RESEARCH METHODOLOGY IN SOCIAL SCIENCES

Research is of two types, Pure or Basic and Applied. Pure or Basic Research involves knowledge for the sake of knowledge. A scholar of pure knowledge may see acquisition of knowledge satisfying in itself irrespective of the fact whether it is of any practical use or not. It is an intellectual satisfaction which is an end in itself. In Applied research the basic purpose is to put knowledge to practical use. A researcher in applied knowledge would be more interested in trying to find some utility out of it which may bring some improvement in the practical life. He thus works with certain values, norms and preferences which become the end product.

The research enterprise includes many roles—those of scholar, subject, funding authority, and society to name a few. The people who occupy those roles have needs and wants that sometimes converge and sometimes conflict. As a research consumer your curiosity about the way things work may agree with the researcher’s desire for discovery. But if you should use the researcher’s words as your own without credit, your desire to get a good grade conflicts with the author’s copyright on the work. With the advent of large-scale social research came the increased risk of conflicts between different parties in the scientific enterprise. The most notorious examples of such conflict involve the abuse of human subjects, as in the Nazi medical experiments and the Tuskegee Syphilis Study. The publicity attending these scandals helped focus public and professional attention on the problems of protecting human subjects.

Since philosophers of ethics have not been able to derive universal principles, political and professional institutions have tried to regulate research conduct. Professional associations want to preserve the autonomy of their members by helping them conform their conduct to ethical codes without outside intrusion. Criminal and civil legal procedures are also, in principle, available to provide redress to human subjects and other parties in the research process. However, these legal and professional procedures provide for punishment only after the fact and for only the small proportion of ethical violations brought up for review. To guarantee more systematic and preventive protection of human subjects, the government now requires prior institutional review of research proposals. Under the jurisdiction of institutional review boards (IRBs), researchers must provide in their proposals for informed consent by their subjects and must limit the risks to their subjects. Although IRBs can waive informed consent, they require good reason for such waivers.

Besides the conflict between researcher and subject, other conflicts can arise such as those between researchers, between funding authority and researcher, and between private interests and the public interest. In some cases, ethical codes already address these conflicts, as in the prohibition against fraud and plagiarism. In other cases, ethical guidance seems less clear, and we can expect continuing political and professional debate about some of these matters (for example, allocation of research resources in the public interest).

Legal means exist for bringing complaints and seeking financial redress in cases of plagiarism and fraud. Because of the recent increase in research fraud, the U.S. government now, for instance, requires institutions receiving its funds to establish offices of research integrity. These offices disseminate the guidelines for ethical research and provide mechanism for handling charges of misconduct.

The notorious battle in the U.S. over the effects of lead on children’s intelligence shows the need for skepticism in using social research. Drawing causal inferences from social research can prove difficult and uncertain. Philosophers of knowledge even dispute the degree to which we can know the real world. Science works through the adversarial process. Researchers should doubt their own findings and those of other scholars. As consumers of research, we should not believe everything we read. Instead, we should assume a doubtful posture in the face of research claims. We call this posture skepticism. This term does not mean unyielding disbelief but rather the habit of checking the evidence. Skepticism requires us to distinguish poor research, unworthy of our belief, from good research, which deserves at least provisional acceptance. We must view our research practice as an ethical duty. Scientific integrity consists of “a kind of utter honesty… If you make a theory, for example, and advertise it, or put it out, then you must also
put down all the facts that disagree with it, as well as those that agree with it” (Feynman, 1985: 341). This view of integrity challenges us to help our worst critics attack our most cherished conclusions. We will need a detachment from our theories if we are to value the credibility of our results more than victory in our disputes.

Social research proceeds by raising tentative explanations, making observations, and then seeing how well the proposed ideas fit the data. The claim that A causes B, for instance, requires observations showing that (1) A and B co-vary; (2) A occurs before B; and (3) no rival explanation for A-with-B association remains plausible. The first criterion is simple enough. If A causes B, they should move together or co-vary. If rapidly changing economic conditions cause suicide, we should count more suicides in changing economic times and fewer in stable ones. Knowing that two things do not co-vary, on the other hand, casts doubt on the theory that they have a causal link. However, association alone does not tell us the type of causal link between A and B. The philosopher Hume warned us of our habit of mind that tends to see causation in the association of events. When two events coincide again and again, we come to expect one when we notice the other. We often wrongly treat this ‘prediction’ as ‘causation.’ However, we must separate these two notions in our minds. Russel (1948) illustrates this problem with the story of ‘Geulinex’s two clocks.’ These perfect timepieces always move together such that when one points to the hour, the other chimes. They co-vary and allow us to make a causal claim. No one supposes that one clock causes the other to chime. In fact, a prior event causes both, namely the work of the clockmaker. Thus we need more criteria beyond simple association to judge causation. The second requirement deals only in part with this problem of telling co-variation from causation. A cause should precede its effect. Economic change cannot cause suicide if the upturn in suicide rates comes before the change in the economy. Knowing the sequence of events can help us rule out one causal direction. But knowing that two events are correlated and that one comes before the other still does not settle the question. Recall Geulinex’s two clocks, and suppose that one clock is set one second before the other so that its chimes always sound before the other. Would we argue that the former clock causes the latter’s chimes just because it occurs first? Of course, we would not. The third rule requires that we design research to prevent all possible alternative ways of explaining observed linkages. This rule for causation also deals with the problem of Geulinex’s two clocks. It says that we must be able to rule out any rival explanation as not plausible. By plausible we mean reasonable or believable. This test of causation can prove hard to pass. A rival explanation that seems unlikely to one researcher may later appear quite likely to others. Anything that can cause two events to appear linked serves as a plausible rival explanation. Much of what social researchers do helps guard against such rival explanations. We grade social research largely on its success in ruling out rival explanations. Someone may think of a new and plausible rival years after a study is published. Thus, the social researcher must design studies in ways that minimize, as much as possible, present and future competing explanations. To the extent that a researcher shows co-variation and temporal precedence and casts doubt on opposing rationales, we will accept his or her causal claim. The threat of competing inferences shapes almost every aspect of data collection and research design. Whether as a consumer or producer of social research, you must learn to judge research on the basis of how well it limits and rejects rival interpretations.

Sometimes claims draw their support not from evidence but rather from the authority, expertise, or rank of the source. We often hear assertions that some new treatment can cure cancer. Perhaps a few patients testify to the success of the new cure. Recruiting desperate, paying clients with the promise of a miracle drug may motivate such claims. However, neither the fame nor the academic degree of the source will substitute for evidence. Some authorities base their assertions entirely on faith with no claims to scientific foundation. Clashes between claims based on faith and those based on evidence have made for some dramatic moments. One of the most famous came to a head in the Galileo’s heresy trial. In 1616 a church court condemned the view that the earth moves around the sun as proposed by Galileo. The Inquisition summoned him to Rome for trial in 1633, forced him to recant, and prohibited his book.
Galileo gave an eloquent defense of science: “I do not feel obliged to believe that the same God who has
endowed us with sense, reason, and intellect has intended us to forego their use” (Quoted by Durant &
Durant, 1961: 607). Now of course the Vatican has admitted that the judges were wrong. Pope John Paul
II in 1979 called for a reexamination of the Galileo case and in 1992 the Church found him not guilty
(Montalbano, 1992). One irony of this episode is that Galileo had many friends in the Church (including
the Pope). They advised him not to claim proof for his theory in order to avoid confronting the Church.
As it turned out, Galileo should not have claimed that his theory was proved since he had made some
mistakes (for instance, in his theory of tides). This episode shows that assertions based on good evidence
prevail over those based on authority and, in their turn, yield to better ones based on better evidence. In
the long run, the more truthful and useful explanation should emerge from this competition between rival
ideas.

With these rules, we can assess causal claims in a public way. Assertions based on such evidence
have proven more convincing than claims based on faith or authority. Social research can play an
important role in making personal, professional, and public decisions. For these reasons, everyone can
benefit by learning to read research critically.

When a person feels strongly about an issue, he/she uses various types of techniques to persuade
others to agree with them. Some of these techniques appeal to the intellect, some to the emotions. Many
of them distract the listener or the reader from the real issues. Below are some of the examples of
argumentation tactics. Most of them can be used either to advance an argument in an honest, reasonable
way or to deceive or distract from the real issues. It is important for a critical reader to recognize these
tactics in order to evaluate rationally an author’s ideas.

1. **Scare tactics**: the threat that if you do or do not believe this, something terrible will happen.
2. **Straw Person**: distorting or exaggerating an opponent’s arguments to make one’s own seem stronger.
3. **Bandwagon**: the idea that ‘everybody’ does this or believes this.
4. **Slanters**: trying to persuade through inflammatory and exaggerated language instead of through reason.
5. **Generalizations**: using tactics or facts to generalize about a population, place, or thing.
6. **Personal Attack**: criticizing an opponent personally instead of rationally debating his or her ideas.
7. **Categorical Statements**: stating something in a way implying that there can be no argument.

As pointed out by Joseph Joubert, “It is better to debate a question without settling it than to settle
a question without debating it” (1978: 324). Probably the best way to become informed is to analyze the
positions of those who are regarded as experts and well-studied on issues. It is important to consider every
variety of opinion in an attempt to determine the truth. Opinions from the mainstream of society should
be examined. But also important are opinions that are considered radical, reactionary, or minority as well
as those stigmatized by some other uncomplimentary label. An important lesson of history is the eventual
acceptance of many unpopular and even despised opinions. The ideas of Socrates and Galileo are good
examples of this.

To have a good grasp of one’s own viewpoint, it is necessary to understand the arguments of those
with whom one disagrees. It can be said that those who do not completely understand their adversary’s
point of view do not fully understand their own. A persuasive case for considering opposing viewpoints
has been presented by John Stuart Mill in his work *On Liberty*. When examining controversial issues it
may be helpful to reflect on this suggestion:

> The only way in which a human being can make some approach to knowing the whole of a
subject, is by hearing what can be said about it by persons of every variety, and studying all
modes in which it can be looked at by every character of mind. No wise man ever acquired his
wisdom in any mode but this.
A pitfall to avoid in considering opposing points of view is that of regarding one’s own opinion as being common sense and the most rational stance and the point of view of others as being only opinion and naturally wrong. It may be that another’s opinion is correct and one’s own is in error.

Another pitfall to avoid is that of closing one’s mind to the opinions of those with whom one disagrees. Dudley F. Malone used to say: “I have never in my life learned anything from any man who agreed with me.” The best way to approach a dialogue is to make one’s primary purpose that of understanding the mind and arguments of the other person and not that of enlightening him/her with one’s own solutions. More can be learned by listening than speaking. We must learn to appreciate the complexity of even seemingly simple issues on which good and honest people disagree. This awareness is particularly important in a democratic society such as ours where people enter into public debate to determine the common good. Those with whom one disagrees should not necessarily be regarded as enemies, but perhaps simply as people who suggest different paths to a common goal.

A number of basic skills needed for critical thinking are:

1. Evaluating Sources of Information: The ability to choose from among alternative sources the most reliable and accurate source in relation to a given subject. A critical thinker must always question sources of information. Historians, for instance, distinguish between primary sources and secondary sources. To read and think critically, one must be able to recognize primary sources. This is not enough, however, because primary sources (e.g. eyewitness account) do not necessarily provide accurate information. The historian must decide which account seems most accurate, keeping in mind the potential biases of the eyewitnesses.

2. Separating Fact from Opinion: The ability to make the basic distinction between factual statements (those that can be demonstrated or verified empirically) and statements of opinion (those that are beliefs or attitudes that cannot be proved). Consider this statement: “2% people in India are Buddhists.” This is a factual statement because it could be proved by checking from the latest census information. But the statement, “The people involved in animal rights groups have mixed-up morals,” is an opinion. Someone who agrees with animal rights groups would have a different idea of what is moral than someone who does not agree. When investigating controversial issues it is important that one be able to distinguish between statements of fact and statements of opinion. It is also important to recognize that not all statements of fact are true. They may appear to be true, but some are based on false or inaccurate information. For this activity, however, we are concerned with understanding the difference between those statements which appear to be factual and those which appear to be based primarily on opinion.

From various sources of information we are constantly confronted with statements and generalizations about social and moral problems. In order to think clearly about these problems, it is useful if one can make a basic distinction between statements for which evidence can be found and other statements which cannot be verified or proved because evidence is not available, or the issue is so controversial that it cannot be definitely proved.

3. Identifying Stereotypes: The ability to identify oversimplified, exaggerated descriptions (favourable/ unfavourable) about people and insulting statements about racial, religious or national groups, based upon misinformation or lack of information.

4. Recognizing Ethnocentrism: The ability to recognize attitudes or opinions that express the view that one’s own race, culture, or group is inherently superior, or those attitudes that judge another culture or group in terms of one’s own.

5. Ability to Empathize: The ability to empathize, to see a situation from another person’s vantage point, is an important skill. When we empathize, we put ourselves in someone else’s position. This helps us to look at a problem in a way that perhaps we have not considered before. The ability to understand an opponent’s viewpoint is a difficult skill, one that is needed for a highly emotional and controversial subject like the benefits of animal experimentation.

Thus, it is important not only to consider another viewpoint but equally important to be able to
critically analyze that viewpoint. It is an undisputed fact that the number of good researchers in the society is quite limited. Every body cannot be a good researcher. A good researcher, as they say, must possess certain qualities of head. It is also important to remember that no researcher can be without shortcomings. Thus, he must be aware of these so that he is able to take such limitations, drawbacks and shortcomings into consideration. A good researcher must have the following qualities:

1. He must be qualified in the technical sense. Mediocre, ill-trained or ill-educated person can never be a researcher. He should have the technical know-how to use his tools as well.
2. He must be keenly interested in the area in which he wants research. Involvement and dedication are primarily important. He should devote enough time to research. Research should be seen as something more than earning livelihood. Those who work for the sake of salary cannot be researchers of a worthwhile quality.
3. He should be open minded. Biases and prejudices should be minimum.
4. He should have the capacity to get deeper into the problem.
5. He should have the desire for accuracy, keen observation and precision.
6. He should have a critical outlook.
7. He should be well-versed in the research techniques.
8. He should be sensitive to new research and techniques. Should not suffer from rigidity.
9. Perseverance: he should not get easily discouraged.
10. A good researcher does not care about as to what is approved or not approved by the society. If his research leads to conclusions which are not approved by the society he should come out boldly.

However, most researchers are not really researchers. Collection of research data is not an easy task and researchers do not have the aptitude for it. Another problem relating to research is that a researcher has to depend upon others. A researcher cannot do everything himself. After all, he too may need some guidance from his supervisor. A bad supervisor who is a bad researcher can ruin the career even that of a budding scholar. Moreover, analysis of data needs not only capability and keen brains, but various biases also can result in wrong analysis. Then there are the problems relating to postulates. Postulates, to put it simply, means presuppositions. In every study there are certain postulates. One such postulate is that all social events are resultants of some cause or causes, though usually it is not easy to understand them. Then another postulate is that social events are not disorganized but that they follow some orderly pattern. Still another presupposition is that in all things there are certain ideal forms and thus it is possible to pick up representative units for study.

Of course, a good research always takes into consideration

1. Importance of context: things stated out of context can be misleading.
2. Importance of trends of times, societal infatuations and habits. Tendency to exaggerate, politeness, truth is bitter.
3. Tendency to round about things, e.g. rounding off numbers.
5. Importance of Theory and Theorization: Theoretical framework, theory and theorizing have a special place in research. First, theory precisely and concisely summarizes what is already known about the subject which one wants to research on. Theorizing on a large scale also attempts to integrate the major empirical generalization of an era. “If theory summarizes facts and states a general uniformity beyond the immediate observations, it also becomes a prediction of facts” (Goode & Hatt, 1971: 11) It is only through theory that one brings out as to what is expected out of the research and the way in which a researcher should move. (E.g. if one were to go to Kamala Nagar from here, he would already have a theoretical route to be followed, though on the way he
may make modifications in it.) Theory also helps in finding out gaps of study and the areas which need be explored. It suggests where deficiency in knowledge remains and the areas which have been “over-researched.”

6. Facts and Theory: A good theory must always interact with facts. It also plays an important role in uncovering facts and/or isolating facts from non-facts. Facts in their turn lead to new theories.

Different methods are used in social science research because problems and research that we conduct in social sciences is varied. Thus, much depends on the type of topic/aspect we want to study that we use a method. E.g. if one were to do a study on the critical edition of a text then Library Method perhaps would be ideal, whereas for doing a thesis on some aspect of Buddhist architecture Evolutionary Method or may be Survey Method would be suitable.

1. Qualitative method: Quantitative data is collected and on the basis of this certain facts are obtained and analyzed. As a result of this certain conclusions are drawn. Such conclusions are reliable, precise and the results presentable. However, this method suffers from subjectivity.

2. Quantitative Method/Statistical Method: In this method data is measured and as such only such units are taken which are worthy measuring and tabulating. E.g. Trautman’s study of the Arthaśāstra. Some research scholars in our department are also doing statistical study of certain social and political aspects of Buddhism and Buddhist texts. Its merit lies in the fact that it is quite devoid of subjectivity and in it if the statistics are corrected then the conclusions are bound to be correct and dependable. However, in it no consideration is given to quality of the units which are studied. E.g; Upanī and Cunḍa cannot be treated at par. Moreover, the problems which are primarily of qualitative nature cannot be studied through this method. It deals with numbers and not with causes.

3. Field Study Method: The researcher goes to the field to investigate and acquire first hand knowledge. data is collected and documents are prepared based on it. However, not many people do field work. There are also certain difficulties of finance and life involved.

4. Library Method Through this it is possible to know the work that has already been done and that remains to be done. It is again through this method that theoretical framework already available can either be accepted or refuted. Work on manuscripts etc. However, with its help no new field can be covered and only existing knowledge can be interpreted and given a new outlook or twist.

5. Experimental method/Laboratory Method: In this method experiments are carried out under controlled situations. E.g. Buddhist psychology, Vipassanā etc. The most important thing here is that the researcher should be able to control the things over which he is experimenting. It is also important to remember that human conduct and behaviour are not easy to control.

6. Survey Method: Whereas the scope of Experimental Method is quite limited in social sciences, the scope of Survey Method is quite wide and extensive. The researcher himself formulates his hypothesis and draws conclusions on the basis of surveys.

7. Evolutionary method/Hierarchical Method: A concept or an institution is chosen and then a systematic evolutionary history of this institution is prepared. E.g. the Doctrine of Ahimsā. As this concept has its own history of origin, growth and evolution, a researcher can proceed beyond a certain stage and research on it.

8. Comparative Method: An institution or aspect is taken in two different situations and compared. E.g. something relating to both Buddhism and Hinduism or the growth of the concept of dāna in India and China.

9. Interview Method: It is becoming very important now. In it the data collected is quite reliable, dependable and also valid. Certain issues relating to contemporary Buddhism can perhaps best be studied through this method. However, the difficult in this method is that the interviewer may not be able to establish a proper rapport with the interviewee. It is also quite subjective.

10. Case Study Method: In this method a study is undertaken and an effort is made to make a
comprehensive study of the problem in all its entirety, keeping in view the unitary character of the subject under study. However, universal conclusions from such a study may not be always possible from such a study.

11. Questionnaire Method: A comprehensive questionnaire is prepared and an effort is made to see that the answer can be obtained in objective language. However, one has to guard against having ambiguous questions. Responding parties also have to be chosen carefully. Difficulties of interpreting and analyzing the data collected.

12. Sampling Method: Through this method the whole area or all associations or institutions are not studied, but by a systematic method only a sample is taken out and studied. E.g.; if we want to study the expenditure pattern of a Maharastrian Neo-Buddhist where more than, say, 1 million Neo-Buddhists live, it will be a time consuming and expensive affair. In order to save both time and money, out of one million Neo-Buddhist, only say four or five thousand Neo-Buddhists are taken up taking into consideration the fact that they represent all ranges of income, education, family-size, occupation etc depending on what exactly we want to investigate. The idea is that while choosing a sample, it is believed that the results derived will be more or less applicable to those Neo-Buddhists who have been left out. One disadvantage in this method is that even a small negligence can lead to wrong results and conclusions.

13. Inter-disciplinary Method: Now it is strongly believed that no subject of study is self-contained and all inclusive. All problems are mutually interlinked and inter-connected. Thus, meaningful research can only be done when people belonging to different disciplines combine together and try to solve a problem. Thus expertise in computers can be of tremendous help in the statistical study of a text etc.

14. Scientific Method: For a clear perception of the term research, one should know the meaning of scientific method. The two terms, research and scientific method, are closely related. Research can be termed as “an enquiry into the nature of, the reasons for, and the consequences of any particular set of circumstances, whether these circumstances are experimentally controlled or recorded just as they occur. Further, research implies the researcher is interested in more than particular results; he is interested in the repeatability of the results and their extension to more complicated and general situations” (Ostle & Mensing, 1975: 2). On the other hand, the philosophy common to all research methods and techniques, although they may vary considerably from one science to another, is usually given the name of scientific method. In this connection, Karl Pearson writes, “The scientific method is one and same in the branches (of science) and that method is the method of all logically trained minds… the unity of all sciences consists alone in its methods, not its material; the man who classifies facts of any kind whatever, who sees their mutual relation and describes their sequences, is applying the Scientific Method and is a man of science” (Pearson, 1957: 10-12). Scientific method is the pursuit of truth as determined by logical considerations. The ideal of science is to achieve a systematic interrelation of facts. Scientific method attempts to achieve “his ideal by experimentation, observation, logical arguments from accepted postulates and a combination of these three in varying proportions” (Ostle and Mensing, 1975: 2). In scientific method, logic aids in formulating propositions explicitly and accurately so that their possible alternatives become clear. Further, logic develops the consequences of such alternatives, and when these are compared with observable phenomena, it becomes possible for the researcher or the scientist to state which alternative is most in harmony with the observed facts. All this is done through experimentation and survey investigations which constitute the integral parts of scientific method.

As Pendelton Herring once said: “Obvious function of research is to add new knowledge to the existing store, but its power for cleansing minds of cliches and removing the rubbish of inapplicable theory is equally notable.” In other words, research has two-fold functions: one, it helps in opening new vistas and knowledge; second, it helps in removing the rubbish of inapplicable theory. It discards the outworn assumptions which in turn lead to wrong conclusions. E.g. the 18th century assumption that the Buddha was a mythical figure. Now nobody accepts it as new research has totally disproved it. The aim of Social Science research is that it attempts to add to knowledge of human beings about the problems which face
the society. E.g. Webster’s International Dictionary defines Research as “a careful and critical enquiry or examination in seeking facts or principles, diligent investigation in order to ascertain something.”

Research methods may be understood as all those methods/techniques that are used for conducting research. Research methods or techniques, thus, refer to the methods the researchers use in performing research operations. In other words, all those methods which are used by the researcher during the course of studying his research problem are termed as research methods. Since the object of research is to arrive at a solution for a given problem, the available data and the unknown aspects of the problem have to be related to each other to make a solution possible. Keeping this in view, research methods can be put into the following three groups:

1. In the first group we include those methods which are concerned with the collection of data. These methods are used where the data already available are not sufficient to arrive at the required solution;
2. The second group consists of those statistical techniques which are used for establishing relationships between the data and the unknowns;
3. The third group consists of those statistical methods which are used to evaluate the accuracy of the results obtained.

Research methods falling in the last two categories are generally taken as the analytical tools of research.

Research methodology is a way to systematically solve a research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation, how to apply particular research techniques, but they also need to know which of these methods or techniques are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem. For instance, an architect, who designs a building, has to consciously evaluate the basis of his decisions, i.e., he has to evaluate why and on what basis he selects particular size, number and location of doors, windows, and ventilators, uses particular materials and not others and the like. Similarly, in research the researcher has to expose the research decisions to evaluation before they are implemented. he has to specify very clearly and precisely what decisions he selects and why he selects them so that they can be evaluated by others also.

When we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others. Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected and what particular method has been adopted, why particular technique of analyzing data has been used and a host of similar other questions are usually answered when we talk of research methodology concerning a research problem or study.

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The degree to which a social science is truly scientific depends upon the extent to which its practitioners use the Scientific Method. It is an extension of the reasoning ability that we use in everyday situations. The characteristics of the scientific method can be grouped in various ways, but basically seven characteristics can be identified:

1. **Empirical:** Ultimately, all things with which science can deal are empirical phenomena. Such phenomena are those which can be sensed i.e. seen, heard, felt, tasted, or smelled (Dickinson, 1971: 1191-1192). There are instances in which scientists hypothesize the existence of things that have not yet been sensed, at least not directly. These would include things that are too small (like various subatomic particles), too remote (such as black holes), or things that may exist but for which our methods of measurement have not yet been adequately developed (life on other planets). Nevertheless, all phenomena with which scientists can deal are at least conceivably empirical. However, it must be remembered that there is no way of proving that our senses are not deceiving us about what exists. Thus, science rests upon an unprovable philosophical assumption and this is not the only one.

2. **Verifiable:** the characteristic of verifiability assumes that we can use our senses to confirm or refute the empirical observations made by others, and that they, in turn, can check ours. For various reasons, mistaken observations are occasionally reported. Gradually, such an observation will be followed by attempts to replicate the finding until it is apparent that the original report was in error.

3. **Cumulative:** Isaac Newton was once asked by a student how he came up with all his ideas. He was said to have paused for a moment and replied: “If I’ve seen far, it’s because I've stood on tall shoulders.” Newton’s response reflects the cumulative nature of scientific knowledge. One of the most exciting features of the scientific method is that you need not start from scratch when attempting to understand something. Instead, you find out what others have already learned, and add to this base. Of course, if you feel unsure about some reported observations, then you often attempt to verify them before adding something new to the store of knowledge.

4. **Self-Corrective:** Science is considered self-correcting because when errors in observations are made, sooner or later the mistakes will be identified (Stokes,1974: 185, 399; Silberner, 1982: 41). Ultimately, no statement about scientific observations is ever excluded from the possibility of being in error, although from a practical standpoint many statements can be considered proven. Because science is self-correcting by always leaving all statements about reality open for further investigation, you will find most scientists do not say statements are “either true or false.” Instead, they will use such terms as “The evidence strongly suggests…” or “Studies have shown…” The self-correcting and the verifiable and the cumulative features of science methodology are closely linked (Fuchs & Turner, 1986: 143-150).

5. **Deterministic:** Deterministic is another unprovable philosophical assumption that scientists
implicitly make in attempting to explain why things happen. Basically, this assumption is that any explanation given for a phenomenon must entail only empirical (or natural), as opposed to supernatural, factors (Encyclopedia of Sociology, 1981: 282). Although there is no way to prove that supernatural entities (God, the devil etc) are not responsible for whatever is being observed, by removing the supernatural factor from consideration, scientists can at least hope to find the causes. If supernatural forces are controlling events that scientists are trying to understand, then they are unlikely to understand the phenomenon using scientific methodology. Consequently, scientists normally assume that causes are natural in origin (natural in this sense would also include social causes). There is little controversy any more in applying the assumption of determinism to the study of physical or even biological phenomena. When applied specifically to the study of behaviour, however, the determinist assumption also implies that, in the strictest sense, there is no “freewill” underlying human actions. People feel very uncomfortable applying this assumption, and there is a long standing controversy over “free will” vs. determinism in the social sciences (M. Ruse, 1987: 419-442; B. Russell, 1948; D.W. Viney, 1986: 555-565). This controversy will not be debated here. Students of research methods only need to understand that (a) determinism is ultimately an unprovable assumption, and (b) it does not deny that humans (or other animals) make choices. The assumption simply postulates that all choices any living creature makes can be ultimately explained in terms of some combination of natural (including social) factors (See E.R. Harcum, 1991: 93-114).

6. Ethical and Ideological Neutrality (Value Free): The ethical neutrality of the scientific method does not mean that scientists must divest themselves of all moral principles and political beliefs in order to conduct research. Ethical and ideological neutrality merely means that scientists should not allow such things as ethics and ideology to influence what is being empirically observed and reported. There is a long-standing controversy as to whether it is possible for scientists, especially social scientists, to ever be completely objective, especially when studying people with cultural backgrounds unfamiliar to the observer (M.J. Mahoney, 1987: 165-176; J.M. Brittain, 1990: 105-117). One example of apparent social science bias has come from studies of sex-differences in behaviour. Overall, male researchers were found to report greater sex differences in various behaviour patterns than were female researchers (Eagly & Carly, 1981: 1-20). Which sex is closer to being correct still remains to be determined. The best insurance against observations biases is to, first, never take a single study’s results as proved. This means that social scientists should conduct numerous replication studies (using a variety of methodologies and samples before asserting that a particular finding is well-established) (R.F. Bornstein, 1990: 71-81). The second way to avoid unintentional biases is to make social science a world wide endeavour. Fortunately, people in nearly all countries have an interest in objectively studying social phenomenon (J.M. Brittain, 1990: 105-117). This gives one reason for being optimistic about social scientists gradually becoming a universal human enterprise.

7. Statistical Generalizability: The scientific method usually involves subjecting information to statistical analysis. Sometimes the statistics involved are very simple, such as finding averages and calculating percentages, and other times the statistics are exceedingly complex. Thus it must be understood very clearly that no student can grasp social science research methods without a rudimentary knowledge of statistics.

In this way, seven interrelated characteristics of the scientific method can be identified. Although they are all important, we should not assume that scientists-- even good scientists-- necessarily adhere to the scientific method without exception. Less tangible qualities of the scientific process sometimes take precedence. These include individual motivation, inspiration, lucky hunches, and even stubborn defiance of prevailing opinion. About the only characteristic that is diametrically opposed to the spirit of science is insistence upon any single set of unquestionable dogmatic beliefs. We need not see science as a dehumanizing force in society. Indeed, it may well be the most powerful humanizing force available to us. If it is an extension of our best efforts in ordinary situations, then it can teach us to improve those
efforts. And any learning that occurs in those situations can be a basis for improving the scientific methods available to us, for those methods are merely human construction and are thus subject to continuing change. Such an approach is in the direction of fulfilling our shattered Enlightenment dream of a society based on reason.

Thus, “the scientific method encourages a rigorous, impersonal mode of procedure dictated by the demands of logic and objective procedure” (C.L. Lastrucci, 1967: 7). Accordingly, scientific method implies an objective, logical, and systematic method, i.e., a method free from personal bias or prejudice, a method to ascertain demonstrable qualities of a phenomenon capable of being verified, a method wherein the researcher is guided by the rules of logical reasoning, a method wherein the investigation proceeds in an orderly manner and a method that implies internal consistency.

There are certain long-standing ethical principles to which social scientists have always been bound regarding how they should treat human subjects. Other ethical and even legal responsibilities have only recently been instituted. Confidentiality refers to the assurance given by researcher to not reveal the identity of persons who provide research information. Such assurances are generally considered morally equivalent to the assurances that newspaper and television reporters make to not disclose the identity of their sources without permission. It is also similar to the confidentiality to which physicians, ministers, and professional counselors are bound in their relationship with clients.

A special type of confidentiality is called Anonymity. It refers to the practice of not asking any information that would reveal the identity of specific subjects. Anonymity is most easily assured with questionnaire completed by subjects, as opposed to information obtained by direct observation or an interview. Assurances of both confidentiality and anonymity should not be made by a researcher unless he or she intends to abide by those commitments. In spite of the clear moral commitment researchers have to abide by assurances of confidentiality, in fact, the legality of such assurances has never been fully tested in court. Therefore, if subjects are being asked to report information that could be used in a court of law, they should be so informed of that risk.

In order to maintain the confidentiality of data, the following procedures should be followed:
1. Keep all data under lock and key, and restrict access to original data to a minimum number of trusted research associates.
2. Although it is sometimes necessary to know names of subjects while data are being collected, afterward it is often no longer necessary. Therefore, as soon as possible, permanently detach the names of all subjects from the data records, destroy the names, and use arbitrary number for identifying each record. Some types of marketing research present special problems from the stand point of confidentiality.

In most countries, informed consent is now legally required of all research projects involving human subjects. It entails letting prospective subjects know the basic purpose of a study, and then obtaining their permission to be involved (with the understanding that they are free to withdraw it at any time). The y exception to this requirement would be persons who are unwitting subjects in direct observations (e.g. observing seat belt usages by passing motorists). Informed consent is either explicit (i.e. in written form), or implicit (i.e. by subjects’ taking and returning a completed questionnaire). Implicit informed consent is mainly acceptable when persons are asked to complete and return an anonymous questionnaire. The concept of informed consent clearly implies that participation in a study or not coerced. However, such an implication is difficult to avoid in some cases especially in captive populations such as prisons. Imagine that you needed a pool of subjects to test the effectiveness of new treatment programme. You would be implicitly coercing prisoners to be subjects in the study if there was even a possibility that they could be released earlier than those who chose not to participate in the study.

The concepts of deceiving and causing harm to subjects are often closely related, especially in the social sciences. The first refers to any misinformation that is intentionally given to subjects about the study in which they will be involved. The second concept covers any physical and emotional discomfort that subjects may experience as a result of their taking part in a study. Most harm experienced by subjects in
social science research is of an emotional rather than physical nature. There are many examples of deceptions and/or the induction of emotional harm. These include studies which have exposed subjects to gruesome photographs, pressured them to lie or cheat, falsely told them that they possessed undesirable personality traits or that they failed a basic competency test, or led them to believe that an emergency had just occurred (e.g. someone collapsed or fight broke out in front of them). Much of the deception used in social science research only lasts as long as the subject’s participation in the study. At the end of their participation, the subjects are debriefed, i.e. informed of the nature of the study.

For most of the time that social science research has been conducted, all ethical decisions were at the discretion of the researchers involved. However, now there are various types of associations of social scientists which have begun to form basic guidelines for professional ethics. In most of the commonwealth countries, they are such associations are called Research Ethics Committees (RECs). These committees must review and approve most research involving human subject before the projects can be undertaken, especially if any public funding is involved.

Intentionally representing someone else’s writings or ideas as your own is called **Plagiarism**. It comes in three forms. The most common form is copying passages from an article or book without crediting the original author. This type of plagiarism is clear-cut, although the dividing line between plagiarism and “liberally paraphrasing” a sentence or two is sometimes fuzzy. The other two forms of plagiarism are **Ghostwriting**, and **Piggybacking**. While ghostwriting is said to be common in the authorship of popular books (such as autobiographies by celebrities), it is considered unethical in professional writings (including student papers, theses, and dissertations). Piggybacking is including, as the author of a publication, someone who made no significant contribution to the document. It often happens when a subordinate is pressured by someone in authority into including his or her name on a manuscript unreservedly. To avoid plagiarizing never use the exact phrase or another writer without doing the following: In the case of a phrase or sentence or two, place quotation marks around the quoted passage. If several sentences are being quoted, the passage should be indented. Even sentences that contain close paraphrasing of someone else’s words should be avoided unless that person is explicitly given credit.

The most difficult to prove is the type of fraud in which a researcher lies about what he or she found in a study. This type of fraud can be very destructive because it may take decades to determine that a particular finding was an error. There appear to be two main reasons as to why a researcher would indulge in this kind of fraud. First, some researchers are highly motivated people and would like to make an important contribution to their field. In addition, researchers are encouraged to do so by their employing institutions because the reputations of most universities depend heavily upon research excellence. 92% of readers of an English general science magazine, responding to an anonymous survey, said they were aware personally of at least one instance of cheating in social science research. In order to stop plagiarism, as students, researchers need greater supervision by those who have more-established careers. Further, young researchers should be encouraged to present preliminary findings at review sessions and seminars to obtain feedback. It is also important that researchers should understand the importance of keeping careful records of all observations and maintaining them for at least five years beyond publication. In fact, the basic philosophy demands that if young researchers are properly trained in how to conduct research, they will be less tempted to “cut corners” and possibly even fabricate data when difficulties are encountered. One problem with disclosing cases of possible fraud is that individuals who bring charges, and journals that publish such charges, risk being sued for libel if their charges cannot be proven.

One of the foremost problems relating to our texts is their largely non-historical nature. For instance, literature fails to give a realistic picture of the cities where the Buddha delivered his sermons. Most of the descriptions of these cities are repetitive and conventional to the extreme. Information like sky touching mansions with banners, wide streets and large portals has to be treated with utmost caution. But through the prolixity of the conventional descriptions emerge certain specific facts about the early
urban centres—some, indeed, did have moats, ditches, ramparts with towers and gates, and busy markets. Information on the structure of the population, government officials and their henchmen, and material milieu (though generally exaggerated) is readily available in the texts as features of cities. The Pāli Tipiṭaka purports to depict society at the Buddha’s time, though the date of the Buddha itself is neither firmly established nor universally accepted (See Sarao, 1988). The dates suggested for different parts of the Pāli canon are themselves neither absolute nor even approximate. They are all too often based on a chain of inferences, which is no stronger than its weakest link. Thus, uncertainty of chronology of various texts, makes a chronological arrangement of the data very difficult. Buddhist literature, in common with the general ideas of the period, frequently appears to use numbers in a conventional sense rather than as real. Thus the numbers instead of being rejected altogether, are taken as representing large or small quantities.

There have been several serious and useful studies in the recent past, which have aimed at explaining from one point of view or another satisfactory methods for utilizing the texts. T.R. Trautman (1971) did a computer study of the Arthaśāstra though some scholars are sceptical about such a use of computers to analyse texts (See the reviews of his book by L. Stembach, 1972: 498-500; T. Burrow, 1971: 198-199). His central aim was to examine statistically the authorship and sequence of the different sections of the Arthaśāstra, with a view to discovering its composite nature and chronology. A.L. Basham in the preface of Trautman’s book claimed his former student’s conclusions to be something approaching certainty. Though it may be said that the statistical methods are quite useful for studying what Trautman had set out to do, his conclusions appear to be extremely sweeping because he made use of only simple particles, conjunctions, and in one case compound words, whereas the sentence-length, compound-length as well as many other linguistic considerations were completely ignored. But still, it is a new and exciting way of analyzing texts. N. Wagle (1966) studied anthropologically early Buddhist literature with the help of structural analysis. His aim was to use the Pāli canon to establish the nature of society at the time of the Buddha. His study included, amongst other things, patterns of settlement, social groups and ranking, kinship and marriage, and occupational division of society. He used various modes of address, relative status, competition for status, and criteria for respect to prepare a picture of the household, the magnates, the kin groups, and other associations. His results are extremely convincing and consistently coherent.

One of the major areas where the correlation between the textual and archaeological data may be considered reasonably satisfactory is the identification of ancient sites mentioned in literature. This aspect of ancient Indian historical geography received attention as early as the middle of the eighteenth century. The geographical bearing of important ancient sites, as given both in Indian textual tradition and the classical writings on India, formed the core of this type of study. This approach matured in Cunningham’s Ancient Geography of India, first published in 1871. He depended for this, in addition to the sources used by the earlier scholars and his own extensive field investigations, on the then newly published records of travel of Faxian (fifth century CE) and Xuanzang (seventh century CE). The identifications proposed by Cunningham were not all undisputed, though disputes or uncertainties occurred because of the discrepancy and incompleteness in the Chinese accounts themselves. It is in these areas of uncertainty that there has been a steadily increasing volume of satisfactory correlation between the textual tradition and archaeological evidence.

References


