Total	.0%	10.0%	10.0%
		Rs. 50001100000	Count	1	1	2
			% of Total	10.0%	10.0%	20.0%
		Rs. 100001-200000	Count	3	1	4
			% of Total	30.0%	10.0%	40.0%
		Rs. 200001-400000	Count	1	1	2
			% of Total	10.0%	10.0%	20.0%
		More than Rs. 400000	Count	1	0	1
			% of Total	10.0%	.0%	10.0%
	Total		Count	6	4	10
			% of Total	60.0%	40.0%	100.0%
Widowed	Income group	Less than Rs. 50000	Count	0	2	2
			% of Total	.0%	28.6%	28.6%
		Rs. 100001-200000	Count	1	0	1
			% of Total	14.3%	.0%	14.3%
		Rs. 200001-400000	Count	1	2	3
			% of Total	14.3%	28.6%	42.9%
		More than Rs. 400000	Count	0	1	1
			% of Total	.0%	14.3%	14.3%
	Total		Count	2	5	7
			% of Total	28.6%	71.4%	100.3%

Multiple regression

In two variable linear regression you have used one dependent variable and one independent variable. The multivariate regression is used to investigate the relationship between two or more independent variables on a single dependent variable. The procedure for computing the statistics for multiple regression is the same as that for two variable linear regression explained earlier, except that you have more than one variable under **Independent(s)** area in the **Linear Regression** dialog box.

1) **Analyse→ Regression-Linear**...command from the menu bar. The **Linear Regression** dialog box appears on the screen.

2) Click on the variable name that will be a dependent variable in the left side box. Shift this variable to the box under **Dependent** area using arrow tab.

3) Click on the variable name that will be independent in the left side box. Shift this variable to the box under **Independent(s)**

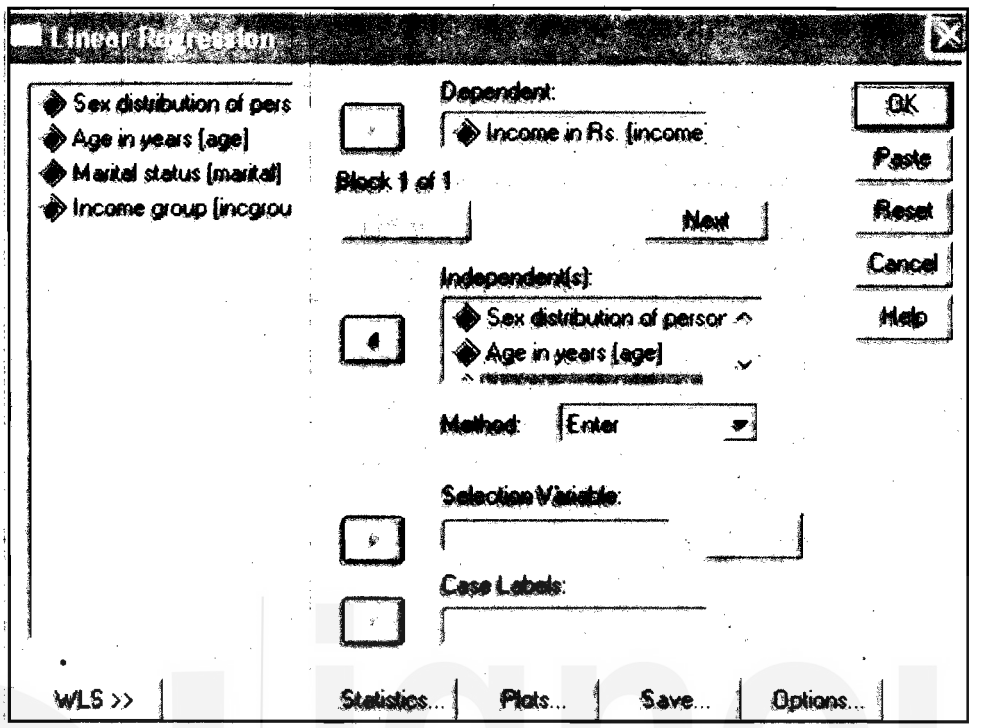


Figure 30.28 Linear Regression Dialog Box

area. Follow this step until all the desired independent variables are selected.

4) Click **OK** button. You will see the results in the Output Viewer Window.

Regression

Table 30.18 Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Marital status, Sex distribution of persons, Age in yeas		Enter

a) All requested variables entered
b) Dependent Variable: Income in Rs.

Table 30.19 Model Summary

Model	R	R Square	Adjusted R Sqaure	Std. Error of the Estimate
1	.168[a]	.028	−.084	200774.054

a) Predictors: (Constant), Marital status, Sex distribution of persons, Age in years

Table 30.20 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.03E+10	3	1.010E+10	.250	.860[a]
	Residual	1.05E+12	26	4.031E+10		
	Total	1.08E+12	29			

a) Predictors: (Constant), Marital status, Sex distribution of persons, Age in years

b) Dependent Variable: Income in Rs.

Table 30.21 Coefficients[a]

Model		Unstandardzed Coefficients		Standardzed Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	362849.3	153394.2		2.365	.026
	Sex distribution of persons	−44008.8	75727.227	−.116	−.581	.566
	Age in years	−680.236	2431.316	−.056	−.280	.782
	Marital status	−18212.7	46773.389	−.076	−.389	.700

a) Dependent Variable: Income in Rs.

30.7 Tests of Significance

In this section, you will learn one sample t-test* for a mean, two sample t-test for the equality of means, and chi-square test for independence.

One sample t-test

The one sample t-test compares the sample means to a population mean, using t-distribution as the standard of comparison.

1) Select Analyse→Compare Means→One-Sample TTest...command from the menu bar. The **One Sample T Test** dialog box appears on the screen.

2) Click on the variable name you want to perform the t-test on the

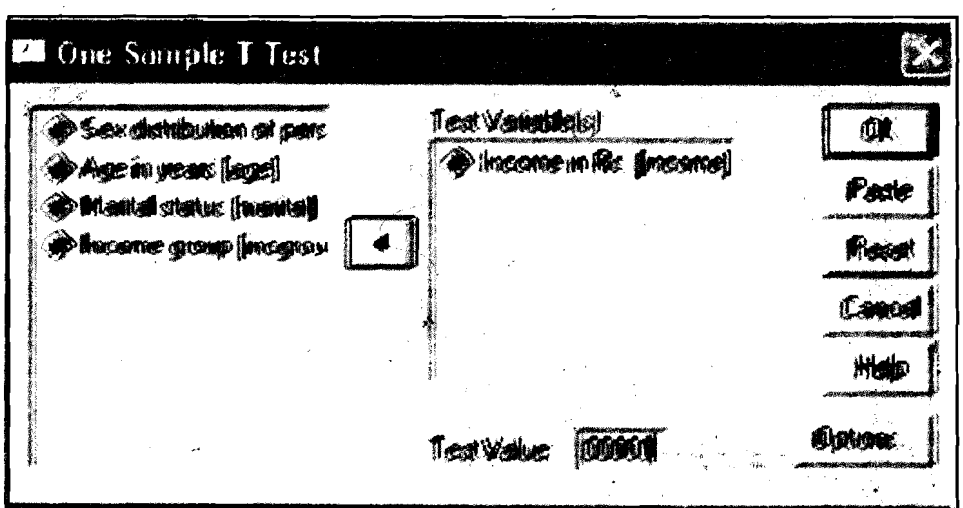


Figure 30.29 One Sample T Test

left side box. Shift this variable to the box under **Test Variable(s)** area.

3) Suppose you have selected Income Variable for the t-test and hypothesis takes the population mean income as Rs.200000. Type 200000 in the test box next to **Test Value**.

4) Click OK button. The following is the output you will see in Output Viewer Window.

T-Test

Table 30.22 One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Income in Rs.	30	234810.00	192833.232	35206.370

Table 30.23 One Sample Test with Test Value

	Test Value = 200000					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Income in Rs.	.989	29	.331	34810.00	−37195.11	106815.11

Two sample T-Test

Sometimes, our data analysis focuses on two distinct groups within a single population or we may want to compare the two populations in terms of their respective means. The two-sample t-test for the equality of means will help you in this.

1) Select **Analyse→Compare Means→Independent-Samples T**

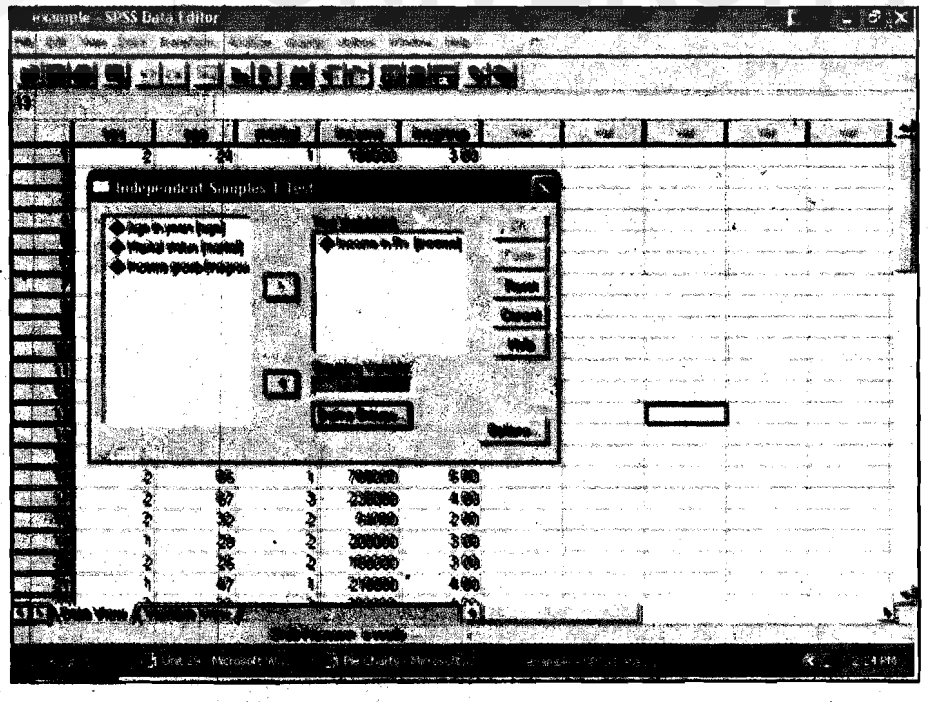


Figure 30.30 Example SPSS Data Editor: Income Variable

Test...command from the menu bar. The **Independent-Samples** T dialog box appears on the screen.

2) Click on the Variable name in the left side box that you want to include for the t-test. Suppose you want to include Income Variable, shift this variable to the right side box under **Test Variable(s)** using arrow key.

3) Click on the variable you want to group. Suppose you want to test the income mean difference between males and females, click on sex variable. Shift this variable to the box under **Grouping Variable** using arrow key.

4) Click on the **Define Groups**...button. The **Define Group** dialog box appears on the screen. Type '1' in the **Group 1** box. Type '2' in the **Group 2** box. Click **Continue** button to close the Define Groups dialog box.

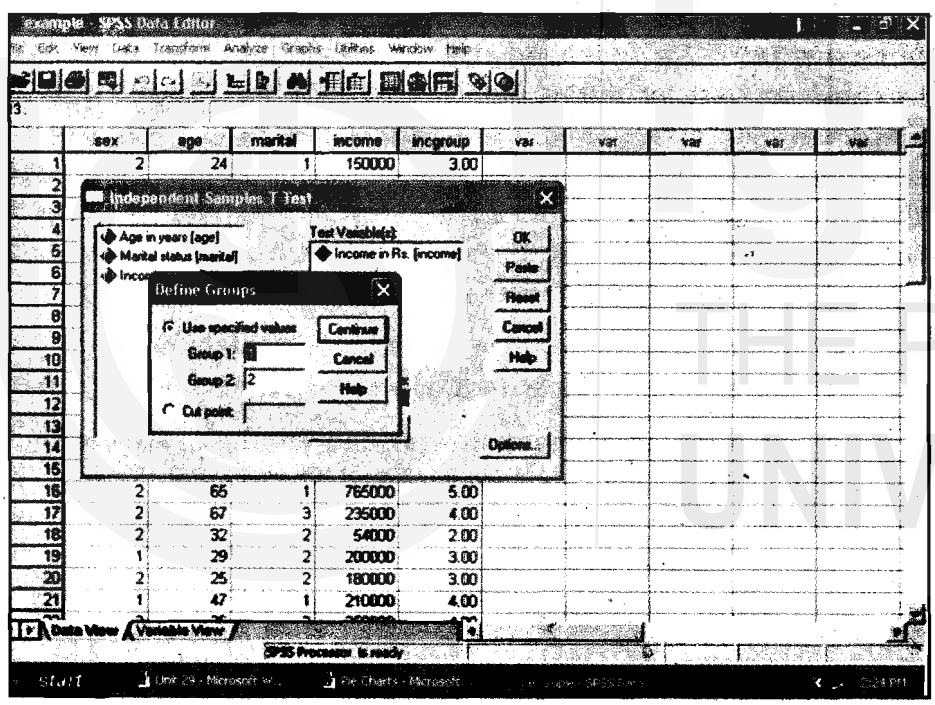


Figure 30.31 Example SPSS Data Editor: Grouping Variables

5) Click OK button to close the Independent-Samples T Test dialog box. The following table presents the output.

T-test

Table 30.24 Group Statistics

	Sex distribution of persons	N	Mean	Std. Deviation	Std. Error Mean
Income in Rs.	Male	14	262450.00	176610.187	47201.058
	Female	16	210625.00	208616.994	52154.248

Table 30.25 Independent Samples Test

			Income in Rs.	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		.118	
	Sig.		.734	
t-test for Equality of Means	t		.728	.737
	df		28	27.978
	Sig. (2-tailed)		.472	.467
	Mean Difference		51825.00	51825.00
	Std. Error Difference		71147.913	70342.061
	95% Confidence Interval of the Dfference	Lower	−93914.893	−92269.306
		Upper	197564.893	195919.306

Chi-square test© for independence

The chi-square test for testing the independence of attributes is for the categorical data arranged in a cross tabulation. The chi-square test appears as an option within the procedure for generating a cross-tabulation. The steps for chi-square test are repeat of steps for generating cross-tabulation with the addition of Expected counts under cells and chi-square under Statistics.

1) Select **Analyse→Descriptive Statistics→Crosstabs** command from the menu bar. The cross tabs dialog box appears on the screen.

2) Select a variable under **Row(s)** and another variable under **Column(s)**. Suppose you have selected Income level (a categorical variable with income levels low and high) variable under Row(s) and sex variable under Column(s).

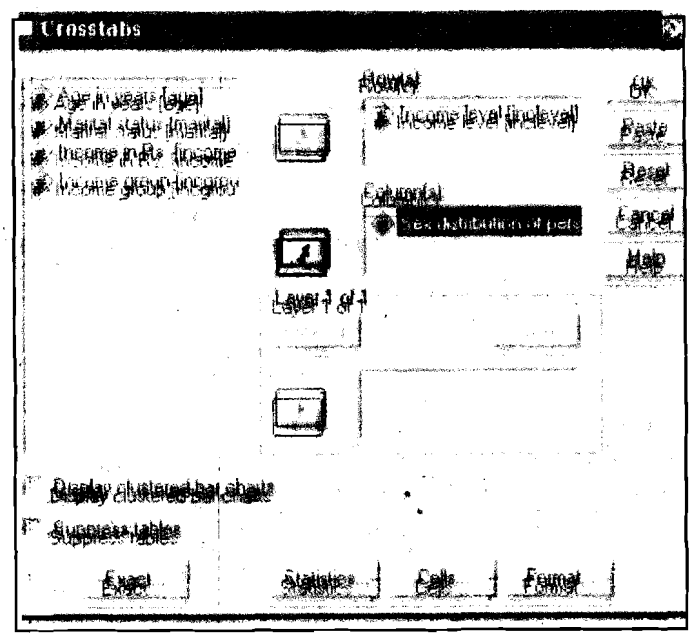


Figure 30.32 Crosstabs: Income Levels

3) Click on the **Statistics**...button in the Cross tabs dialog box. The **Cross tabs:Statistics** dialog box appears on the screen. Check mark the Chi-square button. Click **Continue** button to close the Cross tabs: Statistics dialog box.

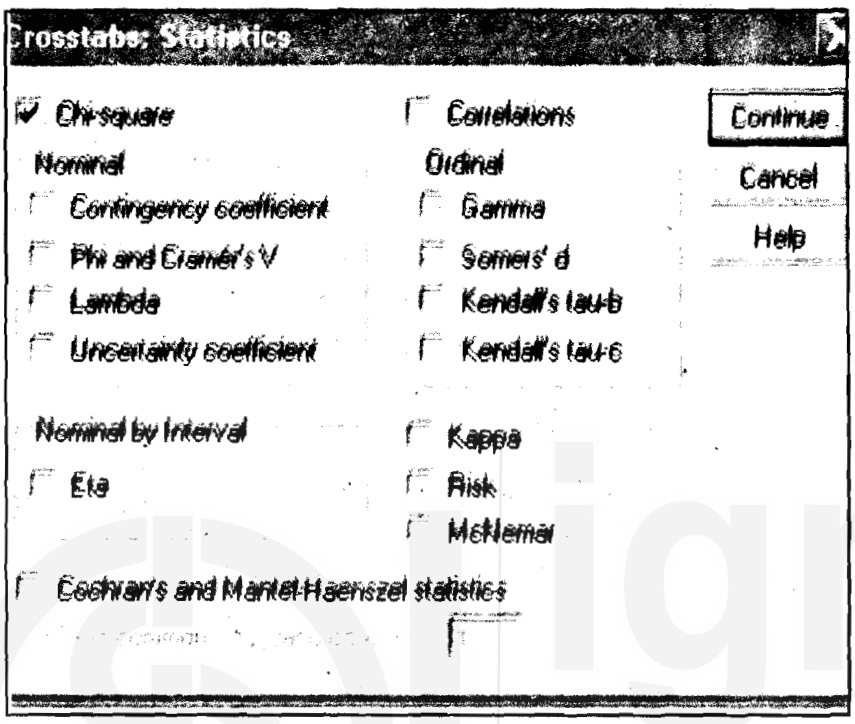


Figure 30.33 Crosstabs: Statistics

4) Click on the **Cells**...button in the Cross tabs dialog box. The **Crosstabs:Cell Display** dialog box appears on the screen. Check mark both Observed (if not already check marked) box and **Expected** box under Counts. Click **Continue** button to close **Cross tabs:Cell Display** dialog box.

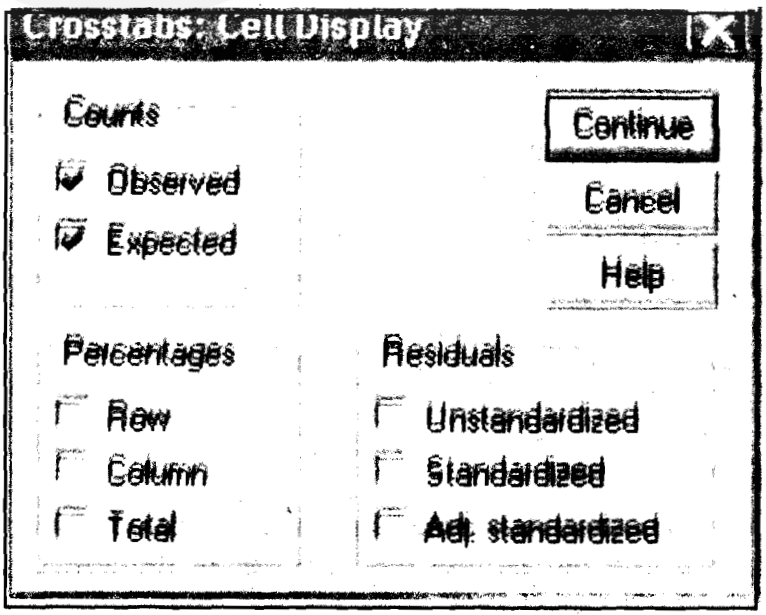


Figure 30.34 Crosstabs: Cell Display

5) Click OK button in the Cross tabs dialog box. The output generated is shown below.

Crosstabs

Table30.26 Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Income group * Sex distribution of persons	30	100.0%	0	.0%	30	100.0%

Table30.27
Income level * Sex distribution of persons Crosstabulation

			Sex distribution of persons		
			Male	Female	Total
Income level	Low	Count	4	8	12
		Expected Count	5.6	6.4	12.0
	High	Count	10	8	18
		Expected Count	8.4	9.6	18.0
Total		Count	14	16	30
		Expected Count	14.0	16.0	30.0

Table30.28 Chi-Square Tests

	Value	df	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)	Exact Sig. (1-sided)
Pearson Chi-Square	1.429[b]	1	.232		
Continuity Correction[a]	.675	1	.411		
Likelihood Ratio	1.448	1	.229		
Fisher's Exact Test				.284	.206
Linear-by-Linear Association	1.381	1	.240		
N of Valid Cases	30				

a) Computed only for a 2X2 table
b) 0 cells (.0%) have expected countless than 5. The minimum expected count is 5.60.

Reflection and Action 30.3

Answer the following question on the basis of what you have just finished reading.

- What are the different views available in SPSS Data Editor?
- Explain when would you use each of these views?

30.8 Conclusion

In this unit you have learned the use of the SPSS Program to enter the data in a data file and use this data file for the analysis of data. You might have generated a data file using some other data base programs such as Excel. It is very easy to convert such data files

into a SPSS data file.

This unit provides an introduction to the SPSS. You can do a range of statistical analyses from simple cross tabulation to more complex statistical techniques, depending upon the individual researcher's requirement. However, we have tried to explain only simple commands and statistical tools, which are more popular in social research. We will leave it to the student to try and learn the full range of features in SPSS.

Further Reading

Nie, N. H., C.H. Hull, J. G. Jenkins, K. Steinbrenner and D. H. Bent 1979. *Statistical Package for the Social Sciences*. McGraw Hill: New York

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Unit 31

Using SPSS in Report Writing

Contents

31.1 Introduction
31.2 Why to Use SPSS
31.3 Charts
31.4 Working with SPSS Output
31.5 Copying SPSS output to MS Word Document
31.6 Conclusion



Learning Objectives

It is expected that after going through Unit 31, you will be able to

- ❖ Edit the SPSS output Tables to suit your needs in report writing
- ❖ Create and edit Charts for graphic presentation of your data analysis
- ❖ Copy the SPSS edited Tables and Charts directly in your report.

31.1 Introduction

Unit 29 you read about SPSS and now in Unit 31 you will learn how to modify or edit the Tables generated by the SPSS to meet your specific needs in writing reports. Creating and editing Charts are covered to enhance your report presentation skills. Also, you will learn how to copy the edited tables and charts in a MS Word document where your main report file may be accessible.

31.2 Why to Use SPSS

In SPSS, when you run a statistical procedure, the results are displayed in a window called Viewer. At the time of including these results in your report, you may wish to create a professional-looking report both quickly and easily. Powerful calculation and formatting capabilities of SPSS let you design your own highly specialised reports, such as cross-tabulation. You can use formatting tools to change fonts, colours, styles, column size, row size, and alignment. The use of preset formatting in style sheets can eliminate the need to reformat each new report.

Often, the most striking way of presentation of data is with Charts (also, often called Graphs). A Chart provides a quick visual sense of the main features of the data. Using SPSS, you can create and edit Charts for your data.

Normally, you use MS Word or some other word processing program to type your report. You include the Tables and Charts generated by the SPSS in the report to support your analysis. Using the Copy and Paste

functions of MS Word, the Tables and Charts generated by the SPSS can be copied from the SPSS Output Window and pasted into the Word Window without having to create new Tables and Charts.

31.3 Charts

A chart is a graphical presentation of data. Before you create a chart, you should keep in mind:

- The **title** identifies the chart. Therefore, give the chart an appropriate title.
- **Category (X) axis** identifies the data being charted on the horizontal X-axis. Examples of Category X-axis include dates, persons, places, groups, etc. Therefore, clearly identify the categories of the variable and give an appropriate category axis title.
- **Value (Y) axis** identifies the data being charted on the vertical Y-axis. Examples of Y-axis labels include numbers, value of currency, percentage, etc. Therefore, clearly identify the value along with an appropriate value title.
- **Legends**© identify the information charted. A legend will be important for identifying which information relates to what class.

A number of types of charts (pie charts, bar charts, histograms, etc.) are available to portray certain types of information. You must, therefore, choose the correct type of chart for information you wish to project.

Many of the charts available in SPSS come in two different general formats: (a) Standard chart; and (b) Interactive charts. The standard charts are created either from the main Graphs menu bar or by statistical procedures. The interactive charts are created from the Interactive sub-menu of the Graphs menu bar and the charts created from pivot tables. However, we will limit this Unit to creating and editing Standard charts only.

Pie Charts can be created using any of the level of measurement of data (nominal, ordinal, interval, or ratio). Bar charts can be created using nominal, ordinal, or interval/ratio (discrete variables) data. Histograms are created using interval/ratio (continuous variables) data. The polygon chart can be created using interval/ratio data.

Creating standard charts

In this unit, we shall be concerned with the creation of a simple Pie chart and then a Bar chart.

Pie Chart: A pie chart can be constructed for all levels of measurement.

To create a pie chart, follow the instructions given below:

1) Select **Graphs→Pie...** command from the menu bar in the **Data Editor** Window. The Pie Charts dialog box (figure 31.1) appears on the

screen asking you to define the cases in a variable or separate variables.

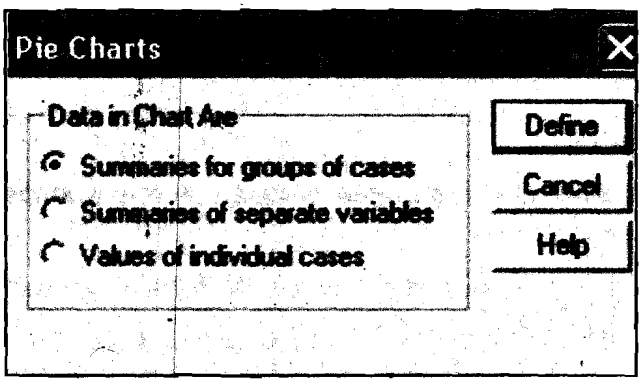


Figure 31.1 The Pie Charts Dialog Box

a) If you want the summary (number, percentage, etc.) of cases in each category groups available in the same variable check mark the **Summaries for groups of cases** button. For example, you may wish a pie chart to show the gender distribution of the number of respondents (sex variable: Number of male and female respondents).

b) If you want the summaries (total, percentage, average, count, etc) of different variables as a pie chart check mark the **Summaries of separate variables** button.

c) If you want simply the values of individual cases as a pie chart, check mark **Values of Individual Cases** button. For example, you might have typed the number '25' as male respondents as case-1 and the number '30' as female respondents against case-2 in 'gender' variable.

In our example, we have check marked **Summaries for groups of cases** button, since the gender sub groups (male and female) are in sex variable.

2) After check mark in the appropriate button in the **Pie charts** dialog box, press the **Define** button to close that dialog box. The **Define Pie: Summary for Groups of Cases** dialog box appears on the screen. The default setting for what each slice of a Pie chart should represent is the number of cases. **Check mark N of cases** button if it is not already check marked. You can also check mark **% of cases** button if required in place of number of cases. Transfer the variable(s) on which you want the pie

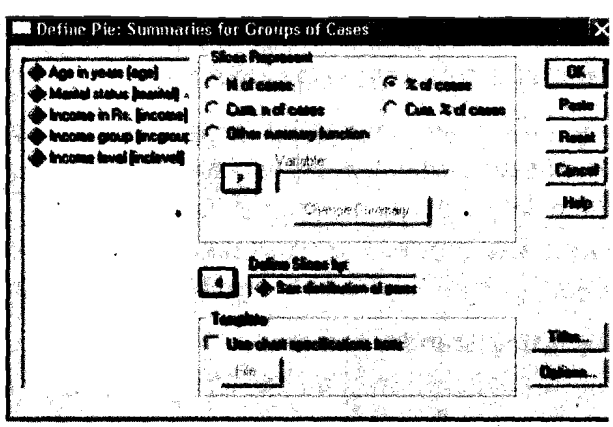


Figure 31.2 Define Pie: Summaries for group of cases

chart from left variable box to the box under **Define series** by: using arrow key.

Remember that when charts are created, they do not show the missing cases category as default as you have seen in Unit 30 on Using SPSS for Data Analysis. If you want to display this category make sure that the number of cases with missing values is not excessive. To display missing values, click the Options button to define the missing values. The Options dialog box appears. Checks mark the Display groups defined by missing values button and then click Continue button. Click OK button in the Define Pie... dialog box to create a Pie chart.

Reflection and Action 31.1

Read carefully the text given above about creating standard charts and answer the following questions. Write your answers in the context of creating a pie chart on the gender distribution in India.

- ❖ When you create a chart in SPSS, what are the important points you should keep in mind?
- ❖ Discuss the steps involved in creating a Pie Chart on the topic mentioned above.

Graph: See figure 31.3 an example of a completed Pie Chart on the gender distribution in India.

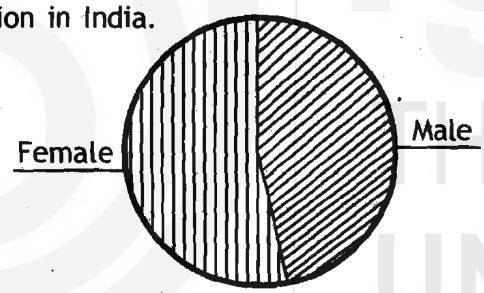


Figure 31.3 Example of a completed Pie Chart on the gender distribution in India

Bar Charts: To generate a bar chart, select **Graphs→Bar...** command from the menu bar of the Data Editor window. The **Bar Charts** dialog box appears on the screen. You have three options available in this dialog box: (a) Simple bar charts, (b) Clustered bar charts, and (c) Stacked bar charts. Select your option by clicking on the respective chart box, define the case as you have done for pie chart by clicking either **Summary for groups of cases**, or **Summary of separate variables**, or **Values of individual cases** box under **Data in Chart Are** area in the Bar Charts dialog box. In our example, we have check

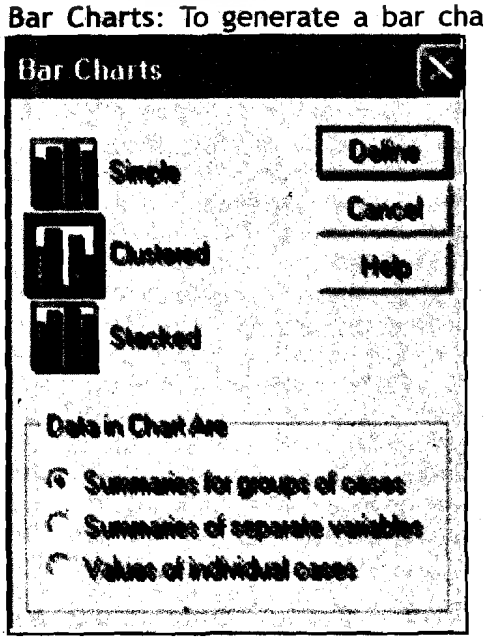


Figure 31.4 Bar Charts

marked **Summaries for groups of cases** button, since the gender sub groups (male and female) are in sex variable.

Click on the **Define** button in the Bar Charts dialog box to close it. The **Define Simple Bar: Summary for Groups of Cases** dialog box appears on the screen, which is identical to the **Define Pie** dialog box. Transfer the variable(s) on which you want the bar chart from left variable box to the box under **Category Axis**: using arrow key. The default setting for what each rectangle of a bar chart should represent is the number of cases. Check mark **N of cases** button if it is not already check marked. You can also check mark **% of cases** button if required in place of number of cases. Click **OK** button to generate the bar chart in the Output Viewer window.

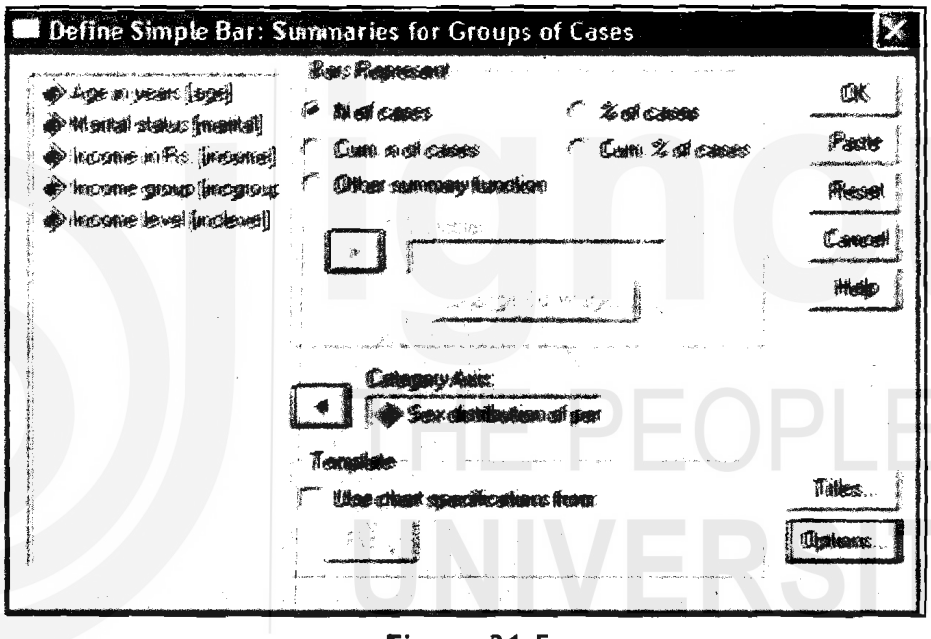


Figure 31.5
Define Simple Bar: Summaries for Groups of Cases

Graph: See in figure 31.6 an example of a completed Bar Chart.

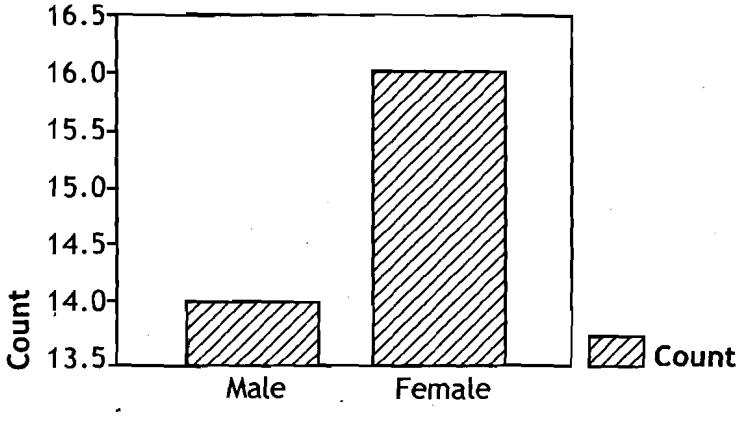


Figure 31.6
Example of a completed Bar Chart on Sex Distribution of Persons

Editing Chart Output®

The basic SPSS procedure on creating graphs produces a bare minimum amount of information about the chart. You do not get a title, or number, or percentage for each slice of the chart. You could have generated title of the graph by clicking Titles button on the Define Pie...dialog box in case of pie chart or Define simple bar... dialog box in case of bar chart. However, in SPSS a number of options are available to improve the graph. You can do this with the help of SPSS chart Editor.

1) Double click anywhere on the chart. The **Chart Editor** dialog box appears along with a menu bar. You can choose a number of options to improve the chart or change one type of chart to another type of chart.

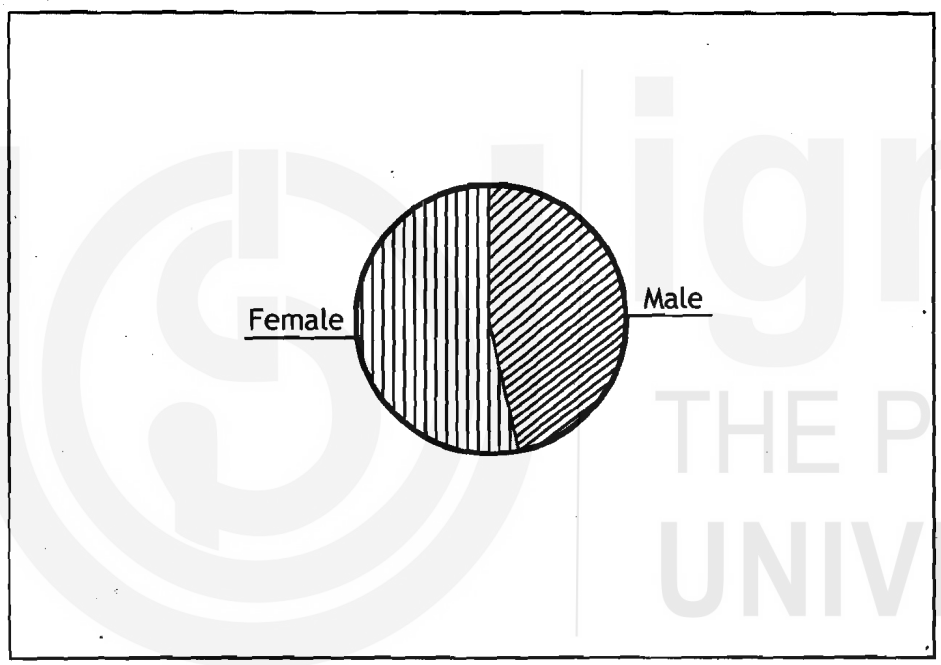


Figure 31.7 Chart 1: SPSS Chart Editor

2) **Changing to a different type of chart:** To change the type of chart from pie chart to bar chart, select **Gallery→Bar** command from the menu bar in Chart Editor. The **Bar Charts** dialog box appears. You have three options (Simple, Clustered, or Stacked). Click the **Replace** button to change the chart type to a (Simple) bar chart.

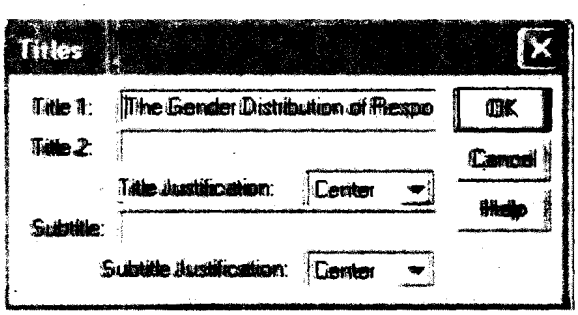


Figure 31.8 Titles

3) **Adding Titles to your chart:** To add titles to the chart, select **Chart→Title** command from the menu bar in Chart Editor. The Titles dialog box appears. Type the title of the chart in the **Title 1:** and/or **Title 2:** box. Click **OK** button to

close this dialog box and insert the title.

4) **Adding Footnote:** To add footnote to the chart, select **Chart→ Footnote** command from the menu bar in the Chart Editor. The **Footnotes** dialog box appears. Type the text for footnotes in the **Footnote 1**: and/ or **Footnote 2**: box. You can also align (Centre, Left, or Right) by selecting the option the **Footnote** Justification box. Click OK button to close this dialog box and insert the typed footnotes.

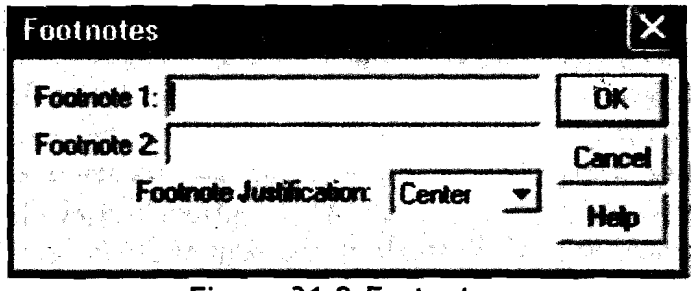


Figure 31.9 Footnotes

5) **Options:** select **Chart→ Options** command from the menu bar in the Chart Editor to change the information that is attached to each slice of the Pie. As we have seen earlier at the time of creating a chart the default setting for text labels (male/female, etc.) is represented by each slice. In the options dialog box click on the **Values** and **Percents** boxes to generate absolute (number) and relative (percent) frequencies for each slice displayed along with the text label. By clicking **Format** button, you can also set the decimal places either to zero or some other required number of digits.

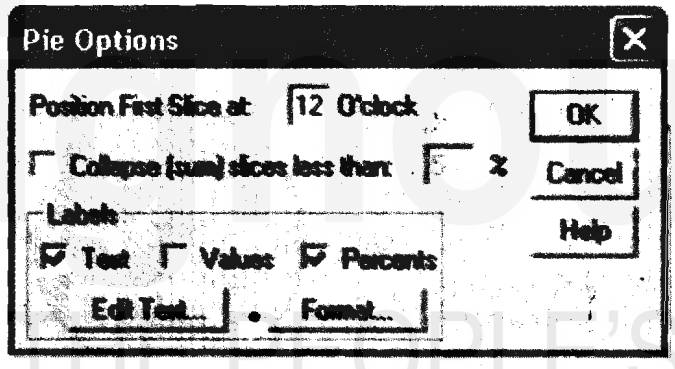


Figure 31.10 Pie Options

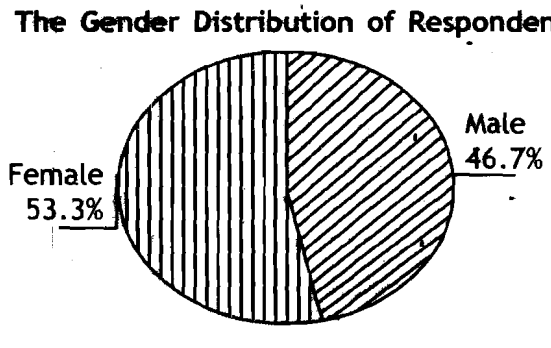


Figure 31.11 Pie Chart on The Gender Distribution of Respondents

You can edit the bar chart created earlier using various features in the Chart Editor.

An example of refined bar chart is shown on the next page.

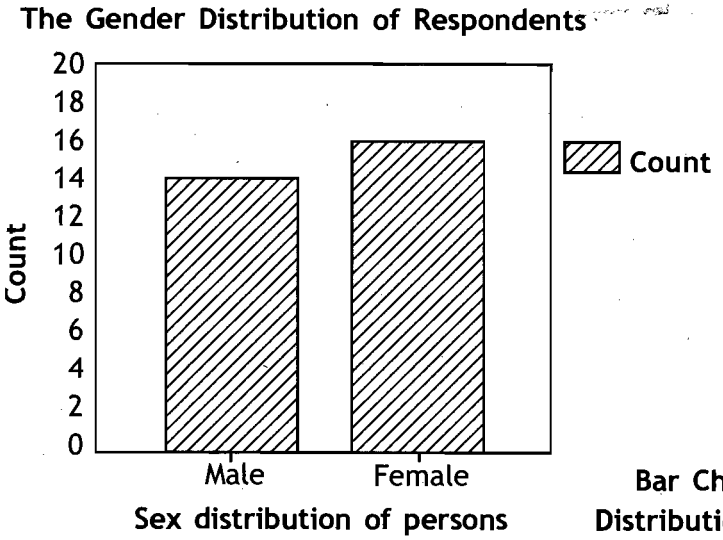


Figure 31.12
Bar Chart on the Gender Distribution of Respondents

Reflection and Action 31.2

At the time of editing a chart you can add or modify some information about the chart. What are the options available for doing so? Discuss the options in terms of changing the chart shown as figure 32.4 in Unit 32 to a different type of chart, adding titles and footnotes to it.

31.4 Working With SPSS Output

All the output generated from statistical and graphical procedures will appear in the SPSS Viewer Window. Every time you run a new procedure in the same session, the output is added at the end of the output of the previous procedure. If the output Viewer Window is closed and another procedure is run, a new output Viewer Window is automatically generated. The Viewer Window has two components: (a) the **Outline** Pane*, and

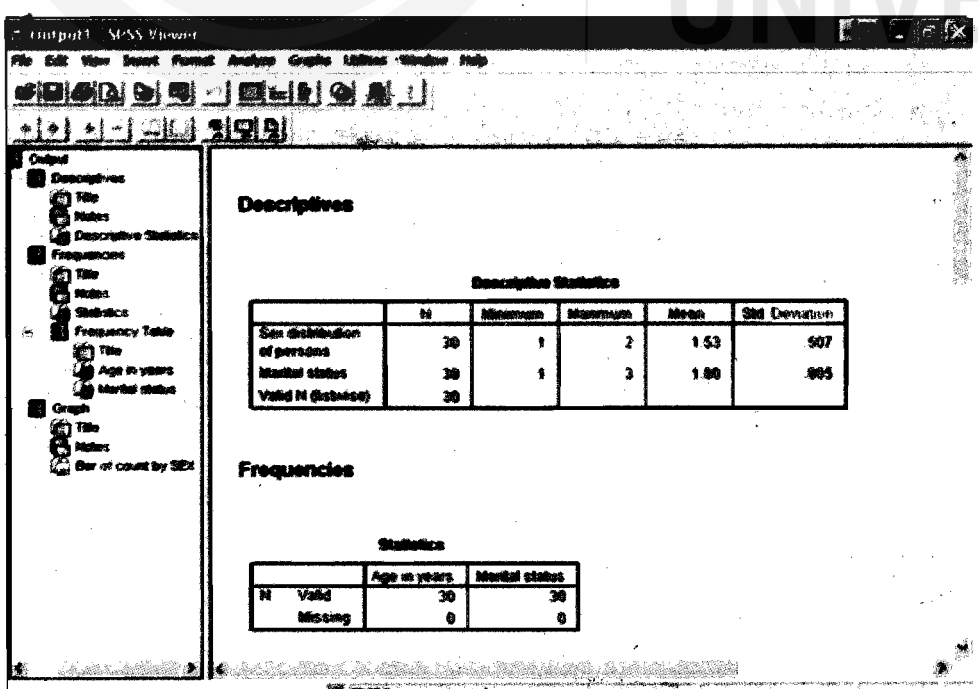


Figure 31.13 Output 1: SPSS Viewer

(b) **Contents** Pane. The Outline Pane is located at the left hand side of the Output Viewer Window and shows the output in outline view as a list of items. The Contents Pane is located at the right side of the Output Viewer Window and displays the actual contents (tables, charts, and text) of the output.

You can click and drag the right (left) border of the outline pane (contents pane) to change the width of the Outline Pane (Contents Pane). This will facilitate enough room in the respective viewer pane.

Browsing Results: You can use the scroll bars (both vertical and horizontal) to browse the results. If you want to go to a particular table/chart/text, click the corresponding caption of the item in the Outline Pane.

You can use the Output Viewer Window to:

- ❖ Browse through the results
- ❖ Show or hide selected tables/text/charts
- ❖ Change the display order of results by moving selected items
- ❖ Use the Draft Viewer for simple text output
- ❖ Use the Pivot Table Editor to rearrange the rows, columns, and layers
- ❖ Copy the items in other applications such as MS Word
- ❖ Delete the selected tables/text/charts
- ❖ Add items to viewer
- ❖ Printing the output

You have learned how to print the output in the earlier Unit on SPSS. You will learn how to copy items in MS Word in the next section of this Unit.

Hiding and Showing Output: In the viewer, you can selectively hide or show the individual text/table/chart. The hidden items (text/table/chart) would not be viewed, copied, or printed with the rest of the output. To hide a table/text/chart, double click its open book icon in the Outline Pane of the Viewer. The open book icon changes to a closed book icon signifying that the

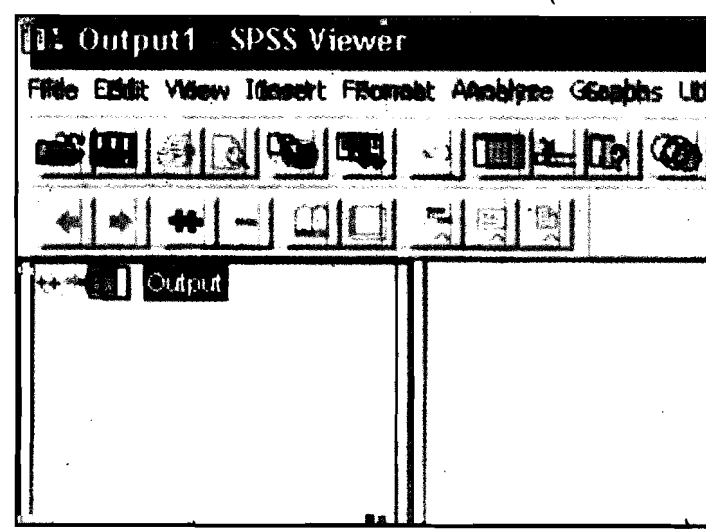


Figure 31.14

Output 1: SPSS Viewer Hiding the Items

particular item of a procedure is hidden. To hide all the results from a particular procedure, click the box to the left of the procedure name in the Outline Pane. This hides all the items (results) from the procedure and collapses the Outline View.

To redisplay the hidden item(s), double click the closed book icon.

Changing Display Order of Items: You can also change the order in which the output is displayed. In the outline pane, click on the items you want to move. Drag the selected items (hold down the mouse button while dragging) to a new location in the outline and release the mouse button. You can also move items by clicking and dragging in the contents pane or selecting **Edit→Cut** command and then select **Edit→Paste** After command on the menu bar.

Deleting Items: Click an item on the Outline Pane or Contents Pane to select the item. Press **Delete** key on the keyboard. The item is deleted.

Changing Items Alignment: By default all results are initially left aligned. You can change the alignment of selected items. For this, click on the items either in Outline Pane or Contents Pane to select the items you want to align. Select **Format→Align Left** to align left or **Format→Align Right** to align right or **Format→Align Centre** command from the menu bar.

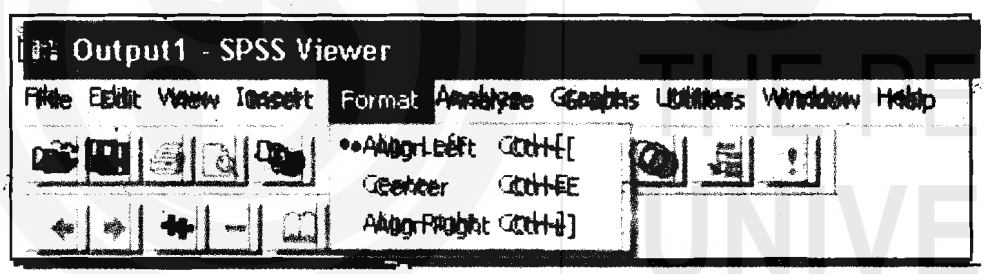


Figure 31.15 Output 1: SPSS Viewer Changing Items Alignments

Adding Items: In the Output Viewer, you can add items such as text, charts, or material from other applications such as Word or Excel. Text items not connected to a table or chart can be added to the Viewer. Click on the text, table, or chart object will precede the title or text you are intended to add. Select **Insert→New Title** command or **Insert→New Text** command from the menu bar. Double click the new object. Enter the text/title you want at this location.

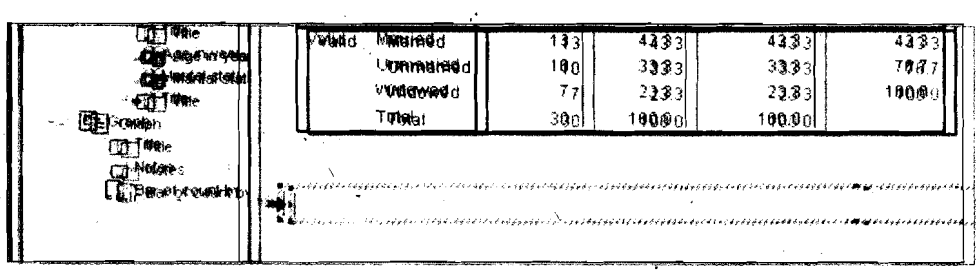


Figure 31.16 Output 1: SPSS Viewer Adding Items

To insert a text file, in the Output Viewer, click a table, chart or text item that will precede the text file you are indented. Select **Insert→Text File...** command from the menu bar. Select the text file to be inserted. Observe that the text file is inserted. To edit the text, double click the item.

Draft Viewer

The Draft Viewer provides results in a draft form when you run a procedure. The text output in the Draft Viewer can be edited, the charts can be resized, and both the text and charts can be copied to other applications such as MS Word. You cannot edit the charts and the Draft Viewer does not include interactive features of pivot tables. That means if you prefer simple text output rather than interactive pivot* tables, you can use the Draft Viewer.

To create a draft output, open the Draft Output Window by selecting **File→New→Draft Output** command in the Data Editor Window and then run a procedure in the **Draft Viewer** Window.

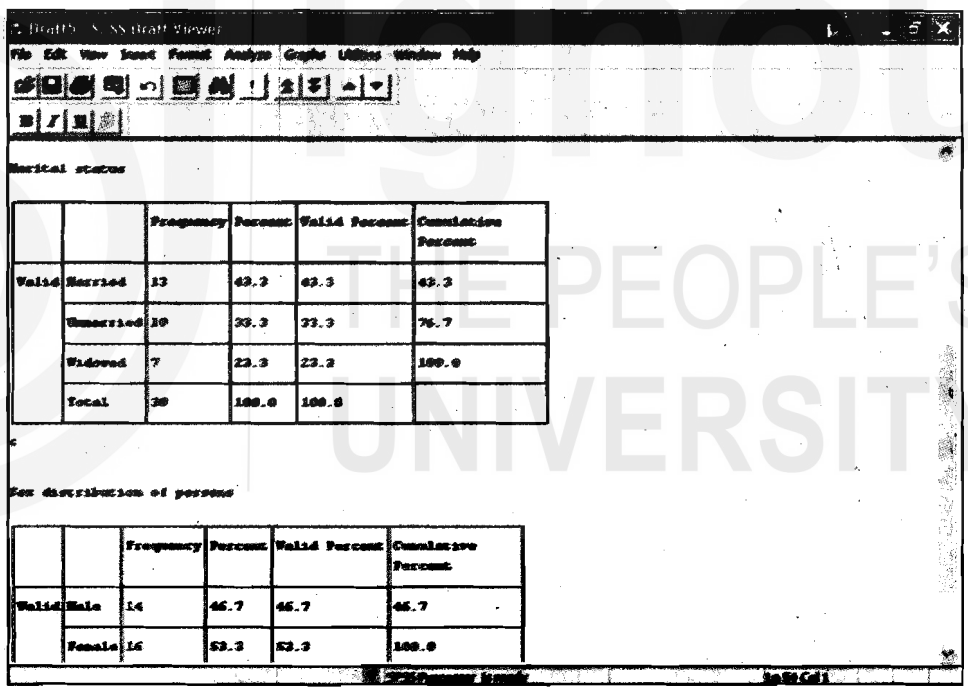


Figure 31.17 Draft 5: SPSS Draft Viewer

Controlling the Format: The output that would be displayed as pivot tables in the Draft Viewer is converted to text output. The default settings for converted pivot table output include:

a) Each column in the table is set to the width of that column label. Therefore, the column labels are not wrapped in multiple lines.

b) Instead of tabs, the alignment is controlled by spaces.

c) Box characters from the SPSS market set are used as row and column separators. If the box characters are turned off, vertical

- line characters (|) are used as column separators and dashes (-) are used as row separators.

You can control the format of the table output using Options dialog box before you run a procedure. For this, select **Edit→Options** command in the menu bar before you run a procedure. The **Options** dialog box appears on the screen. Click on the **Draft Viewer** button. To reduce the width of tables, you should reduce the column width containing long labels. Click on **Maximum** button under **Column width**: area in the options dialog box. Type the maximum number of characters that a column width can hold in the box against **characters**. The labels longer than the specified width are wrapped to fit the maximum column width. You can change the default box characters for row and column borders. You can also specify different cell separators or enter blank spaces if you do not want any characters used to mark rows and columns. For this, remove the check mark in the **Display Box Character** box in the options dialog box. Type a character (which you want as row separator) in the box against **Row**: Under **Cell Separators**: area. Similarly, type a character (which you want as column separator) in the box against **Column**: Under **Cell Separators**: area. Typing a space character in the **Row**: and/or column: boxes will result a table with corresponding blank borders.

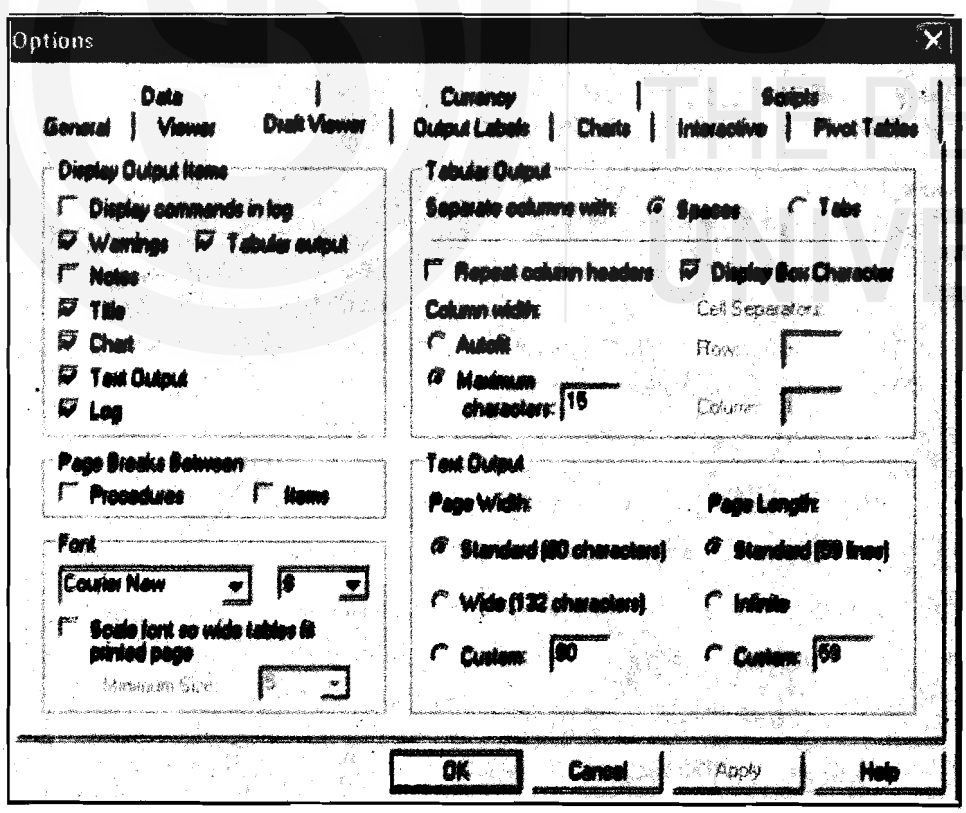


Figure 31.18 Options

The Draft Viewer is designed to display space-separated output in a fixed pitch font. If you want to copy the output to some other application such as MS Word document, select **Tabs** for the column separator. For

this, check mark the **Tabs** button against Separate Columns Width in the options dialog box. With this selection, you can use any font that you want in the MS Word like applications and set the tabs to align output properly. However, tab separated output will not align properly in the Draft Viewer. You can change the font type and their sizes in the Options dialog box. For this select the font type in the list box Under Font and then the size in the next list box. To print or save the Draft output follow the steps explained in earlier Unit on SPSS.

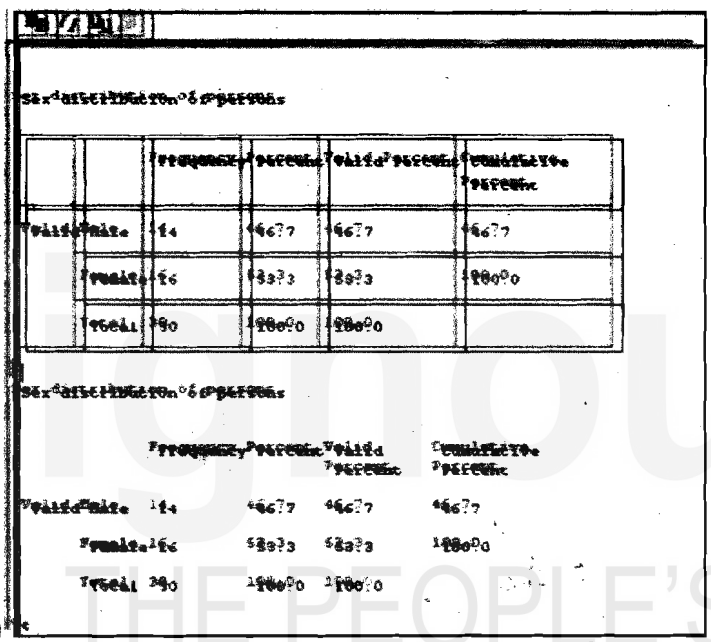


Figure 31.19 Draft output before and after setting Cell separators and Column width

Pivot Tables

In SPSS many of the results from statistical procedures are displayed in default Pivot tables. The default labels produced may not display information as neatly or as clearly as one would like. With Pivot tables you can rearrange the rows, columns, and layers. Some of the options for modifying a Pivot table are:

- ❖ Interchanging rows and columns
- ❖ Moving rows and columns
- ❖ Creating multidimensional layers
- ❖ Grouping and ungrouping rows and columns
- ❖ Showing and hiding cells
- ❖ Rotating row and column labels
- ❖ Finding definitions of terms used

Accessing Output Definitions: Many of the statistical terms are displayed in the output. Definitions of these terms can be accessed directly in the Output Viewer. For example, double click **Case Processing Summary** pivot table. Right click **Valid** and select **What's This?** from the pop-up menu. Observe that the definition of **Valid** is displayed in a pop-up Window.

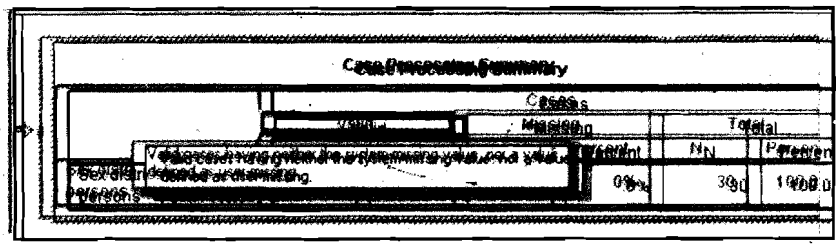


Figure 31.20 Case Processing Summary

Editing a Pivot Table

To edit a Pivot table, activate the table by double-clicking the table you want to edit. Click a label or text or number you want to edit. The menus change to display commands relevant for editing table attributes. In addition, a table toolbar and a Pivoting Tray dialog box appear allowing you to change the table attributes.

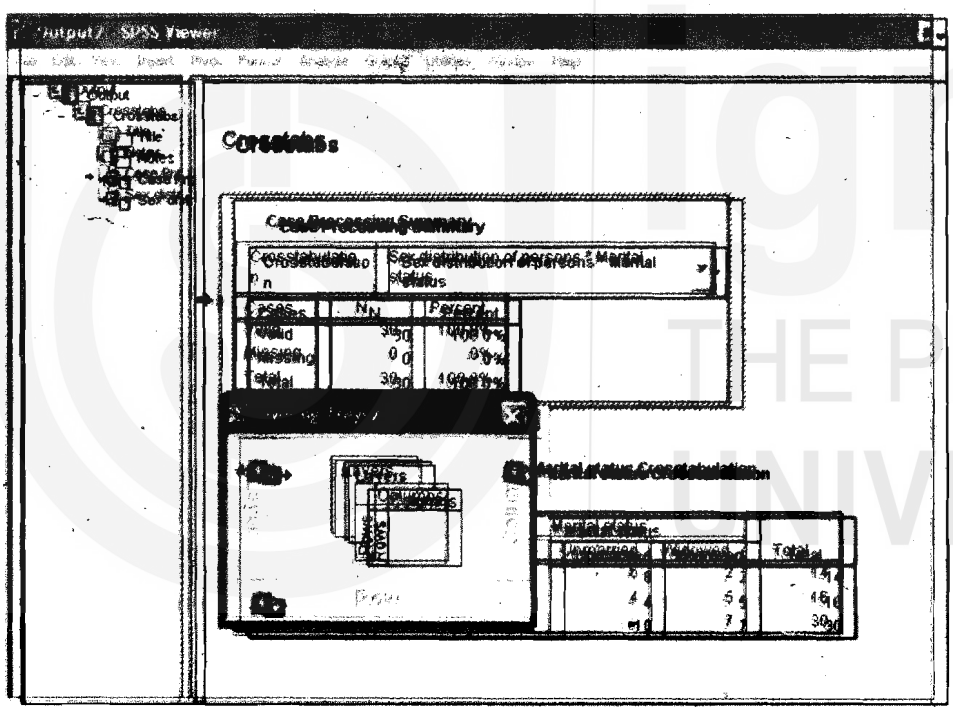


Figure 31.21 Output 2: SPSS Viewer

If the Pivoting Tray dialog box is not visible on the screen, select Pivot?Pivoting Trays command from the menu bar. The Pivoting Trays provide a way to move data between columns, rows, and layers. The Pivoting Tray contains three pivot icons representing layers, columns, and rows. Move the cursor on one of the pivot icons to see what it represents. The shaded area in the table indicates what will be moved when you move that pivot icon. Also, when you move the cursor on a pivot icon, a pop-up label will be displayed indicating what that icon represents in the table. Drag an icon from one tray to another tray. The table immediately changes the arrangements in the table. For example, if you want to change the sex category from the row to column drag the icon from Row tray to the Column tray.

Transposing Rows and Columns: Activate the table by double clicking the table. Select **Pivot→Transpose Rows and Columns** command on the menu bar. This will change all the columns to rows and rows to columns.

Sex distribution of persons * Marital status Crosstabulation

Count

Count		Marital status			Total
		Married	Unmarried	Widowed	
Sex distribution of persons	Male	6	6	2	14
	Female	7	4	5	16
Total		13	10	7	30

Sex distribution of persons * Marital status Crosstabulation

Count

		Sex distribution of persons		Total
		Male	Female	
Marital status	Married	6	7	13
	Unmarried	6	4	10
	Widowed	2	5	7
Total		14	16	30

Figure 31.22 Transposing Rows and Columns

Changing the display order of rows and columns: The order of Pivot icons in dimension (row, column, layer) tray reflects the display order of elements in the pivot table. Drag the respective icons in each tray to the order you want (left to right or top to bottom).

Moving rows and columns: Activate the Pivot table by double clicking. Click the label for the row or column you want to move. Click and drag the label to the new position. Select **Insert Before or Swap**® from the pop-up menu.

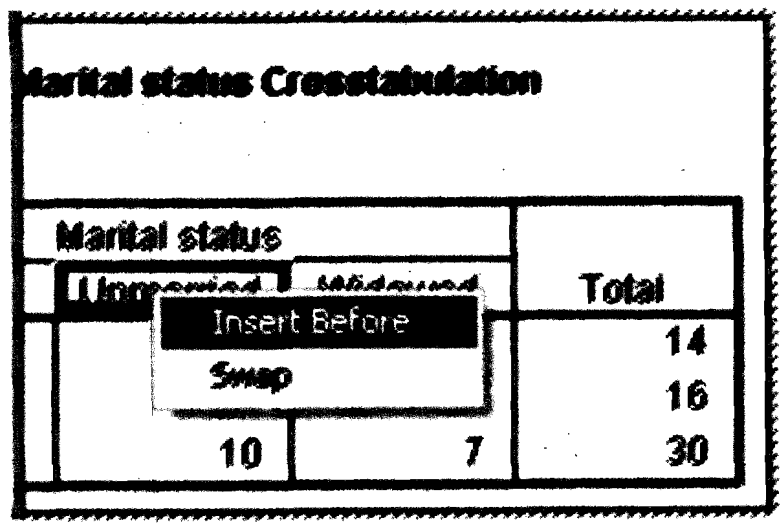


Figure 31.23 Moving Rows and Columns

Grouping Rows and Columns: You can group a number of rows or columns in a table by inserting a group label. For this, activate the table by double clicking on it. Select the rows or columns you want to group together. Click and drag the mouse to select multiple cells containing row headings or column headings where you want to insert a row or column group heading. Select Edit?Group command on the menu bar. A group label is automatically inserted. Double click the group label to edit the label text. If you want to add a new row or column to an existing group, you should first ungroup the items currently in the group and then create a news group that includes the new items. To ungroup rows or columns you should remove the group labels. For this, select the group label by clicking anywhere in the group label for the rows or columns you want to ungroup. Select Edit→Ungroup command on the menu bar. This will automatically delete the group label.

Rotating Labels: You can rotate either the inner most column labels or outer most row labels. For this activate the Pivot table. Select Format→Rotate Inner Column Labels command for rotating innermost column labels or Format→Rotate Outer Row Labels for rotating outer most row labels.

Sex distribution of persons * Marital status Crosstabulation

Count

Count		Marital status			Total
		Married	Unmarried	Widowed	
Sex distribution of persons	Male	6	6	2	14
	Female	7	4	5	16
Total		13	10	7	30

Sex distribution of persons * Marital status Crosstabulation

Count

		Marital status			Total
		Married	Unmarried	Widowed	
Sex distribution of persons	Male	6	6	2	14
	Female	7	4	5	16
Total		13	10	7	30

Figure 31.24 Rotating Labels

Creating and Displaying Layers: Layers can be useful for large tables with nested categories of information. By creating layers, you can simplify the look of the table, making it easier to read. Layers work best when the table has at least three variables. Activate the table by

double clicking it. Drag an icon from the Row tray or column tray into the Layer tray. Each layer icon has left and right arrows. The visible table is the table for the top layer. To view the different layers, you can either click the arrows on layer icon or select a layer from the drop-down list in the table.

Hiding cells: You can hide many types of cells in a table:

a) Dimension labels
b) Category labels without hiding the data cells
c) Label cell and data cells in a row or column
d) Footnotes, titles, and captions

To hide rows and columns in a table, select View-Hide on the Pivot Table menu bar or right click the highlighted row or column to show the pop-up menu and then choose Hide category from the pop-up menu.

To show the hidden rows and columns in a table, select another label in the same dimension as the hidden row or column. For example, if the Male category of the Gender distribution is hidden, click the Female category. Select **View→Show All Categories** in Gender command on the menu bar or select **View→Show All** command on the menu bar. This command displays all hidden cells in the table.

To hide (or show) a dimension label, activate the pivot table. Select the dimension label or any category label within the dimension. Select **View→Hide** (or **Show**) **Dimension** Label command on the menu bar to hide (show) the selected dimension label.

To hide or show a footnote in a table, select the footnote and then select View?Hide (or Show) command on the menu bar to hide (or show) the selected footnote.

TableLooks: You can change the appearance of a table either by changing

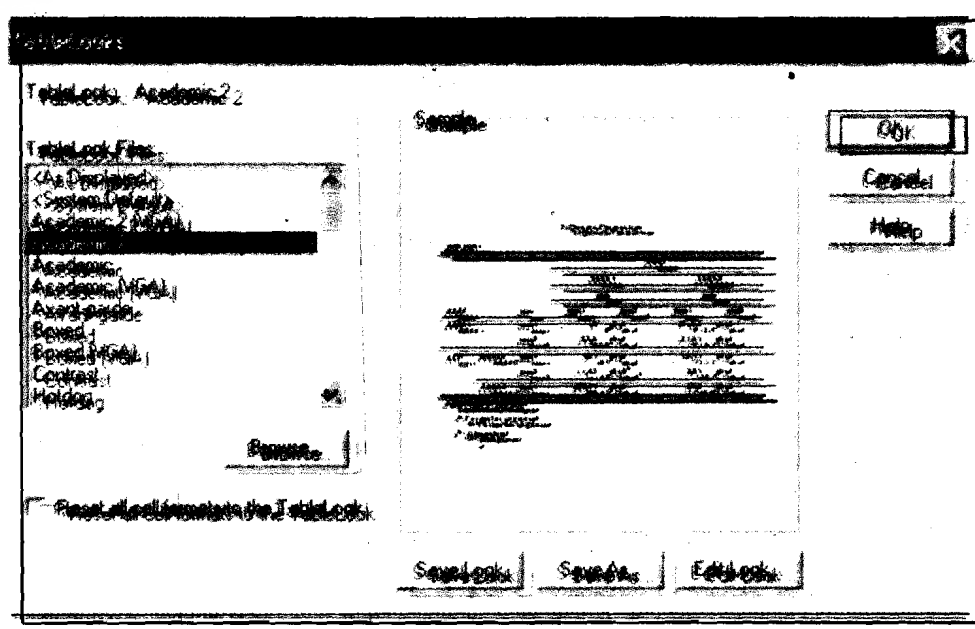


Figure 31.25 TableLooks

table properties or by applying TableLook. Each TableLook consists of a collection of table properties, including general appearance, footnote properties, cell properties, and borders. You can either select a preset TableLook or create and save a custom TableLook of your own. To apply a preset TableLook to your table, activate the pivot table by double clicking the table. Select **Format→TableLooks...** command on the menu bar. The **TableLooks** dialog box appears on the screen. Select a TableLook from the list of files under **TableLook Files**. Click **OK** button to apply the selected pivot table.

To edit a selected TableLook or to create your own TableLook, select a TableLook from the list of files as explained above. Click **Edit Look** button. The **Table Properties** dialog box appears on the screen. Select the appropriate options in the menu to adjust the table properties for attributes you want. Click **OK** button in the Table properties dialog box. Click Save Look to save the edited Table Look or click **Save As** to save it as a new TableLook. Note that editing a TableLook affects only the selected pivot table. An edited TableLook is not applied to any other labels that use that TableLook unless you select those tables and reapply the TableLook.

The Table properties dialog box allows you to set general properties of a table, set cell styles for various parts of a table, and save a set those properties as a TableLook.

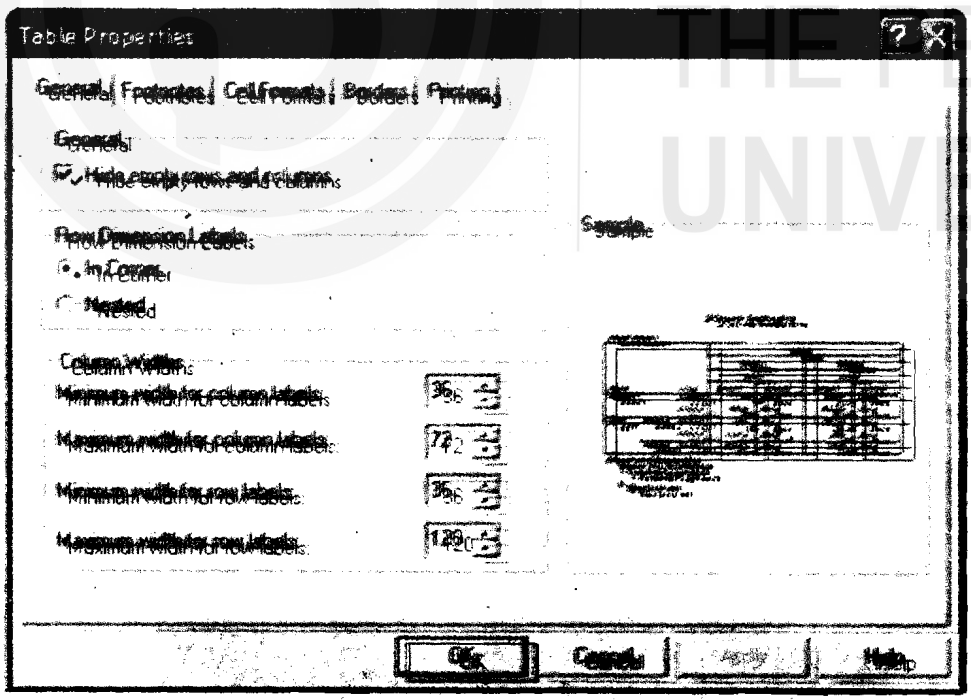


Figure 31.26 Table Properties

Using **General** tab on the Table Properties dialog box, you can control general properties of the table such as hiding empty rows or columns and adjusting printing properties.

Click the **Footnotes** tab to control the format and the position of footnote markers.

Click **Cell Formats** tab to determine specific formats for cells in the data area, for row and column labels, and for other areas in the table.

Click **Borders** tab to control the width and column of the lines forming the borders of each area of the table.

Click **Printing** tab to control printing properties.

Reflection and Action 31.3

You have just learnt the while working with SPSS output, it is possible carry out several activities like browsing through the results, show or hide selected table/ text/ charts etc.Write answers of the following questions.

How do you transpose the rows and columns of a table? What are the steps involved in it?

Can it be possible to hide some results in SPSS Output Viewer without being deleted? If so what are the steps to hide the selected results?

What dialog box will help you in changing the look of a Pivot Table. What are the general properties you can control using this dialog box?

31.5 Copying SPSS Output to MS Word Document

If you want to include some or all of your tables and charts generated by SPSS into your report, you can copy and paste them from the SPSS Viewer window into a Word document. The basic procedure is same for copying data from the Data Editor and text, tables, and charts from Output Viewer window.

1) Copy the text, table, or chart from the SPSS Output Viewer window to the Windows Clipboard. Or copy the data from the SPSS Data Editor to the Windows Clipboard.

2) Paste the copied data/text/table/chart to the Word document from the Windows Clipboard.

This means, while copying and pasting the data/output, the respective program should be open.

Copying Data from SPSS Data Window

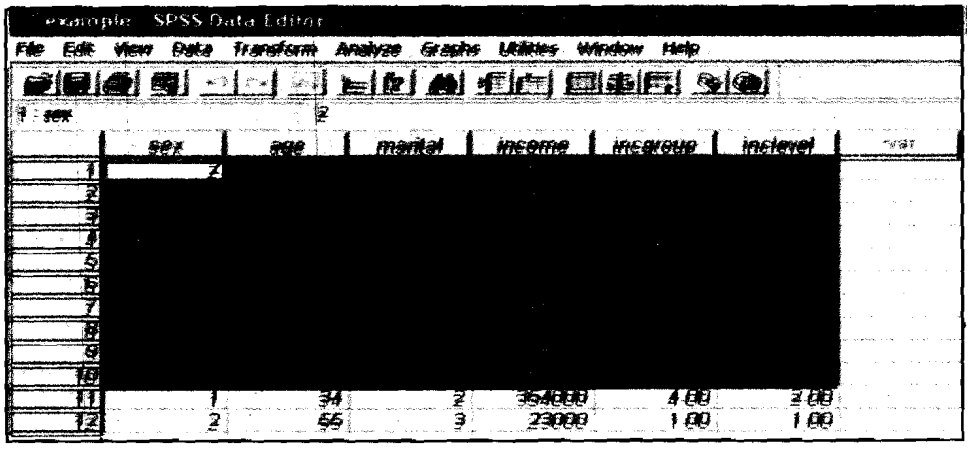


Figure 31.27 Example: SPSS Data Editor

To copy the data from your SPSS Data Editor into your Word document, follow the steps given below:

1) Start the SPSS program. Open the data file (with extension .sav) using the Data Editor. Select the data area (rows and columns) you want to copy.

2) Select **Edit→Copy** command from the menu bar of SPSS Data Editor Window. The data is now copied to the Windows Clipboard.

3) Start the Word program. Open the Word document where you are typing your report and want to copy the selected data. Select the page and paragraph. Position the insertion point by clicking the mouse.

4) Select **Edit→Paste** command from the menu bar of Word window. The data is now copied from the Windows Clipboard to your Word document at the insertion point.

Or

Select **Edit→Paste** Special command from the menu bar of Word window. The **Paste Special** dialog box appears on the screen. Select **Unformatted Text** under As: and then, click **OK** button. The data is now copied from the Windows Clipboard to your Word document at the insertion point.

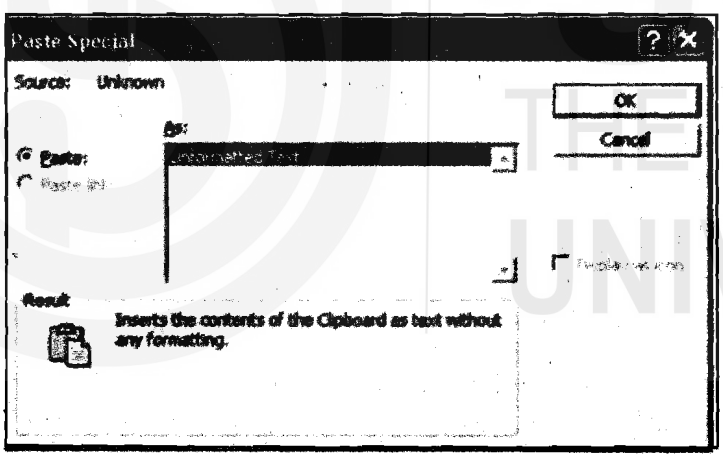


Figure 31.28 Paste Special

You can edit the data or reformat the settings if needed in your Word document.

2	24	1	150000	3.00	1.00
1	52	1	345000	4.00	2.00
2	65	3	45000	1.00	1.00
1	35	3	245000	4.00	2.00
1	42	1	23000	1.00	1.00
1	25	1	670000	5.00	2.00
2	23	2	345000	4.00	2.00
2	63	1	156000	3.00	2.00
1	41	2	65300	2.00	1.00
2	48	1	150000	3.00	1.00

Figure 31.29 Data as Copied from SPSS Data Editor into Word Document

Copying Text or Tables from SPSS Output Viewer

We will explain here the following three formats: (a) Picture, (b) Formatted Text (RTF), and (c) Unformatted Text. For clarity, we will also explain the steps involved in three stages: (a) selection, (b) copy, and (c) paste. Also, you can either copy multiple items or single items.

Stage-1: Select Items (Text/Tables/charts) from SPSS Output Window

Start the **SPSS** program. Open the data file (with extension .sav) using the Data Editor. Perform the statistical procedure to generate the output. As you have seen in the earlier Unit the output will be generated in the SPSS Output Viewer window.

If you have already generated the output and saved in a output file (with extension .spo) open the output file by selecting **File→Open→Output...** command on the menu bar of SPSS Data Editor.

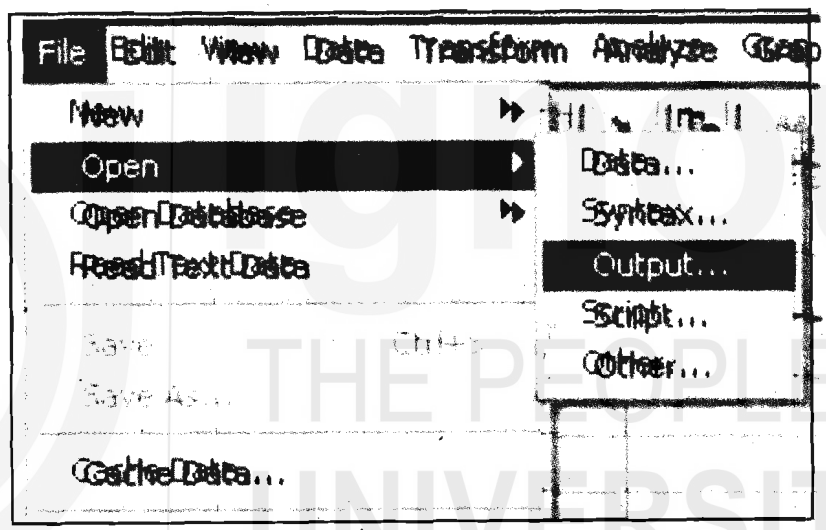


Figure 31.30 Selecting Items from Menu Bar of SPSS Window

In the Outline Pane of the Output Viewer window, select either **single** individual item (table/text/chart) or **multiple** items (tables/text/chart) you want to copy by clicking on the items. Now the Table(s)/text/ chart(s) is (are) ready for copying.

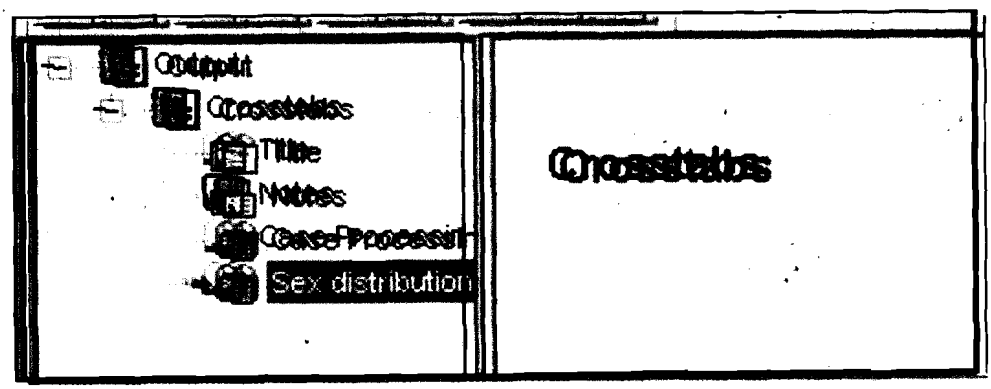


Figure 31.31 Selecting Single Individual Item from Menu Bar of SPSS Window

Stage-2: Copy Item(s) (Text/Table(s)/chart(s)) from SPSS Output Window:

Copying Single Item: For copying a single item, after selecting the text/table/chart to be copied, select **Edit→Copy** command from the menu bar of SPSS Output Window. The selected item is now copied to the Windows Clipboard.

Copying Multiple Items: For copying multiple items (text/tables/charts) use the **Edit→Copy Objects** command on the menu bar. The selected items are now copied to the Windows Clipboard.

Stage-3: Paste Item(s) (Text/Table(s)/Chart(s)) into Word Document

Start the Word program. Open the Word document where you are typing your report and want to copy the selected item(s). Select the page and paragraph. Position the insertion point by clicking the mouse.

a) Pasting Single Items

Text Item: If the item you are pasting is a **text item**, select **Edit→Paste** command on the menu bar. The text item is now copied from the Windows Clipboard to your Word document at the insertion point. You can edit the text item.

Table Item: If the item you are pasting is a **table item**, select **Edit→ Paste Special** command on the menu bar. The **Paste Special** dialog box appears on the screen. Now you have three options in the dialog box.

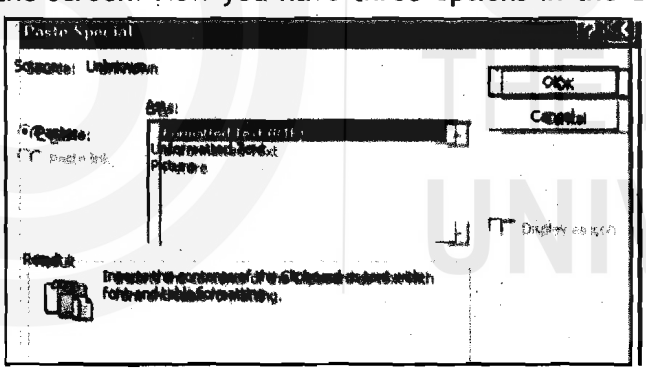


Figure 31.32 Paste Special for Pasting a Table Item

Table as Formatted Text (RTF): Select **Formatted Text (RTF)** under **As:** box in the dialog box. Click **OK** button. The table is now copied from the Windows Clipboard to your Word document at the insertion point. The advantage of copying the tables as formatted text is that you can edit the table or reformat the settings if needed in your Word document. However, you may have to do some setting if needed in the table to improve the table look.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Sex distribution of persons	30	1	2	1.53	.507
Marital status	30	1	3	1.80	.805
Valid N (listwise)	30				

Figure 31.33 Descriptive Statistics in Formatted Text

Table as Unformatted Text: Select **Unformatted Text** under **As:** box in the dialog box. Click **OK** button. The table is now copied from the Windows Clipboard to your Word document at the insertion point. You can edit the table if needed. However, you may have to adjust the tabs to set the columns to align properly.

Descriptive Statistics

	N	Minimum	Maximun	Mean	Std. Deviation
Sex distribution of persons	30	1	2	1.53	.507
Marital status	30	1	3	1.80	.805
Valid N (listwise)	30				

Figure 31.34 Descriptive Statistics in Unformatted Text

Table as Picture: Select Picture under A box in the dialog box. Click **OK** button. The table is now copied from the Windows Clipboard to your Word document at the insertion point. The table is copied as an independent graphic clip, so the text in the table can no longer be edited by you in the Word document. The layout, font size, style, and any box characters will automatically be preserved. The graphic can be resized and positioned on a page within Word document. However, information is lost when editing the graphic in Word. Therefore, if you want to change the titles or labels or other formatting of text/table, it will be better you do it in SPSS Output Viewer Window as we explained in section 32.3.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Sex distribution of persons	30	1	2	1.53	.507
Marital status	30	1	3	1.80	.805
Valid N (listwise)	30				

Figure 31.35 Descriptive Statistics as 'Picture

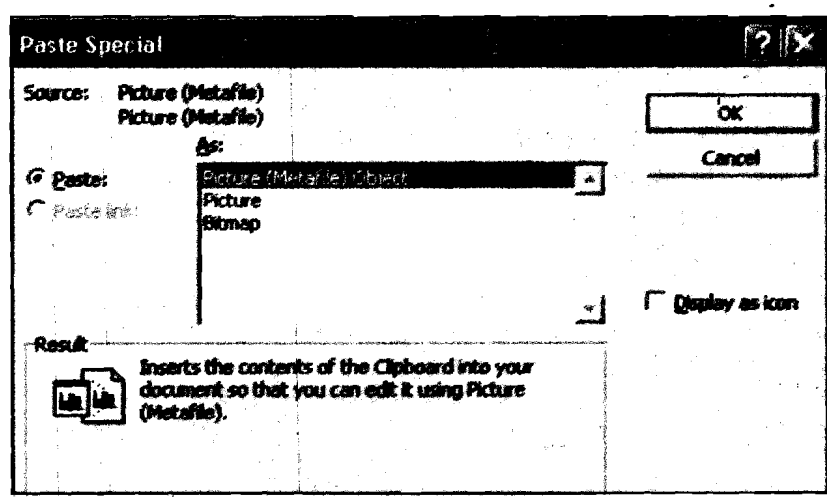


Figure 31.36 Paste Special to Paste a Chart Item

Chart Item: If the item you are pasting is a chart item, select **Edit→Paste Special** command on the menu bar. The **Paste Special** dialog box appears on the screen. Now you have three options in the dialog box. Picture (Metafile) Object, Picture, and Bitmap. Whatever the option you choose, you cannot do any editing in the Word document except resizing. Therefore, we explain only Pasting as picture in this Unit.

Chart as Picture: Select Picture under **As:** box in the dialog box. Click **OK** button. The chart is now copied from the Windows Clipboard to your Word document at the insertion point. The chart is copied as an independent graphic clip, so the text in the table can no longer be edited by you in the Word document. The layout, font size, style, and any box characters will automatically be preserved. The graphic can be resized and positioned on a page within Word document. However, information is lost when editing the graphic in Word. Therefore, if you want to change the titles or labels or other formatting of text/table, it will be better you do it in SPSS Output Viewer Window as we explained in section 32.2.

a) Pasting Multiple Items:

To paste multiple items, first select multiple items (as explained at stage-1) and then copy items (as explained at stage-2), select **Edit→Paste** command from the menu bar of Word window. The objects are now copied from the Windows Clipboard to your Word document at the insertion point.

The text items are copied as **Formatted Text** and therefore you can edit the text items. However, each table and/or chart item will be pasted as individual Objects (Picture). Each object can be resized and positioned on a page within Word document. However, information is lost when editing the graphic in Word. If you want to change the titles or labels or other formatting of table or chart, it will be better you do it in SPSS Output Viewer Window as we explained in section 32.2 and 32.3.

Reflection and Action 31.4

Section 31.5 has explained how to copy items generated by SPSS into your report that is in MS Word. Answer the following questions.

What are the three major stages in copying the SPSS output into your Word document?

Suppose you want to copy a chart from SPSS output window into the Word document. Write the steps involved in it.

31.6 Conclusion

Presentation of text, tables, and charts that you have generated using SPSS statistical procedures in your report is very important. This is because you can make your report more readable, analytical, and communicable to the reader/ audience. The graphical presentation of data is one of

the significant ways analysing the information in a more meaningful way. Using SPSS you can create a number of different types of charts. In this Unit we have introduced you to how to create and edit a simple pie chart and bar chart. Like your word processor program, most of the commands in SPSS are simple, interactive, and routine. By trying to create other charts you will be able to master the SPSS program.

Using the Output Viewer window, you can edit and improve the look of your tables. You can change the order of tables, insert new text, delete or add items, print output, and copy the output to your report document in MS Word. Use the Draft Viewer Window and change preset options to improve the table look as per your needs before you run a procedure. The Pivot Tables are more interactive. With pivot tables you can access the definitions of the statistical terms used in the tables. This will help you in interpreting the statistical results. You can also, reformat the tables by transposing the columns and rows, changing the order of rows or/and columns, show or hide cells, group or ungroup the row and column labels.

The section on copying the text/tables/charts from SPSS Output Viewer Window to your MS Word document will help you to copy results directly to your report without being typed again. This will save you a lot of time and eliminate the possibility of errors in typing your report.

Remember that there are many statistical procedures (from basic to advanced) available in SPSS. We did not cover all of them here as the objective in this course is only to introduce SPSS to the students.

Further Reading

Davis, J. 1984. Data into Text. IN R. F. Ellen (ed.) *Ethnographic Research: A Guide to General Conduct*. Academic Press: London, pp. 295-318 (especially sections 9.4 to 9.4.5 from page 308 to 314)

Unit 32

Tabulation and Graphic Presentation - Case Studies

Contents

32.1 Introduction
32.2 Structure for Presentation of Research Findings
32.3 Data Presentation: Editing, Coding and Transcribing
32.4 Case Studies
32.5 Qualitative Data Analysis and Presentation through Computer Software
32.6 Types of ICT used for Research
32.7 Conclusion



Learning Objectives

- The general structure for presentation of research findings
- Role of ICTs in presentation of research findings
- The application of ICT tools through case studies
- The various steps for report presentation.

32.1 Introduction

In Unit 31 we have discussed the salient features of SPSS in report writing, creating and editing graphs and analysed data by using univariate, bivariate and multivariate statistics. In Unit 32, we will discuss the structure of report presentation with the help of information and communication technology (ICT).

We will also introduce you to some cases of the presentation of research findings with the help of audio and software for qualitative data analysis and presentation. The cases will help you understand the process of applying the ICT tools. For this reason, this unit does not carry any boxes with supplementary information. It does not also require you to complete Reflection and Action exercises as long as you are trying to follow each case study to master the art of applying new tools for presenting your research findings.

32.2 Structure for Presentation of Research Findings

It is important to look carefully at the existing publications of the kind you are trying to write - style, length, and format - for your writing. The following structure shown on the next page will apprise you how to present your findings through computer.

Structure for a research report presentation

a) Abstract	b) Background of research	c) Review of related literature
d) Research methods	e) Findings	f) Analysis
g) Discussion	h) Conclusion	i) Summary and Suggestions
j) References	k) Glossary	l) Appendix

Figure 32.1 Structure for Presentation of Research Project Report

Before presenting your research findings, you need to check the following:

- ❖ Availability and suitability of the computer
- ❖ Availability of the electrical point
- ❖ Familiarity with software and hardware
- ❖ You can obtain technical support, if necessary
- ❖ Test the data-collection instrument
- ❖ To see, there is clear storage and retrieval system for data collection, etc.

Presentation of your research findings depends on your intended target group. For example, papers or articles for journals and magazines will be presented in different format than book chapters or final research report. Therefore, you have to decide yourself about the format for the presentation of your research findings. You may visit **http://www.sociology.org.uk/rrocr1.pdf** for the structure of research report on your subject area.

32.3 Data Presentation: Editing, Coding and Transcribing

The processes of editing, coding and transcribing are extremely important for the presentation of accurate research findings. If the study is conducted through primary base data (i.e., through questionnaire), the following steps are very important:

- ❖ Responses should be scrutinised for completeness and for errors.
- ❖ Response validation is obtained by recontacting individuals whose answers appear inconsistent or unusual.
- ❖ Open-ended questions should be properly classified or scored, while responses to both qualitative and quantitative questions are coded for data entry.

For a detailed treatment of these aspects, see the units in Block 6 on Survey Research.

Editing primary data© is a fairly complex task. In fact, it requires great skill and experience, while editing. The data should be complete, consistent, accurate and homogenous. Quite a few steps have been presented below for presenting primary data.

a) **Complete data:** You should see that the answer to each and every question has been given. If a few questions remain unanswered, then you should mark them as 'Not reported' (NR).

b) **Consistent data:** You should see that the answers to questions are not contradictory. If there are mutually contradictory answers, you should try to obtain the correct answers either by referring back the questionnaire or by contracting the respondent.

c) **Accurate data:** If the data is inaccurate, it can easily be corrected. But, in some case, it is very difficult to correct it, for example, income and age group informed by the respondents. In this case, we have to accept whichever the respondent gives us.

d) **Homogenous data:** You should see that information supplied by the respondents is homogenous. If it is not, it cannot be comparable.

Now, after making you aware of how data is edited and collected, in the forthcoming sections we are presenting some cases and illustration of the presentation of research findings. In some cases, it has been presented with the help of the computer along with Internet and digital media.

32.4 Case Studies

Here are four case studies for you to carefully study and then taking them as examples, you may also attempt to present your research findings in the same manner.

Case 1: Questionnaire Coding

The following figure (32.1) represents the responses to the questionnaire* which was designed to conduct a study on "the socio-economic profile of rural people of Haryana". The questionnaire code identification number is 0412. To facilitate data entry, each selected individual's four-digit number is presented. The first number (04) indicates it is the district code i.e. Kurukshetra. The next two digits, i.e., 1 and 2, indicate Tehsil and Village codes. The digits within brackets indicate along with the questionnaire the coding of the questions. This questionnaire is designed for you to give a broad idea of coding. This is only for part of the questionnaire.

QUESTIONNAIRE

Q. Code	0	4	1	2

A Study of Socio-economic profile of rural people of Haryana

Q.1Family members:	(a) 3-4 (1)	(b) 5-6 (2)	(c) 7-8 (3)
	(d) 9-10 (4)	(e) >10 (5).	
Q.2 Age profile:	(a) below 20(1)	(b) 20-25 (2)	(c) 26-30 (3)
	(d) 31-35 (4),	(e) 36-40 (5)	(f) 41-50 (6) (g)> 50 (7)
Q.3 Gender	(a) Male (1)	(b) Female (2)	

Figure 32.2 Questionnaire Coding

After coding this data, you can present it in table (see Table 33.1) and graphic format. You can put this data into spreadsheet and by pressing a few buttons (see Figure 32.3), it is possible to produce what looks like the most wondrous variety of charts and graphs. For example, with excel column, bar, line, pie and others are all possible to make and use in the report presentation.

Q. Code	Q1.	Q2	Q3
0412	2	4	1
0413	3	3	0
0414	4	3	2
0415	1	3	1
0416	1	1	2
0417	3	3	1
0418	4	3	1
0420	5	0	2
0421	4	3	0
0422	3	3	2
0423	2	3	1
.	1	4	2
.	4	4	1
.	3	3	1
.	1	4	1
.	1	1	2
.	.	.	.
n=(230)	230	230	230

Figure 32.3 Coding of Questionnaire Data

Let us now look at the coded data in tabular form. See Table 32.1 on Gender Distribution of the Respondents.

Table 32.1 : Gender Distribution of the Respondents

Gender	Frequency	Percent
0	4	1.73
1	82	35.49
2	144	64.01
Total	230	100.00

You can now convert coding into words and your final table (see Table 32.2) would look as below.

Table 32.2 : Gender Distribution of the Respondents

Gender	Frequency	Percent
No Reply	4	1.73
Male	82	35.49
Female	144	64.01
Total	230	100.00

Similarly, you can present the above findings into pie diagram as presented in the following figure (Figure 32.4).

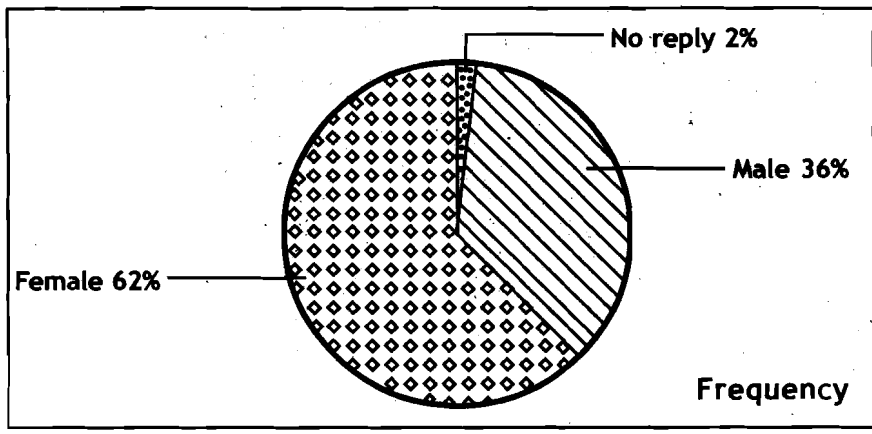


Figure 32.4 Gender distribution of the respondents.

Data from the Windows can be transferred to the report on your word processor through clipboard. If you are transferring the data from Excel to Word, the data will be imported already formatted as a basic Word table, which you can then visually increase or decrease its size. Graphs from Excel can also be transferred to your report through clipboard, using cut and paste.

Case II: Data collection and presentation through Audio

We are presenting here our own experience on data collection and presentation through audio. We interviewed sixty students for our research study on drop out. Respondents' phone numbers were located and they were contacted to take part in a face-to-face recorded interview at their respective home. On confirmation, we visited their homes as per their convenience, and recorded their responses to a structured interview schedule.

We recorded thorough tape recorder and translated into about fifty pages. One interview was about one page of transcription. We were faced with an enormous pile of interview transcriptions each of which covered the issue of any interview schedule, but in no particular order.

Once data transcribed, we found that we rarely returned to the tapes. Hesitation, coughing and personal and irrelevant discussion were indicated in the original transcriptions. Although these were not used in the final presentation of findings, we listened to the tape again, it sounded different. For a micro study (or dissertation for master programme), it is worth thinking carefully about whether it is necessary to complete the full transcriptions of taped material or not. In fact, transcriptions could be reserved for sections, which are particularity relevant to the study. The printed version and recorded version were matched for accuracy, consistency and prioritization. The recorded data was further categorized into four areas and presented in Table 32.3.

Table 32.3: Factors for dropout

Situational factor	Dispositional factor
❖ Office work pressure (5) ❖ Family responsibility (3) ❖ Timing for practical classes were not suitable (2) ❖ Got married (3) ❖ Exam date clashed (9) ❖ Not doing well during exams (1) ❖ Admission in other programme (4) ❖ Husband got transferred (1) ❖ Due to extended family (1)	❖ 2nd preference to CIC programme (1) ❖ Felt inferiority complex during classes when junior was taking classes (1) ❖ Not aware about the exam date sheet (1)
Institutional factor	**Course related factor**
❖ Not received hall ticket (1) ❖ Study centre changed (5) ❖ No information from regional centre for classes (4)	❖ Course was easy (1) ❖ Course was difficult (1) ❖ Language was difficult (1)

Source: Panda et al. (2004) *Study on Programme Completion, and Learner Persistence and Dropout in Distance Education*, IGNOU, New Delhi

Case III: Online case study

Research through virtual mode can be conducted through one to one e-mail or by hosting the questionnaire on a web page. This method provides quick feedback and access to geographically dispersed respondents. In addition, the online interviews and e-mail messages provided automatic text transcripts of all the interviews and communications. You can see from the following illustrations how research data is presented with virtual or digital mode.

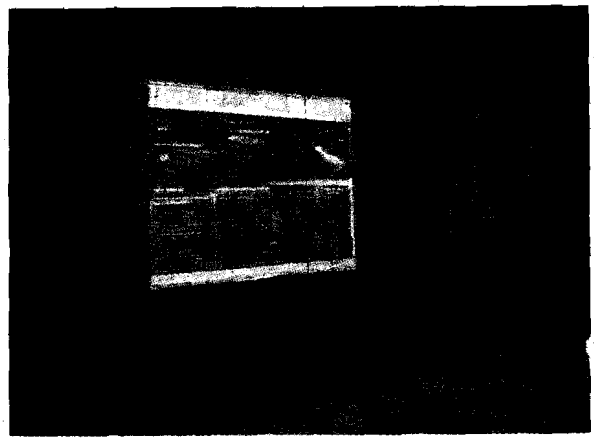


Figure 32.5: Presentation of Research Findings through Virtual Mode



Figure 32.6 Researcher editing data through the internet.

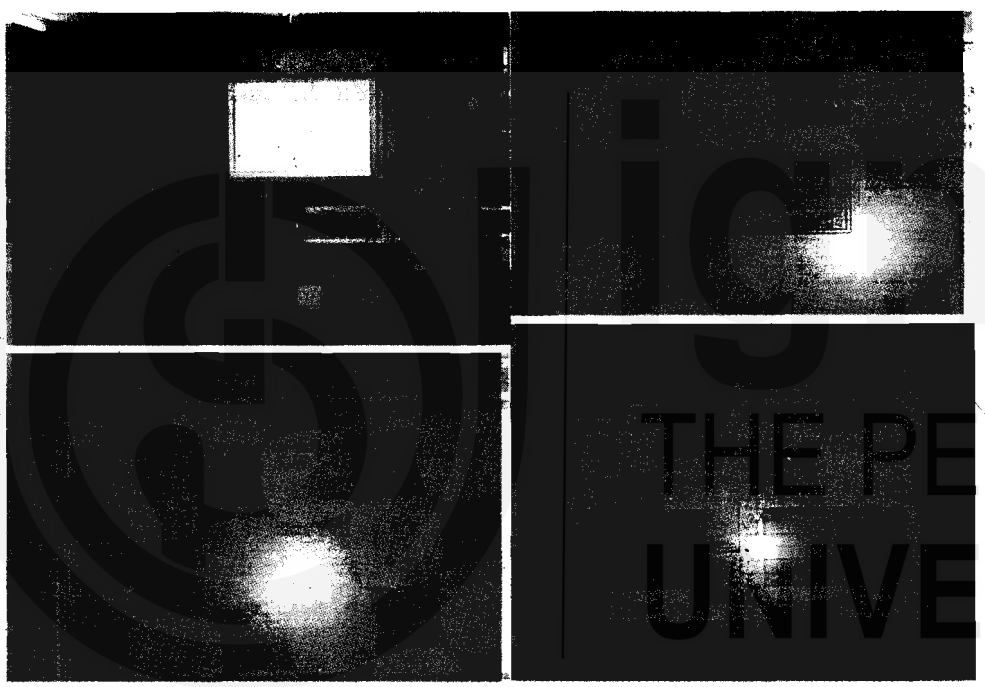


Figure 32.7 Presentation of research findings through multimedia.

In addition to the above mode or research presentation, you can also use self-paced learning and self-assessment using software/CD-Rom.

Case IV: Presentation of Research Findings in CD-Rom

We have presented a case study of data analysis and presentation in CD Rom. We are giving you a CD with this unit in which you can see how the actual data is coded, analysed and presented in the CD. The researcher conducted a study on "Pre-Testing Self-Instructional Material". The researcher collected feedbacks from ten respondents through face to face, analysed and presented his data research findings.

You can also present your experiment data or research findings by using power point and interactive whiteboard. You can collect and disseminate research data by using the devices of the web. But you should have Internet and research skills for the your presentation of research findings through the Internet.

32.5 Qualitative Data Analysis and Presentation through Computer Software

In addition to Excel, SPSS and SAS, other software packages are also available which are being used for qualitative data analysis and presentation, for example computer-aided methods for qualitative data analysis (CAQDAS). CAQDAS have two programmes like NUD-IST (non-numerical, unstructured data indexing-searching theorizing) and innovative and imaginative computer software application (ATLAS.ti). The purpose of these programmes is to show that even at micro research study, where the number of interview data is limited, these programmes may be used. You can download this software free from http:// www.scolari.co.uk

NUD-IST: This programme has more complex features, which can be learned or ignored as the user develops familiarity with the software. Textual data are imported into NUD-IST as separate documents. These data can be coded which makes sense of the data. All the data under this category (or code) can be retrieved and then turned into a separate document. For detail you can study an introductory tutorial of this software.

WinMax: Some packages allow direct entry into the system while others will operate only with imported files. Some allow external files incorporating video and other material to be indexed. This makes the programme more complex. A much more user friendly programme is WinMax. It is easy to learn. It can be used for straightforward code-and-retrieve operations on text files as well as for the more difficult approaches of grounded theory and case oriented quantification. It also help you to work with qualitative and quantitative data simultaneously.

ATLAS.ti: It is an innovative and imaginative computer software application that allows you to study and analyse text. The text can be interview transcripts. You have to add additional coding so that it is easy to categorize or code short or long text segments for comparative study. For details, you may visit www.atlasti.de/demo.shtml, You can also present your findings of the interview data which have been recorded on tape. You can analyse the audio transcripts with this software.

CAQDAS programme makes you analyse a vast amount of data to be handled, while coding and retrieving can now be accomplished with remarkable speed and efficiency.

32.6 Types of ICT used for Research

In the previous units of Block 8, you have studied the application of ICT in social science research. In the present section, you will study the different types of ICT being used in research activities. These are:

- Online surveys
- Open ended or structured text-based interviews conducted via email or computer-mediated conferencing
- Focus groups using real time Net-based video, audio conferencing or asynchronous computer conferencing
- Net-based telephone interviews
- Analysis of text transcripts* of learning or social activities
- Analysis of social behavior in virtual reality environments
- Online assessment and/or evaluation of performance or knowledge, web cams.

A researcher can submit his ideas through different types of ICT and develop his ideas to become full resources for use in research activities. ICT also helps the researcher to join a discussion from where he or she can exchange views and join in collaborative research activities. For example **DEOS-L@LISTS.PSU.EDU.** You can present your research findings in a suitable medium of ICT in which audience can access a full text on the Internet in a choice of formats.

There is no ready-made programme/software available for the analysis and presentation of your research findings. There are various considerations to bear in mind when matching the kind of research study and database to the most suitable software.

The selection of the right programme depends upon the size of the database. If you have interviewed just four to five individuals and transcribed the text, CAQDAS may not be useful. This package handles large quantities of data in different files much faster than you could do it by your own hand. You should have a minimum of fifteen cases to use this software. If data is obtained from several sources like documents, observation, questionnaires and audio and video, some software can handle the diversity of data types and others not. In some packages it is easy to revise the text database, but in others revising takes much time. For example, a file imported into CAQDAS cannot be changed. It would be necessary to make the changes in Word and then re-import the file.

Therefore, the selection of the software depends upon the size of the database, nature of data (i.e. structured or unstructured), technical knowledge of the researcher, time and cost.

Similarity, the selection of the ICT for the presentation of your research findings depends upon these factors and the availability of the particular technology to the audience.

Adobe Reader software can help you view, print, and share your research document more securely by using a variety of platforms and devices. For details you may visit **http://www.adobe.com.** There are various Web

pages available which provide free space to share your research findings. See, for example, **www.yahoo.com.**

32.7 Conclusion

The foregoing details apprise you of the cases of presentation of your research findings with different types of ICT sources. This discussion and information was based on the assumption that you have a basic awareness of the writing skill and statistical package. We have focused in this unit on the presentation and dissemination of your research findings through ICT. How to code, edit and present research data has been presented in this unit. In addition to this, how data is collected through tape recorder and transcripted into text are also presented.

Further Reading

Gentleman, Jane F. 2004. *The National Health Interview Survey*. In National Health Interview Survey Presentations of the 2004 Listing of Selected Presentations at http://www.cdc.gov/nchs/howto/events/duc2004/ducpresentations 2004.htm

Unit 33

Guidelines to Research Project Assignment

Contents

33.1 Introduction
33.2 Overview of Research Methodologies and Methods (MSO 002)
33.3 Research Project Objectives
33.4 Preparation for Research Project
33.5 Stages of the Research Project
33.6 Supervision During the Research Project
33.7 Submission of Research Project
33.8 Methodology for Evaluating Research Project
33.9 Conclusion



Learning Objectives

It is expected that after reading Unit 33, you would be able to get the following guidance to successfully complete one of the assignments of MSO 002.

- Obtain an overview of the course material of MSO 002.
- Understand the objectives of undertaking a research project.
- Begin preparations for planning and carrying out the research project.
- Work out the various stages of the research.
- Seeking help to overcome problems, if any, during the research. Be informed about the submission and evaluation methodology of the research project.

33.1 Introduction

I hope that you have read in Book 1 the Introduction to MSO 002, where we mentioned on page xii that the first tutor marked assignment of MSO 002 would comprise a 5,000-word report on a small fieldwork-based research project on one of the subjects listed in the assignment booklet of MSO 002. Alternatively, you may choose your own subject of research. Unit 33 aims to provide you some guidelines to research project assignment. In addition, you may consult your academic counsellor at the Study Centre assigned to you.

33.2 Overview of Research Methodologies and Methods (MSO 002)

It is useful to repeat what you have already read in Book 1 about organisation of the course material of MSO 002. This will provide a bird's eye view of what you have already read in MSO 002 and it is expected

that you will now be able to put into practice what you have learnt in the pages of MSO 002 course material. As explained earlier, the objective of MSO 002 is to train its learners to become good researchers and investigators of the social reality around us.

All attempts to make social research scientifically valid involve clarity of perspectives or orientations that guide one's quest for collection of facts and all such clarity is worthwhile only when it accompanies scientific methods and techniques of collecting and analysing/ interpreting facts. Then comes the documentation and presentation of one's analysis in technical summaries and reports or research publications. Following this very sequence, the second course of M.A. Sociology of IGNOU, (MSO 002) has been divided into three books.

❖ **Book 1, *Research Methodologies***: Book 1 traces the philosophical roots of current methodologies in social research and sensitises its learners to take a critical look at them for obtaining conceptual clarity. It has three blocks, with eleven units.

❖ **Book 2, Quantitative and Survey Methods**: Book 2 deals with the study of a) research methods as a way to understand social phenomena and b) statistical and survey methods of gathering, organizing and analysing the data collected.

❖ **Book 3, Qualitative Methods and Presentation of Research Findings**: Book 3 is concerned with qualitative methods of research and writing up the findings of the research. In addition, as a novel input to a research methods course, the book covers the applications of the tools that information technology has made available to social science researchers for analysing and presenting their research data.

Having completed your reading of the units in the three books of MSO 002, you are now fully sensitised to the need of critically looking at different perspectives, methods and techniques of social research. You have reached the stage when you can receive an exposure, however limited, to fieldwork that would inculcate in you the spirit of inquiry through real life experience of sociological research.

33.3 Research Project Objectives

The objective of the Research Project is to provide you with an opportunity to utilise the knowledge and apply the skills gained from the three books of MSO 002 so that you may be able to use social science research methodologies and methods in the world of work and for pursuing research degrees like M. Phil. and Ph. D. in the social sciences. You would need to read the contents of the three books in detail from the point of view of the subject of your research project. You would study in depth the relevant theoretical foundations, appropriate methods and techniques for carrying out field research in order to generate your own data. In

the process, you may come across constraints at any stage of your research project. You would need to overcome those constraints and present the results of your research in about five thousand words. This discussion would take us to the next section of this unit, that is, preparing for the research project.

33.4 Preparation for Research Project

Here we give, in brief, the main stages of the research project and in the next section you will read their details.

❖ **The planning stage**

This stage begins as soon as you enrol for MSO 002. The effort you put into your research project would be optimum if you work systematically. Some of the steps that you need to follow are listed in the next section for your reference. Just to start with a few of them are

a) Start a diary or a logbook to systematically record the process and activities you undertake throughout the research project.

b) Identify and determine the theme for your research project within six to ten weeks of receiving your learning material of MSO 002 by browsing through each of the three books.

c) Start making entries in your diary/ logbook[◎]. This will help you in later stages of your research.

d) Consult the academic counsellor and discuss with her/ him the feasibility of carrying out your research.

e) Give yourself some degree of flexibility for changing your research topic. This should of course be done keeping in mind the time and resources available at your end.

f) Visit the libraries close to the place of your residence for consulting the books in the reading list suggested by the social scientists you had spoken to.

The above steps would be enough to get going with your research project. You would now be ready for the second stage of your research.

❖ **Working on the Research Project**

a) Getting an overview of your research project through a review of secondary data[◎]

b) Contextualising general observations with the objectives of your research project

c) Description of case study projects, if any

d) Identifying the key actors/ informants/ participants and their social networks

e) Selecting method(s) for data gathering and analysis

f) Data analysis

g) Drawing conclusions

After working on your research project will come the stage of putting it down on paper or let us say that this is the stage of writing up your material.

❖ **Research Project Report**

a) Writing or typing the report

b) Selecting the format of the report

c) Organising accordingly the presentation of the data and its analysis.

Going through the above three stage of the research project will see you build a capacity for conducting a social research. We will now discuss in detail all stages of research including the above three mentioned in this section.

33.5 Stages of the Research Project

The discussion in this section is to give you guidelines so that you are able to carry out the research in a systematic and confident manner without any apprehension and fear of failure. Let us begin with the first stage.

❖ **Stage 1: Planning stage**

At the planning stage, you will need to accomplish the following four tasks in a careful manner. This is so because good planning is likely to provide you a clear and concise understanding of what you are going to do.

i) Work out a timetable for completing the reading of the three books of MSO 002. Along with this task, plan your timetable for carrying out all your assignments and make a conscious effort to maintain your work progress as planned. Make sure to assign some time for research project in your timetable.

ii) Exploring options for individual research project would entail the following steps.

a) You would need to explore options for an appropriate topic from the list in the assignment booklet. Because of the time constraints and demands of your other than study responsibilities, like a job, family obligations etc, it would be most appropriate if you select a research topic that is contextualised in the area of your work or residence. In this matter you need to first decide your area of interest, for example, environment, ecology, natural resources, education, minority communities, socially marginalised groups, girl child, working women, family, marriage and kinship etc. (the list can be a really long one).

b) After selecting the theme or an area of your interest, you can proceed to determine the nature and location of your research. As per your convenience you need to conduct field research in a manner that does not make a heavy demand on your time, energy and resources as you have many other tasks to complete during the course of your study at IGNOU.

c) The next task is to determine the extent, quality and type of secondary data available, as there has to be ample background information on your research topic to give you an understanding of the social processes involved in taking the situation to its current state. This would require you to collect secondary data from various sources. You only need adequate data to get a clear picture of the current status of the social situation so that you can contextualise your own research project.

iii) Making an arrangement with the academic counsellor at your Study Centre to seek help and advice when you feel the need for a discussion on your research or when you find that you are facing some difficulty in carrying out your research.

iv) Preparing a research proposal. This needs to be a brief statement with the following heads.

a) Title of Research Project

b) Purpose and Objectives of Research

c) Research Methods

d) Time Frame

You can discuss the research proposal with your academic counsellor and consider it once more from the point of view of the time and resources available to you for completing the research. Make modifications, if any, at this stage and once you have begun working on it make efforts to stick to your plan. If you keep making changes again and again, you will waste time, energy and resources without achieving much. The evaluation of this assignment will focus on the efforts made by you rather than on achieving a superbly finished product. That you may do after completing your master's programme in sociology.

❖ **Stage 2: Actual Carrying out of Research**

The details of the following depend mostly on the type of research you undertake. Here are the five steps you can take in order to execute your research plans.

i) Determine data requirements

The data you will require will relate to

a) Relevant Acts and policies, if any, existing about the topic of your research

b) Maps and other visual materials

c) Census enumeration of the general/ particular area of research

d) Socio-economic survey of sample population to prepare a profile of the people

e) Socio-cultural, economic and political issues identified through participatory methods

f) Institutional structure, procedures and processes

g) Case-study or extended method report to reflect social change and/ or conflict

ii) Prepare for data collection

You need to find out if there is existing data available on the topic of your research and whether it would be suitable for your research project. It is necessary to determine and record who collected the data, when it was collected and how reliable the information is. You need to remember to note the following details about every source of information you refer to

a) Full title of the document, book, journal, map, etc

b) Author, department, agency that has prepared the document, book, journal, map etc

c) Date/ year when the document, map, etc , was prepared

d) Date/ year when the document, book, journal, map was published

e) Edition, place of publication and publisher for books and articles

After this initial exercise, determine the specific requirements for additional data that may pertain to both primary and secondary data for achieving the objectives of your research.

iii) Identify secondary data sources

Sources can range from newspapers, books, and articles to specialists in the area of your research in public life, administrative bureaucracy, and the Internet search options.

iv) Data collection and methods

Before you begin data collection, review the requirements you have identified for primary data and discus with the academic counsellor about the need to collect primary data. Clearly define what you need and for what objectives. Then determine the most appropriate data collection method. It is necessary to go through the following steps in order to ensure that the data analysis presented in your research project report is reliable. For this purpose you need to explain and justify

a) The design of the survey questionnaire form or the appropriateness and selection of participatory technique or tools used for specific data collection

b) Method of field work including how persons helping in your research were identified and how they were briefed/ trained to help you with the survey work

c) Process followed for field supervision and/ or recording, verification and quality control

d) How data was processed, including use of any computer software packages and how it was analysed

❖ **Stage 3: Research Project Report**

Once you have collected data and analysed them, you will need to prepare the report by systematically reporting your work as per the following steps.

i) Report components

The research project report has the following two components.

a) The logbook or diary that you maintained as an aid for actual preparation of the report (this is only as an evidence of your systematic pursuit of your research)

b) The written report and the documentation in a medium of your choice, including written text, video film, photographs etc

ii) Report format and organisation

The format of report and documentation needs to follow the structure given below.

a) Cover page: The first page of the report is to indicate the titles of your research project, name and location of the place where fieldwork was carried out and your name with your enrolment number.

b) The second page is to carry a summary of your research project in less than 300 words.

c) The third page is to give acknowledgements

d) The fourth page is to list alphabetically a list of abbreviations

e) The fifth page is to provide the table of contents, including list of tables, maps and figures/ illustrations

f) From the sixth page onward, you need to give first an introduction to your research project, its approach, including key issues that determined selection of the research project

g) Next in order of presentation will be the description of techniques or methods adopted for data collection and analysis

h) Then would come stating findings from your research

i) After stating the findings, you need to put down the conclusions drawn.

j) In the end, you need to give a list of references in the manner you find in the three books of MSO 002. This means that the list should be arranged alphabetically by the author's surname followed by initials or forename(s) and the year of publication of the particular

book/ article/ other document, full title of the document, which has to be italicised. This should be followed by the name of the publishing firm and place of publication. You need to take care to mention the sources of data or quotations, whether from books, journals, other published and unpublished documents and websites referred to in the research project report. Please note that this is an important aspect of your research project assignment and take care to pay attention to this in order to obtain better grades.

k) Please keep in mind that when abbreviating names of organisations, terms etc in the written text, provide the name in full form when you mention it for the first time with the abbreviated form in brackets. Subsequently, use the abbreviated form. All abbreviations in the text should be listed on the fourth page of your report along with their full forms stated.

iii) Language and editing

The research project report is to be written in the language that has been opted for by you for completing MSO 002. All the report material like photographs, films, etc, should have the same language scripts. It is a very good idea to write the first draft and then edit it both in terms of its content and language. You may also like to give it to your co-learners of MSO 002 for their comments and suggestions for modifications and you may extend a similar gesture to them. This will help you to refine the presentation of your report.

33.6 Supervision During the Research Project

You will be basically working on your research project on your own but you can always discuss your problems with the academic counsellor at your study centre as well as with your co-learners. There is no formal arrangement for supervision of this practical exercise of MSO 002. You are required mainly to consult the course material of MSO 002 and carry out your research at a modest level so that this exercise gives you a taste of what it is like to do research. You need not make it a too time-consuming and lengthy exercise.

33.7 Submission of Research Project

The written report should be submitted on A4 paper size format, typed in double spacing in a bound volume. The length of the report should be five thousand words, excluding appendices, other documents.

The report should be submitted at the Study Centre in the same manner as you would submit other assignments. Do not forget to retain a copy of the report with you. Obtain an acknowledgement receipt after submission of the report at the Study Centre.

If you allow your research work report to be copied by your co-learners for submission as their reports, you and those who submit such copies would be disqualified and you and others will have to work all over again and produce another piece of work.

33.8 Methodology for Evaluating Research Project

Evaluation methodology of research project report is as follows.

The evaluation will be done at the Study Centre by the same evaluator who would evaluate other assignments of MSO 002. The assignment of the research project will carry a weight similar to assignment 1 of other courses of Master's Programme in sociology. The per cent of total marks of this assignment will be distributed as given in Box 31.1.

Box 31.1 Distribution of total marks of Assignment 1 of the Research Project

i) Diary or logbook documenting the process of fieldwork-based research 20 per cent

ii) Clarity of topic, language, coherence, style etc 20 per cent

iii) Clarity of objectives and methodology as well as methods 20 per cent

iv) Understanding and practice of fieldwork-based research 20 per cent

v) Extent to which the learning objectives of the each of the three books of MSO 002 are reflected in the body of the research project report 20 per cent.

33.9 Conclusion

Unit 33 has provided you guidelines to undertake a mini research project as one of the assignments of MSO 002. The inputs in this unit are considered to be fairly adequate for the need of carrying out a fieldwork-based research of modest proportions.

In case, you face problems in completing this assignment, you are recommended to consult your academic counsellor and/ or the co-ordinator of MSO 002 at headquarters in IGNOU, Maidan Garhi, New Delhi.

I wish you best of luck for completing the assignment and also the full course of MSO 002.

Further Reading

Read once more your own research project and try to improve it in terms of style, language and substantive content.

Glossary

(Explanations of glossary words have been prepared with the help of information available on the Internet and in other sources.)

Animations: The word refers to the act, process, or result of imparting life, interest, spirit,motion, or activity. In the context of the MSO 002 text, it refers to the art or process of preparing animated cartoons.

Anonymisation: It refers to the process of giving pseudonyms to persons/ places in order to hide their identity. This is a regular practice among social scientists who often work on sensitive topics and disclosing the identities of real persons/ places may in some cases give rise to problems of moral and ethical nature and in such circumstances taking recourse to anonymisation may be necessary.

Bar Charts: Bar Charts, like pie charts, are useful for comparing classes or groups of data. In bar charts, a class or group can have a single category of data, or they can be broken down further into multiple categories for greater depth of analysis. Bar charts are familiar to most people, and interpreting them depends largely on what information you are looking for. You might look for:

- the tallest bar.
- the shortest bar.
- growth or shrinking of the bars over time.
- one bar relative to another.
- change in bars representing the same category in different
- classes

Watch out for inconsistent scales. If you're comparing two or more charts, be sure they use the same scale. If they don't have the same scale, be aware of the differences and how they might trick your eye.

Be sure that all your classes are equal. For example, don't mix weeks and months, years and half-years, or newly invented categories with ones that have trails of data behind them.

Be sure that the interval between classes is consistent. For example, if you want to compare current data that goes month by month to older data that is only available for every six months, either use current data for every six months or show the older data with blanks for the missing months.

For each bar in the bar chart, the following statistics are useful:

Mean	the average height of all the bars.
Maximum	the maximum value (tallest bar) in the series.
Minimum	the minimum value (shortest bar) in the series.
Sample Size	the number of values (bars) in the series.
Range	the maximum value minus the minimum value.
Standard Deviation	Indicates how widely data is spread around the mean.

Bivariate: The term refers to the fact of having two variables, for example bivariate binomial distribution.

Boolean: The term refers to a logical combinatorial system treating variables, such as propositions and computer logic elements, through the operators AND, OR, NOT, and

XOR, a browser that supports Boolean searches. It relates to a data type or variable in a programming language that can have one of two values, true or false.

The term is named so after George BOOLE.

Browser or Web browser: It is the program that serves as your front end to the Web on the Internet. In order to view a site, you type its address (URL) into the browser's Location field; for example, www.computerlanguage.com, and the home page of that site is downloaded to you. The home page is an index to other pages on that site that you can jump to by clicking an underlined hyperlink or an icon. Links on that site may take you to other related sites.

Browsers have a Bookmark or Favorites feature that lets you store references to your favorite sites. Instead of having to type in the URL to visit the site again, you select the bookmark. It Started with Mosaic. The Mosaic browser put the Web on the map in 1993, but by the mid 1990s, Netscape Navigator (commonly called "Netscape") had 80% of the market. Vying for top spot, Netscape and Microsoft's Internet Explorer (IE) constantly added new features and functions that fragmented Web sites into competing camps. Today, IE, which is included with every Windows PC, has approximately 90% of the market. Netscape is still popular among devotees, and it wound up spawning Mozilla and Firefox, the latter gaining a lot of attention when released in 2004. Opera also has a nice following, and Safari is the browser for Mac OS X.

When a site says "best viewed by Netscape" or "best viewed by Internet Explorer," it means that the pages were programmed for that particular browser. Using the other browser will ignore some of the page's visual features until a subsequent release supports them. See Mosaic, Opera, Mozilla, Firefox, Safari, hyperlink, World Wide Web, HTML and microbrowser.

Chi-square test: Chi-square test is a test that uses the chi-square statistic to test the fit between a theoretical frequency distribution and a frequency distribution of observed data for which each observation may fall into one of several classes.

"Clickability": Clickability works with organizations online who want to generate revenue, reduce costs, and strengthen relationships with their audience. Clickability provides solutions and tools for enhancing user interactivity, managing content, and improving navigation.

Code: As a noun the word refers to the stuff that software writers write, either in source form or after translation by a compiler or assembler. Often used in opposition to "data", which is the stuff that code operates on. Among hackers this is a mass noun, as in "How much code does it take to do a bubble sort?", or "The code is loaded at the high end of RAM." Among scientific programmers it is sometimes a count noun equivalent to "program"; thus they may speak of "codes" in the plural. Anyone referring to software as "the software codes" is probably a newbie or a suit.

In the sense of writing a code, the word always refers to source code rather than compiled. "I coded an Emacs clone in two hours!" This verb is a bit of a cultural marker associated with the Unix and minicomputer traditions (and lately Linux); people within that culture prefer the verb 'code' to the verb 'program' whereas outside it the reverse is normally true.

In communications, a code is a rule for converting a piece of information (for example, a letter, word, or phrase) into another form or representation, not necessarily of the same sort.

In the history of cryptography, codes were once common for ensuring the confidentiality of communications, although ciphers are now used instead.

Codes in communication are used for brevity. Code can be used for brevity. When telegraph messages were the state of the art in rapid long distance communication,

elaborate commercial codes which encoded complete phrases into single words (commonly five-letter groups) were developed, so that telegraphers became conversant with such "words" as BYOXO ("Are you trying to weasel out of our deal?"), LIOUY ("Why do you not answer my question?"), BMULD ("You're a skunk!"), or AYYLU ("Not clearly coded, repeat more clearly."). Code words were chosen for various reasons: length, pronounceability, etc. Meanings were chosen to fit perceived needs: commercial negotiations, military terms for military codes, diplomatic terms for diplomatic codes, any and all of the preceding for espionage codes. Codebooks and codebook publishers proliferated, including one run as a front for the American Black Chamber run by Herbert Yardley between WWI and WWII. The purpose of most of these codes was to save on cable costs. The use of data coding for data compression predates the computer era; an early example is the telegraph Morse code where more frequently-used characters have a short representation. Techniques such as Huffman coding are now used by computer-based algorithms to compress large data files into a more compact form for storage or transmission.

Coding: Coding means to systematise and arrange (laws and regulations) into a code or to convert (a message, for example) into code. In Computer Science coding refers to write or revise a computer program. In communications and information processing, encoding is the process by which a source (object) performs this conversion of information into data, which is then sent to a receiver (observer), such as a data processing system. Decoding is the reverse process of converting data, which has been sent by a source, into information understandable by a receiver.It is an implementation of that rule (or algorithm) for coding and decoding, for example MP3, which may be a hardware implementation or a software implementation, and which may include compression.

One reason for coding is to enable communication in places where ordinary spoken or written language is difficult or impossible. For example, a cable code replaces words (e.g., ship or invoice) into shorter words, allowing the same information to be sent with fewer characters, more quickly, and most important, less expensively. Another example is the use of semaphore flags, where the configuration of flags held by a signaller or the arms of a semaphore tower encodes parts of the message, typically individual letters and numbers. Another person standing a great distance away can interpret the flags and reproduce the words sent.

Consistency: It refers to condition of adhering together or firmness of material substance. In the context of units of MSO 002, the word refers to ability to be asserted together without contradiction or agreement or harmony of parts or features to one another or a whole.

Content analysis: Content analysis (also called: textual analysis) is a standard methodology in the social sciences on the subject of communication content. Harold Lasswell formulated the core questions of content analysis: "Who says what, to whom, why, to what extent and with what effect?". Ole Holsti (1969: 14)) offers a broad definition of content analysis as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages".

The method of content analysis enables the researcher to include large amounts of textual information and identify systematically its properties, e.g. the frequencies of most used keywords (KWIC = Keyword In Context) by detecting the more important structures of its communication content. Yet such amounts of textual information must be categorised according to a certain theoretical framework, which will inform the data analysis, providing at the end a meaningful reading of content under scrutiny. David Robertson (1976: 73-75) for example created a coding frame for a comparison of modes of party competition between British and American Parties. It was developed further in 1979 by the Manifesto Research Group aiming at a comparative content-analytic approach on the policy positions of political parties. This classification scheme

was also used to accomplish a comparative analysis between the 1989 and 1994 Brazilian party boadcasts and manifestos by F. Carvalho (2000).

The creation of coding frames is intrinsically related to a creative approach to variables that exert an influence over textual content. In political analysis, these variables could be political scandals, the impact of public opinion polls, sudden events in external politics, inflation etc. Mimetic Convergence, created by F. Carvalho for the comparative analysis of electoral proclamations on free-to-air television is an example of creative articulation of variables in content analysis. The methodology describes the construction of party identities during long-term party competitions on TV, from a dynamic perspective, governed by the logic of the contingent. This method aims to capture the contingent logic observed in electoral campaigns by focusing on the repetition and innovation of themes sustained in party broadcasts. According to such post-structuralist perspective from which electoral competition is analysed, the party identities, 'the real' cannot speak without mediations because there is not a natural centre fixing the meaning of a party structure, it rather depends on ad-hoc articulations. There is no empirical reality outside articulations of meaning. Reality is an outcome of power struggles that unify ideas of social structure as a result of contingent interventions. In Brazil, these contingent interventions have proven to be mimetic and convergent rather than divergent and polarised, being integral to the repetition of dichotomised worldviews.

The Process of a Content Analysis

According to Klaus Krippendorff (1980 and 2004), six questions must be addressed in every content analysis:

- Which data are analysed?
- How are they defined?
- What is the population from which they are drawn?
- What is the context relative to which the data are analysed?
- What are the boundaries of the analysis?
- What is the target of the inferences?

According to Zipf Law, the assumption is that words and phrases mentioned most often are those reflecting important concerns in every communication. Therefore, quantitative content analysis starts with word frequencies, space measurements (column centimetres in the case of newspapers), time counts (for radio and television time) and keyword frequencies. However, content analysis extends far beyond plain word counts, e.g. with KWIC routines words can be analysed in their specific context to be disambiguated. Synonyms and homonyms can be isolated in accordance to linguistic properties of a language. Qualitatively it can involve any kind of analysis where communication content (speech, written text, interviews, images) is categorised and classified. While on its start with the first newspapers at the end of 19th century, it was done by manually measuring the amount of lines and space e.g. on newspapers. With the rise of common computing facilities like PCs, computer based methods of analysis are growing in popularity. Answers to open ended questions, newspaper articles, political party manifestoes, medical records or systematic observations in experiments can all be subject to systematic analysis of textual data. By having contents of communication available in form of machine readable texts, the input is analysed for frequencies and coded into categories for building up inferences. Weber (1990: 12-14) notes: "To make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent. Different people should code the same text in the same way". The validity, Inter-coder reliability and Intra-coder reliability are subject to intense methodological research efforts over long years (see Krippendorf, 2004).

One more distinction is between the manifest contents (of communication) and its latent meaning. "Manifest" describes what (an author or speaker) definitely has written, while latent meaning describes what an author intended to say/write. Normally, content

analysis can only be applied on manifest contents, that are the words, sentences, texts in general.

A further step in analysis is the distinction between dictionary-based (quantitative) approaches and qualitative approaches. Dictionary-based approaches set up a list of categories derived from the frequency list of words and control the distribution of words and their respective categories over the texts. While methods in quantitative content analysis in this way transform observations of found categories into quantitative statistical data, the qualitative content analysis focuses more on the intentionality and its implications.

Copycat: One that closely imitates or mimics another. When used as an adjective, the word refers to closely imitating or following another: a copycat version of a successful product; a copycat crime.

Cursor: In Computer Science the word means a bright, usually blinking, movable indicator on a display, marking the position at which a character can be entered, corrected, or deleted.

Cyber café: The words refer to a cafe from which customers can access the Internet. It refers also to a chatroom.

Database: A collection of data arranged for ease and speed of search and retrieval. Also called data bank.

Debriefing: The term refers to the act or process of debriefing or of being debriefed or the information imparted during the process of being debriefed.

Demographers: The word refers to persons who engage in the study of the characteristics of human populations, such as size, growth, density, distribution, and vital statistics.

Diachronic: The word is concerned with phenomena, such as linguistic features, as they change through time. The word is used to describe the study of a phenomenon as it changes through time.

Dialectic: The history of the term dialectic would by itself constitute a considerable history of philosophy. Briefly, the term "dialectic" owes much of its prestige to its role in the philosophy of Plato, where it figures as the logical method of philosophy in the Socratic dialectical method of cross-examination. The term was given new life by Hegel, whose dialectically dynamic model of nature and history made it, as it were, a fundamental aspect of the nature of reality (instead of regarding the contradictions into which dialectics leads as a sign of the sterility of the dialectical method, as Kant tended to do in his Critique of Pure Reason). In the mid-nineteenth century, the concept of "dialectic" was appropriated by Marx (see, for example, Das Kapital, published in 1867) and Engels and retooled in a non-idealist manner, becoming a crucial notion in their philosophy of dialectical materialism. Thus this concept came, for a time, to play a prominent role on the world stage and in world history. Today, "dialectics" can also refer to an understanding of how we can or should perceive the world (epistemology), an assertion of the interconnected, contradictory, and dynamic nature of the world outside our perception of it (ontology), or a method of presentation of ideas or conclusions. Basically, it is the art or practice of arriving at the truth by the exchange of logical arguments.

Dialog: Dialog refers to the first commercial online information retrieval system, created by Roger Summit in 1967 and launched as a service in 1972. For years, DIALOG has offered the largest single collection of information available online, claiming over 900 databases in areas such as business, science, finance and law. Searching is free, but there are fees for viewing the results. Access is available via the Web or by separate dial-up numbers as was the norm before the Internet became popular. DIALOG's searchable content is considered to be part of the deep Web

Digital mode: The word "digital" is commonly used in computing. A digital system is one that uses discrete values rather than a continuous spectrum of values: compare analog.

The word comes from the same source as the word digit: the Latin word for finger (counting on the fingers) as these are used for discrete counting.

The distinction digital versus analog can refer to data storage and transfer, the internal working of an instrument, and the kind of display. A system working with discrete values would be described as bring in digital mode.

Discourse analysis: Discourse analysis is any of a number of approaches to analysing language use beyond the sentence or clause level. The language in question can be written or spoken texts or systems of texts. The term discourse analysis first entered general use in a paper published by Zellig Harris in 1952.

The concept of discourse analysis has been taken up in a variety of disciplines, including linguistics, anthropology, sociology, and social psychology, each of which is subject to its own assumptions and methodologies. The following are some of the specific theoretical perspectives and analytical approaches used in linguistic discourse analysis:

- Interactional sociolinguistics
- Ethnography of communication
- Pragmatics, particularly speech act theory
- Conversation analysis, which is based on the theories of Harvey Sacks
- Variation analysis
- Discursive psychology, particularly as developed by Jonathan Potter.

Critical discourse analysis combines discourse analysis with critical theory (particularly that of the Frankfurt School and Michel Foucault, as well as literary, semiotic and psychoanalytic influences from Julia Kristeva, Roland Barthes, and Jacques Lacan), to create a politically engaged form of linguistic discourse analysis.

Although each approach emphasises different aspects of language use, they all view language as social interaction, and are concerned with the social contexts in which discourse is embedded. In the social sciences discourse analysis has come to occupy a significant place.

Elicitory: The word means to bring or draw out (something latent); educe. It also means to arrive at (a truth, for example) by logic or to call forth, draw out, or provoke (a reaction, for example).

Ethnographer: Ethnographer is a person who engages with the branch of anthropology that studies the scientific description of specific human cultures.

Ethnomethodology: It is the branch of sociology that deals with the codes and conventions that underlie everyday social interactions and activities.

Fieldwork: Fieldwork is the work done or firsthand observations made in the field as opposed to that done or observed in a controlled environment. In the context of the units of MSO 002 the word refers to the collecting of sociological or anthropological data in the field.

Folklorist: The word means a person who engages in the study of traditional customs, tales or sayings preserved orally among a people. Folklore is a comparative science that investigates the life and spirit of a people as revealed in their folklore.

Footnote: Footnote is a note placed at the bottom of a page of a book or manuscript that comments on or cites a reference for a designated part of the text. It is something related to but of lesser importance than a larger work or occurrence: for example, a political scandal that was but a footnote to modern history. As a verb it is used to denote furnishing with or comment on in footnotes.

Foucault: Foucault, Michel (1926-1984) was a French philosopher and historian who explored the role played by power in shaping knowledge. His works include Madness and Civilization (1961) and the multi-volume History of Sexuality (1976-1986). He was

professor at the Collège de France (1970-84).

Gatekeepers: The word refers to those in charge of passage through a gate. In the context of the units of MSO 002, it refers to those who monitor or oversee the actions of others and are therefore important persons of the community (proposed to be the subject of study by a sociologist/ anthropologist).

Glacier: The word refers to a huge mass of ice slowly flowing over a land mass, formed from compacted snow in an area where snow accumulation exceeds melting and sublimation.

Grounded theory: It is a general research method for behavioural science developed by two sociologists. One was Barney Glaser (b. 1930), who was trained in quantitative sociology by Paul Lazarsfeld. The other person was Anselm Strauss (1916-1996), who was trained in symbolic interactionism by Herbert Blumer. The successful collaboration of Glaser and Strauss in research on dying in hospitals evolved into the "constant comparative method", or grounded theory (GT). The name underscores the generation of theory from data.

GT is the most quoted method by researchers doing qualitative data analysis in the world according to database searches (Google, Medline, CINAHL, Psyclit, Econlit).

Most chapters in the first GT methodology "The Discovery of Grounded Theory" (Glaser & Strauss, 1967) were written by Glaser, trained in methodology generation. Glaser alone wrote the second methodology "Theoretical Sensitivity" (Glaser 1978) and has since written five more books on the method and edited five readers with a collection of GT articles and dissertations. The Grounded Theory Review is a peer-reviewed journal publishing grounded theories and articles on different aspects of doing GT.

Strauss and Juliet Corbin (Strauss and Corbin 1990) took GT in a different direction from what Glaser had outlined in Theoretical Sensitivity and the 1967 book. There was a clash of ideas between the discoverers and Glaser in 1992 wrote a book arguing against the Strauss and Corbin book chapter by chapter. Hence GT was divided into Strauss and Corbin's method, and Glaser's GT with the original ideas from 1967 and 1978 still in operation.

Hardware and software: Though in general hardware refers to metal goods and utensils such as locks, tools, and cutlery, in Computer Science it refers to a computer and the associated physical equipment directly involved in the performance of data-processing or communications functions. Software refers to the programs, routines, and symbolic languages that control the functioning of the hardware and direct its operation.

Histogram: It is a bar graph of a frequency distribution in which the widths of the bars are proportional to the classes into which the variable has been divided and the heights of the bars are proportional to the class frequencies. It is a charting format that displays horizontal or vertical bars. The length of the bars is in proportion to the values of the data items they represent. Many digital cameras use histograms to display the brightness of the image. Using 256 vertical bars to represent brightness levels from 0 to 255, the bar on the leftmost side of the chart is the darkest pixel level (0), and the rightmost bar is the lightest (255). The height of the bars represents the relative number of pixels in the image that contain that brightness level.

HTML: HTML is a markup language used to structure text and multimedia documents and to set up hypertext links between documents, used extensively on the World Wide Web. It is an acronym for Hyper Text Markup Language.

Imponderabilia: The term refers to that cannot undergo precise evaluation: imponderable problems.

Institution: In the context of the units of MSO 002, the term refers to a custom, practice, relationship, or behavioural pattern of importance in the life of a community or society, for example, the institutions of marriage and the family.

In general terms, the word means an established organisation or foundation, especially one dedicated to education, public service, or culture.

Interpretative social science: The second theme of Schutz's theory of the cultural sciences is the clarification of the categories or "basic concepts" of the sciences. To show what this is about, it is most efficient merely to quote the list on the first page of Schutz's Aufbau of the basic concepts of interpretative sociolology that he then attempts to clarify in his book: "the interpretation of one's own and others' experiences, meaning-establishment and meaning-interpretation, symbol and symptom, motive and project, meaning-adequacy and causal adequacy, and, above all, the nature of ideal-typical concept formation." Investigation beyond Schutz's work should pursue similar concepts in other disciplines, beginning from the science-theoretical reflections of the scientists themselves while always being prepared to go further.

Interpretative sociology or verstehen: Interpretative Sociology (or verstehen, a German word for understanding, pronounced as though it rhymes with fair-stain) was used by Max Weber to describe a process in which outside observers of a culture (such as anthropologists) relate to an indigenous people on the observer's own terms. This concept has been both expanded and criticized by later social scientists. Proponents laud this concept as the only means by which researchers from one culture can examine and explain behaviours in another. While the exercise of verstehen has been more popular among social scientists in Europe such as Jürgen Habermas, verstehen was effectively introduced into the practice of sociology in the United States by Talcott Parsons, an American follower of Max Weber. Parsons incorporated this concept into his 1937 work, The Structure of Social Action.

Critics of verstehen such as Mikhail Bakhtin and Dean MacCannell counter that is simply impossible for a person born of one culture to ever completely understand another culture, and that it is arrogant and conceited to attempt to interpret the significance of one culture's symbols through the terms of another (supposedly superior) culture.

IP address: IP address is an acronym for Internet Protocol address, which is the address of a device attached to an IP network (TCP/IP network). Every client, server and network device must have a unique IP address for each network connection (network interface). Every IP packet contains a source IP address and a destination IP address.

An IP network is somewhat similar to the telephone network in that you have to have the phone number to reach a destination. The big difference is that IP addresses are often temporary.

Each device in an IP network is either assigned a permanent address (static IP) by the network administrator or is assigned a temporary address (dynamic IP) via DHCP software. Routers, firewalls and proxy servers use static addresses as do most servers and printers that serve multiple users. Client machines may use static or dynamic IP addresses. The IP address assigned to your service by your cable or DSL Internet provider is typically dynamic IP. In routers and operating systems, the default configuration for clients is dynamic IP.

IP addresses are written in "dotted decimal" notation, which is four sets of numbers separated by periods; for example, 204.171.64.2. If you knew the IP address of a Web site, you could enter the dotted decimal number into your browser instead of the domain name (which is why we have DNS!).

Although the next version of the IP protocol offers a virtually unlimited number of unique addresses, the traditional IP address (IPv4) uses a 32-bit number that defines both the network and the host computer. The network class determines how many of the 32 bits are used for the network address, leaving the remaining bits for use as the host number (note the numbers of networks and hosts in the table below). The host number can be further divided between subnetworks and hosts.

Iterative-inductive research: The word iterative means 'involving repetition'. Inductive refers to application of logical validity. Iterative-inductive research is a research that applies scientific methods or processes, which are considered fundamental to scientific investigation and acquisition of new knowledge based upon physical evidence by scientific communities. Scientists use observations and reasoning to propose tentative explanations for natural phenomena, termed hypotheses. Predictions from these hypotheses are tested by various different experiments, and an hypothesis so verified is considered a theory and new predictions are based upon it. Any erroneous predictions, internal inconsistencies or lacunae, or unexplained phenomena initiate the generation of new hypotheses, which are themselves tested, and so on. Any hypothesis which is cogent enough to make predictions can be tested in this way.

Notably, an unverified hypothesis may gain considerable currency among specialists based on its elegance or some intuitive sense of its validity or anticipation of its verification, though it is not formally accepted until convincing experimental proof. An example is the theory of general relativity.

The development of new technologies is enmeshed in the development of knowledge according to the scientific method, and can serve both as a further test of the validity of the underlying ideas and a source for new tools with which to advance the aquisition of knowledge, by broadening the scope of the observable or improving the quality of observations. Moreover, the need to understand or exploit some natural phenomenon in developing a technology can motivate scientific inquiry into the nature of that phenomenon.

A common viewpoint is to take scientific methods as the underlying logic of scientific practices, e.g., Karl Popper. However, the emphasis on underlying logic is disputed by those emphasising sociological aspects. Scientific methods are means used by scientific communities for building supportable, evidence-based understandings of our natural world. There is often controversy in scientific communities about various aspects of these understandings.

Kurtosis: Kurtosis refers to the general form or a quantity indicative of the general form of a statistical frequency curve near the mean of the distribution.

Legends: The word means an unverified story handed down from earlier times, especially one popularly believed to be historical. It means also a body or collection of such stories or a romanticized or popularised myth of modern times. It is also used for one that inspires legends or achieves legendary fame. In the context of the unit in which this word has occurred, it means an explanatory caption accompanying an illustration or an explanatory table or list of the symbols appearing on a map or chart.

Logbook: The word means the official record book of a ship or an aircraft. In the context of the unit in which this word has occurred, it means a record book with periodic entries.

Lupus erythematosus: It refers to any of several connective tissue disorders, especially systemic lupus erythematosus, that primarily affect women of childbearing age, have a variety of clinical forms, and are characterized by red scaly skin lesions.

Metadata: It means the data that describes data. The term "metadata" is widely used to refer to "data about data,"

Modus operandi: The phrase means a method of operating or functioning or it refers to a person's manner of working.

Monograph: The word refers to a scholarly piece of writing of essay or book length on a specific, often limited subject.

Multivariate: It means having or involving more than one variable, for example, multivariate statistical analysis.

Ndembu: Ndembu is the name of a Central African society of Zambia. Victor W. Turner conducted extensive fieldwork among the Ndembu during 1950-1954.

Output: It means the act or process of producing; production and it refers to an amount produced or manufactured during a certain time. For example, intellectual or creative production can be described as literary output; artistic output. In Computer Science the term refers to the information produced by a program or process from a specific input.

As a verb it means to produce or manufacture (something) during a certain time.

Pane: It means a framed section of a window or door that is usually filled with a sheet of glass or other transparent material or the transparent material used to fill such a section.

It refers also to a panel, as of a door or wall or one of the flat surfaces or facets of an object, such as a bolt, having many sides.

Peer: The word refers to a person who has equal standing with another or others, as in rank, class, or age, for example, children who are easily influenced by their peers.

Pie charts: Pie charts are circular graphs having radii dividing the circle into sectors proportional in angle and area to the relative size of the quantities represented. They are also called circle graphs. Such charts are graphical representations of information in which each unit of data is represented as a pie-shaped piece of a circle.

Precision: It refers to the quality or state of being precise or exact.

Prestroika: The term refers to the restructuring of the Soviet economy and bureaucracy that began in the mid 1980s.

Primary data: The primary data is gathered through questionnaire, schedule, observation or interview or by using two or more of these methods.

Questionnaire: This refers to a form containing a set of questions, especially one addressed to a statistically significant number of subjects as a way of gathering information for a survey.

Quixotic: It means being caught up in the romance of noble deeds and the pursuit of unreachable goals; idealistic without regard to practicality.

Rapport: The term refers to the relationship, especially one of mutual trust or emotional affinity.

Repeatability: It refers to the quality of making, doing, or performing again

Robot: It is a mechanical device that sometimes resembles a human and is capable of performing a variety of often complex human tasks on command or by being programmed in advance. This machine or device operates automatically or by remote control. The term refers also to a person who works mechanically without original thought, especially one who responds automatically to the commands of others.

Secondary data: Secondary data can be defined as previously gathered or gathered by someone else. This data should be collected first and often such data will not answer all questions. Such data evaluate the original study and data in terms of their purpose, source, time period and method.

Skewness: It is a statistical term used to describe a situation's asymmetry in relation to a normal distribution. A positive skew describes a distribution favoring the right tail, whereas a negative skew describes a distribution favoring the left tail.

Snowballing: It refers to causing to increase or multiply at a rapidly accelerating rate.

Spreadsheet: It refers to a piece of paper with rows and columns for recording financial data for use in comparative analysis. In Computer Science it refers to an accounting or bookkeeping program that displays data in rows and columns on a screen.

Structuralist model: In his Structuralist Model, Etzioni (1964) argues that Weber and Marx together form the basis for the structural synthetic model. In this view, workers and managers are inevitably in conflict, and all workers are alienated from their labour (they don't own the means of production). Control is central to the concept of organisations. Etzioni sees the rational theorists like Weber contribute to this view by focusing attention on the distribution of power among organizational positions. Natural theorists like Barnard insist that power alienates unless the control structure is acceptable to the subordinates. Etzioni also proposes that his structural model gives equal weight to both formal and informal structures, social and material rewards, and the interaction between the organization and its environment. Still, it acknowledges the inevitable strains between management and workers, personal and corporate needs, rationality and non-rationality, etc. (Scott p. 97). Overall, the structuralist view sees both natural and rational systems as two sides of the same truth. They are in conflict because the elements they describe are in conflict.

Subjectivity: Subjectivity refers to proceeding from or taking place in a person's mind rather than the external world, for example a subjective decision. In Psychology, it refers that exists only within the experiencer's mind. In Medicine, it relates to, or designats a symptom or condition perceived by the patient and not by the examiner. It also expresses or brings into prominence the individuality of the artist or author.

Swap: It means to trade one thing for another or to exchange (one thing) for another.

Symbolic interactionism: Symbolic interactionism is a sociological perspective which examines how individuals and groups interact, focusing on the creation of personal identity through interaction with others. Of particular interest is the relationship between individual action and group pressures. This perspective examines the idea that subjective meanings are socially constructed, and that these subjective meanings interrelate with objective actions. Noted symbolic interactionists are Herbert Blumer and Erving Goffman. George Herbert Mead is seen as a predecessor to symbolic interactionism.

Synchronic: Synchronic relates to the study of phenomena, such as linguistic features, or of events of a particular time, without reference to their historical context.

Tabula rasa: The phrase refers to the state of the mind before it receives the impressions gained from experience or to the unformed, featureless mind in the philosophy of John Locke.

Transcripts: It refers to something transcribed, especially a written, typewritten, or printed copy, for example the transcript of court testimony; an academic transcript. In Biology it refers a sequence of RNA produced by transcription.

Triangulation: It refers to the measurement of the elements necessary to determine the network of triangles into which any part of the earth's surface is divided in surveying. This method has been used in sociology for finding a position by means of bearings from two fixed points a known distance apart.

T-test: It means student's t-test. A t-test is any statistical hypothesis test in which the test statistic has a Student's t-distribution if the null hypothesis is true.

A statistical test of the null hypothesis is that the means of two normally distributed populations are equal. All such tests are usually referred to as Student's t-tests, though strictly speaking that name should only be used if the variances of the two populations are also assumed to be equal; the form of the test used when this assumption is dropped is sometimes called Welch's t-test. There are different versions of the t-test depending on whether the two samples are independent of each other (e.g., individuals randomly assigned into two groups), or paired, so that each member of one sample has a unique relationship with a particular member of the other sample (e.g., the same people measured before and after an intervention, or IQ test scores of a husband and wife).

If the t value that is calculated is greater than the threshold chosen for statistical significance (alpha conventionally equal to 0.05), then the null hypothesis that the two groups do not differ is rejected in favour of the alternative hypothesis, which typically states that the groups do differ.

Twice-blessed: Blessed means enjoying happiness and twice-blessed is the same in a heightened manner.

Univariate: It means having one variable.

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