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The Research Act

A Theoretical Introduction to Sociological Methods

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the case despite the fact that we largely performed in the role of participants-as-observers. Similarly, we often interviewed patients only once, never again seeing them. Generally speaking, however, the type of experiences and problems I analyze in this chapter will be confined to the complete participant and the participant-as-observer. I will treat most extensively the latter of these two roles because what passes as participant observation in contemporary sociology is largely of this variety, and the problems of this field strategy may also be generalized to the less frequently used method of complete participation.

Participant Observation's Solution to the Causal Inference Problem: The Case of Analytic Induction

At the heart of a causal proposition lies the demonstration of time order, covariance, and the exclusion of other causal factors. In the experiment this problem is explicitly treated by constructing two comparison groups—one exposed to the assumed causal variable and the other not exposed. The survey, I have noted, approximates the experimental model through multivariate analysis. In participant observation the experimental model is again approximated through the use of analytic induction, which is a strategy of analysis that directs the investigator to formulate generalizations that apply to all instances of the problem with which he is concerned. This differentiates analytic induction from multivariate analysis, for in the latter, concern is directed not to generalizations that apply to all instances of the phenomenon at hand, but rather to most or some of them.

Strategically analytic induction represents an approximation of the experimental model to the extent that explicit comparisons are made with groups not exposed to the causal factors under analysis. Conceptually this represents the classic before-after experimental design, and when employed in participant observation it calls for the investigator to search for empirical instances that negate his causal hypothesis. This general strategy, which combines the method of agreement and the method of difference previously discussed in the context of the experiment, is described by Lindesmith as follows:

> The principle which governs the selection of cases to test a theory is that the chances of discovering a decisive negative case should be maximized. The investigator who has a working hypothesis concerning his data becomes aware of certain areas of critical importance. If his theory is false or inadequate, he knows that its weaknesses will be more clearly and quickly exposed if he proceeds to the investigation of those critical areas. This involves going out of one's way to look for negating evidence [1952, p. 492].

Described abstractly, analytic induction involves the following steps:

(1) A rough definition of the phenomenon to be explained is formulated.
(2) A hypothetical explanation of that phenomenon is formulated.
(3) One case is studied in light of the hypothesis, with the object of determining whether or not the hypothesis fits the facts in that case.
(4) If the hypothesis does not fit the facts, either the hypothesis is reformulated or the phenomenon to be explained is redefined so that the case is excluded.
(5) Practical certainty may be attained after a small number of cases has been examined, but the discovery of negative cases disproves the explanation and requires a reformulation.
(6) This procedure of examining cases, redefining the phenomenon, and reformulating the hypotheses is continued until a universal relationship is established, each negative case calling for a redefinition, or a reformulation (see Robinson, 1951, p. 813).

Lindesmith's (1947, 1968) research on opiate addiction provides an illustration of this method. The focus of his investigation was the development of a sociological theory of opiate addiction. He began with the tentatively formulated hypothesis that individuals who did not know what drug they were receiving would not become addicted. Conversely, it was predicted that individuals would become addicted when they knew what they were taking, and had taken it long enough to experience withdrawal distress when they stopped. This hypothesis was destroyed when one of the first addicts interviewed, a doctor, stated that he had once received morphine for several weeks, was fully aware of the fact, but had not become addicted at that time. This negative case, forced Lindesmith to reformulate his initial hypothesis to state:

> Persons become addicts when they recognize or perceive the significance of withdrawal distress which they are experiencing, and that if they do not recognize withdrawal distress they do not become addicts regardless of any other considerations [1947, p. 8].

This formulation proved to be much more powerful, but again negating evidence forced its revision. In this case persons were observed who had withdrawal experiences and understood withdrawal distress, but not in the most severe form; these persons did not use the drug to alleviate the distress and never became addicts. Lindesmith's final causal hypothesis involved a shift on his part from

> the recognition of withdrawal distress, to the use of the drug after this insight had occurred for the purposes of alleviating the distress [1947, p. 8].

This final hypothesis had the advantage of attributing the cause of addiction to no single event, but to a complex chain of events. The final hypothesis, which in reality represented a chain of propositions, involved the following:

1. Addiction rests fundamentally upon the effects which follow when the drug is removed, rather on the positive effects which its presence in the body produces.
2. Addiction occurs only when opiates are used to alleviate withdrawal distress, after this distress has been properly understood or interpreted. That is, after it has been represented to the individual in terms of linguistic symbols and cultural patterns which have grown up around the opiate habit.
3. If the individual fails to conceive of his distress as withdrawal distress brought about by the absence of opiates, he cannot become addicted, but if he does, addiction is quickly and permanently established through further use of the drug [1947, p. 165].

All of the evidence unequivocally supported the above theory, and Lindesmith concluded:

This theory furnishes a simple but effective explanation, not only of the manner in which addiction becomes established, but also of the essential features of addiction behavior, those features which are found in addiction in all parts of the world, and which are common to all cases [1947, p. 165].

Before reaching the conclusion that his theory explained all cases of opiate addiction, Lindesmith explicitly searched for negative cases that would force revision or rejection of the theory. He describes this process as follows:

Each succeeding tentative formulation was not constructed *de novo,* but was based upon that which had preceded it. The eventual hypothesis altered the preceding formulations sufficiently to include the cases which earlier had appeared as exceptions to the theory postulated.

It may be asked whether the search for negative cases was properly conducted and if the observer has not neglected evidence of a contradictory character. To this, of course, there is no final answer. It is probable that somewhere in the course of any study unconscious distortion takes place. Concerning the central hypothesis and the direct lines of evidence, however, certain procedures were followed which may be said to exclude bias. For example, when the theory had been stated in an approximation of its final form it occurred to the writer that it could be tested in cases where an individual had had two separate experiences with morphine or opiates, each of which was sufficiently prolonged to produce withdrawal distress but with addiction following only the second episode. Case 3 in Chapter Four is an example. It was concluded that if the theory was valid, the person would report that he had failed to realize the nature of withdrawal in that experience from which he had escaped without becoming addicted. Thereupon a thorough search was made for cases in which an individual had undergone such an experience with the drug prior to becoming an addict. All cases of this kind which could be found, or of which any record could be located, were taken into account. Any of these cases might have contradicted the final hypothesis, but none did so. The inference or prediction which had been drawn on the basis of the theory was fully borne out. This procedure was followed throughout the study wherever possible . . . [1947, pp. 9–10].

The Intent of Analytic Induction

As Lindesmith's study reveals, a basic assumption underlying analytic induction is the search for propositions that apply to all cases of the problem under analysis. In other words, it is assumed that genuinely scientific causal propositions must be stated as universals. This belief forces the sociologist to formulate and state his theories in such a way as to indicate crucial tests of the theory and to permit the explicit search for negative cases. It is assumed

that the exceptional instance is the growing point of science and that cumulative growth and progressive development of theory is obtained by formulating generalizations in such a way that negative cases force us to either reject the generalization or to revise it [Lindesmith, 1947, p. 37].

This strategy not only forces the careful consideration of all available evidence, both quantitative and qualitative, but it makes necessary the intensive analysis of individual cases and the comparisons of certain crucial cases. Thus, Lindesmith did not confine his study only to analysis of individual addicts, but he also examined statistical reports on opiate addiction. In addition, he explicitly studied nonaddicts who had regularly received drugs in hospitals in order to isolate the causal conditions present in addiction and absent among nonaddicted hospital patients. This of course represents the use of the method of difference that forms the logic for the construction of control groups in the experimental design.

Another central feature of analytic induction is its reliance on theoretical rather than strict statistical sampling models. While Lindesmith made use of prior statistical studies of opiate addicts, his main strategy was to sample theoretically in a continual effort to find crucial cases that would invalidate his theory. In one sense the use of theoretical saturation as a criterion for concluding observations on a concept has its analogue in analytic induction's dictum that a theory is complete only to the extent that negative cases that invalidate it are not identified.

The use of the concept in participant observation and analytic induction represents somewhat of a departure from experimental and survey modes of research. Instead of an emphasis on strict variable analysis, concepts are

used in a sensitizing fashion, as in Lindesmith's study, where opiate addiction was defined in terms of each crucial case. Such a strategy permits the investigator to work back and forth from his theory to his observations, altering when necessary both his theory and the definitions of his central concepts.

Advantages of Analytic Induction

Analytic induction makes it possible to disprove theories while testing one theory against another. (Lindesmith was able to develop and test his theory of opiate addiction by testing it against psychological and physiological theories.) Analytic induction also provides a method by which old theories can be revised and incorporated into new theories as negative evidence is taken into account. (Lindesmith's initial theory was progressively refined in the light of each new piece of evidence.) Third, this method, with its extreme emphasis on the importance of the negative case, forces a close articulation between fact, observation, concept, proposition, and theory. Fourth, analytic induction provides one direct means by which theoretical and statistical sampling models can be brought together; that is, the investigator will find himself extending his propositions to representative cases not yet examined. One method of selecting cases will be the statistical sampling assumptions of randomization and representativeness. Theory will be of little use until it can be shown that the propositions apply to all cases of the phenomenon under analysis, and statistical sampling provides one method of doing this.

Fifth, analytic induction allows the sociologist to move from substantive, or middle-range theories to formal theories. Lindesmith, for example, hypothesized that the propositions in his theory would also apply to other forms of deviance such as alcoholism. While this is not completely representative of a formal theory as I have treated it in Chapter 3, it does indicate an attempt to work with a small number of generic concepts in a variety of different empirical settings to assess the utility range of those concepts and the underlying theory.

Sixth, analytic induction leads to developmental or processual theories, and these are superior to static formulations that assume variables either operate in an intervening or antecedent fashion on the processes under study. If the assumption that social events occur in a temporal-longitudinal sequence is correct, then it is incumbent on the sociologist to develop theories that take this element into account. Sociologists need theories and models of proof and inference that interpret social process.

Deficiencies of Analytic Induction

As Turner (1953, pp. 604–11) has suggested, too frequently analytic induction is employed in a definitional rather than a causal fashion. That is,

predictions concerning who would take a drug and who would not, or under what conditions withdrawal symptoms would be severe or not severe, were not contained in Lindesmith's theory. Instead it is a predictive system that explains the behavior of persons who have taken opiates. Furthermore, the emphasis on qualitative propositions of a universal nature creates problems when the processes studied are continuous variables that exhibit themselves in degree only. Lindesmith found that withdrawal symptoms had to be of a sufficient degree to cause the opiate user to become an addict. The precise amount of severity was never specified, hence it becomes difficult to test this critical assumption in the theory.

When the theorist identifies processes that do not present themselves in degree he avoids this difficulty, but continuous variables occur frequently. The only reasonable solution to the dilemma, of course, is to measure these events quantitatively along a continuum of degree, but this solution has seldom been employed. In effect then, if the theorist does not observe processes that have universal occurrence he is forced to exclude them from consideration. Such events are the province of enumerative or statistical induction, with them the statistical method must be combined with the analytic induction. To fail to make this link is to forego the analysis of central pieces of information that would lead to greater specificity of the final theory.

A third disadvantage of analytic induction is an economical-temporal consideration. While relatively few cases will be analyzed, the time spent in the analysis typically will be much greater than that required in the ordinary experiment or survey. Lindesmith, for instance, intensively studied no more than seventy addicts, but spent several years in the collection, analysis, and presentation of his evidence. As the sophisticated participant observer employs this method, he will utilize multivariate analysis to alternatively test different propositions and to identify the causal sequence of variables. The comparative method is central to the strategy because comparisons are made in situations where the causal propositions under development should not be present, and in these senses, it can be said that analytic induction should represent an attempted synthesis of all the methods of inference treated thus far.

Participant Observation and the Problems of Validity

Just as the experiment and the survey are subject to the problems of internal and external validity, so too is participant observation. Can the observations of the participant observer be generalized to other populations (external validity)? Do the observations represent real differences, or are they artifacts of the observational process (internal validity)?