Criteria For Judging Usable Hypotheses

The formulation of usable hypotheses is of central importance. The entire study rests upon the potential significance of the hypotheses. In this guide, William J. Goode and Paul K. Hatt prescribe step-by-step methods for evaluating hypotheses against criteria. Note again the emphasis given to the criterion that a hypothesis should be related to a body of theory. It is also important to anticipate the verification problem. Zetterberg has stated three criteria for the acceptance of a working hypothesis: (a) that the empirical data were found to be arranged in the manner predicted by the working hypothesis, (b) that we have disproved the null hypothesis with a certain probability, and (c) that we have disproved alternate hypotheses to the one tested.

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1 The hypotheses must be conceptually clear. The concepts should be clearly defined, operationally if possible. Moreover, they should be definitions that are commonly accepted and communicable rather than the products of a “private world.”

2 What to do: One simple device for clarifying concepts is to write out a list of the concepts used in the research outline. Then try to define them (a) in words, (b) in terms of particular operations (index calculations, types of observations, etc.), and (c) with reference to other concepts to be found in previous research. Talk over each concept with fellow students and other researchers in the field. It will often be found that supposedly simple concepts contain many meanings. Then it is possible to decide which is the desired referent.

3 Hypotheses should have empirical referents. It has also been previously pointed out that scientific concepts must have an ultimate empirical referent. No usable hypothesis can embody moral judgments. Such statements as “criminals are no worse than businessmen,” “women should pursue a career,” or “capitalists exploit their workers” are no more usable hypotheses than is the familiar proposition that “pigs are well named because they are so dirty” or the classical question, “How many yards of buttermilk are required to make a pair of breeches for a black bull?” In other words, while a hypothesis may involve the study of value judgments, such a goal must be separated from a moral preachment or a plea for acceptance of one’s values.

4 What to do: First, analyze the concepts that express attitudes rather than describe or refer to empirical phenomena. Watch for key words such as “ought,” “should,” “bad,” etc. Then transform the notions into more useful concepts. “Bad parents” is a value term, but the researcher may have a definite description in mind: parents who follow such practices as whimsical and arbitrary authoritarianism, inducing psychic insecurity in the child, failure to give love, etc. “Should” is also a value term, but the student may simply mean, “If women do not pursue a career, we can predict emotional difficulties when the children leave home, or we can predict that the society will not be able to produce as much goods,” etc. When, instead, we find that our referent is simply a vague feeling and we cannot define the operations needed to observe it, we should study the problem further and discover what it is that we really wish to investigate.

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The hypotheses must be specific. That is, all the operations and predictions indicated by it should be spelled out. The possibility of actually testing the hypothesis can thus be appraised. Often hypotheses are expressed in such general terms, and with so grandiose a scope, that they are simply not testable. Because of their magnitude, such grand ideas are tempting because they seem impressive and important. It is better for the student to avoid such problems and instead develop his skills upon more tangible notions.

By making all the concepts and operations explicit is meant not only conceptual clarity but a description of any indexes to be used. Thus, to hypothesize that the degree of vertical social mobility is decreasing in the United States requires the use of indexes.

Such specific formulations have the advantage of assuring that research is practicable and significant, in advance of the expenditure of effort. It furthermore increases the validity of the results, since the broader the terms the easier it is to fall into the trap of using selective evidence. The fame of most prophets and fortune-tellers lies in their ability to state predictions so that almost any occurrence can be interpreted as a fulfillment. We can express this in almost statistical terms: the more specific the prediction, the smaller the chance that the prediction will actually be borne out as a result of mere accident. Scientific predictions or hypotheses must, then, avoid the trap of selective evidence by being as definite and specific as possible.

What to do: Never be satisfied with a general prediction, if it can be broken into more precise subhypotheses. The general prediction of war is not enough, for example: we must specify time, place, and participants. Predicting the general decline of a civilization is not a hypothesis for testing a theory. Again, we must be able to specify and measure the forces, specify the meaning and time of decline, the population segments involved, etc. Often this can be done by conceptual analysis and the formulation of related hypotheses: e.g., we may predict that urbanization is accompanied by a decline in fertility. However, we gain in precision if we attempt to define our indexes of urbanization; specify which segments will be affected, and how much (since in the United States the various ethnic and religious segments are affected differently); specify the amount of fertility decline, and the type (percentage childless, net reproduction rate, etc.). Forming subhypotheses (1) clarifies the relationship between the data sought and the conclusions; and (2) makes the specific research task more manageable.

Hypotheses should be related to available techniques. Earlier, the point was repeatedly made that theory and method are not opposites. The theorist who does not know what techniques are available to test his hypotheses is in a poor way to formulate usable questions.

This is not to be taken as an absolute injunction against the formulation of hypotheses that at present are too complex to be handled by contemporary technique. It is merely a sensible requirement to apply to any problem in its early stages in order to judge its researchability.

There are some aspects of the impossible hypothesis that may make its formulation worth while. If the problem is significant enough as a possible frame of reference, it may be useful whether or not it can be tested at the time. The socioeconomic hypotheses of Marx, for example, were not proved by his data. The necessary techniques were not available either then or now. Nevertheless, Marxian frameworks are an important source of more precise, smaller, verifiable propositions. This is true for much of Emile Durkheim's work on suicide. His related formulations concerning social cohesion have also been useful. The work of both men has been of paramount importance to sociology, even though at the time their larger ideas were not capable of being handled by available techniques.
Furthermore, posing the impossible question may stimulate the growth of technique. Certainly some of the impetus toward modern developments in technique has come from criticisms against significant studies that were considered inadequate because of technical limitations. In any serious sociological discussion, research frontiers are continuously challenged by the assertion that various problems “ought” to be investigated even though the investigations are presently impossible.

What to do: Look for research articles on the subject being investigated. Make a list of the various techniques that have been used to measure the factors of importance in the study. If you are unable to locate any discussion of technique, you may find it wiser to do a research on the necessary research techniques. You may, instead, decide that this lack of techniques means your problem is too large and general for your present resources.

Some items, such as stratification or race attitudes, have been studied by many techniques. Try to discover why one technique is used in one case and not in another. Note how refinements in technique have been made, and see whether one of these may be more useful for your purposes. Look for criticisms of previous research, so as to understand the weaknesses in the procedures followed.

Again, other problems may have been studied with few attempts at precise measurement. Study the literature to see why this is the case. Ascertain whether some subareas (for example, of religious behavior) may be attacked with techniques used in other areas (for example, attitude measurement, stratification measures, research on choice making, etc.).

The hypothesis should be related to a body of theory. This criterion is one which is often overlooked by the beginning student. He is more likely to select subject matter that is “interesting,” without finding out whether the research will really help to refute, qualify, or support any existing theories of social relations. A science, however, can be cumulative only by building on an existing body of fact and theory. It cannot develop if each study is an isolated survey.

Although it is true that the clearest examples of crescive theoretical development are to be found in the physical and biological sciences, the process can also be seen in the social sciences. One such case is the development of a set of generalizations concerning the social character of intelligence. The anthropological investigations at the end of the nineteenth century uncovered the amazing variety of social customs in various societies, while demonstrating conclusively that there were a number of common elements in social life: family systems, religious patterns, an organization of the socialization process, etc.

The French school of sociology, including Lucien Levy-Bruhl, Emile Durkheim, Marcel Mauss, Henri Hubert, and others, formulated a series of propositions, at the turn of the century, which suggested that the intellectual structure of the human mind is determined by the structure of the society. That is, perception and thought are determined by society, not alone by the anatomical structure of our eyes, ears, and other senses. Modes of thought vary from society to society. Some of these formulations were phrased in an extreme form that need not concern us now, and they were often vague. Nevertheless, the idea was growing that the intelligence of a Polynesian native could not be judged by European standards; his thinking was qualitatively, not merely quantitatively, different.

At the same time, however, better techniques were being evolved for measuring “intelligence,” which came to be standardized in the form of scores on various IQ tests. When these were applied to different groups it became clear that the variation in IQ was great; children of Italian immi-
grants made lower grades on such tests, as did Negroes. Northern Negroes made higher grades than whites from many Southern states. American children of Chinese and Japanese parents made rather high scores. Since it was generally assumed that these tests measured "innate intelligence," these data were sometimes generalized to suggest that certain "racial" groups were by nature inferior and others superior.

20 However, such conclusions were opposed on rational grounds, and liberal sentiments suggested that they be put to the test. There were, then, two major sets of conclusions, one suggesting that intelligence is in the main determined by social experience, the other suggesting that the IQ is innately determined. To test such opposing generalizations, a research design was needed for testing logical expectations in more specific situations. If, for example, it is true that the intelligence of individuals who are members of "inferior" groups is really determined biologically, then changes in their environments should not change their IQ. If, on the other hand, the social experience is crucial, we should expect that such changes in social experience would result in definite patterns of IQ change.

21 Further deductions are possible. If identical twins are separated and are placed in radically different social experiences at an early age, we might expect significant differences in IQ. Or, if a group of rural Negro children moves from the poor school and social experience of the South to the somewhat more stimulating environment of the North, the group averages would be expected to change somewhat. Otto Klineberg, in a classic study, carried out the latter research. He traced Negro children of various ages after they had moved to the North and found that, in general, the earlier the move to the North occurred, the greater the average rise in the IQ. The later the move, the smaller the increase. Even if one assumes that the "better," more able, and more daring adult Negroes made this move, this does not explain the differences by time of movement. Besides, of course, the subjects were children at the time of the migration.¹

22 In this research design a particular result was predicted by a series of deductions from a larger set of generalizations. Further, the prediction was actually validated. In justice to the great number of scholars who have been engaged in refining and developing IQ tests, it should be mentioned that other tests and investigations of a similar order have been carried out by many anthropologists, sociologists, and social psychologists. They do not invalidate the notion that IQ is based in part on "innate" abilities, but they do indicate that to a great extent these abilities must be stimulated by certain types of experience in order to achieve high scores on such tests.

23 From even so sketchy an outline of a theoretical development as the foregoing is, it can be seen that when research is systematically based upon a body of existing theory, a genuine contribution in knowledge is more likely to result. In other words, to be worth doing, a hypothesis must not only be carefully stated, but it should possess theoretical relevance.

24 What to do: First, of course, cover the literature relating to your subject. If it is impossible to do so, then your hypothesis probably covers too much ground. Second, try to abstract from the literature the way in which various propositions and sets of propositions relate to one another (for example, the literature relating to Sutherland's theory of differential association in criminology, the conditions for maximum morale in factories, or the studies of prediction of marital adjustment). Third, ascertain whether you can deduce any of the propositions, including your own hypothesis, from one another or from a small set of major statements. Fourth, test it by some theoretical model, such as Merton's "Paradigm for Functional Analysis in Sociology" (Social Theory

and Social Structure, pp. 50-54), to see whether you have left out major propositions and determinants. Fifth, especially compare your own set of related propositions with those of some classic author, such as Weber on bureaucracy or Durkheim on suicide. If you find this task of abstraction difficult, compare instead with the propositions of these men as explained by a systematic interpreter such as Talcott Parsons in his Structure of Social Action. What is important is that, whatever the source of your hypothesis, it must be logically derivable from and based upon a set of related sociological propositions.