3 Specificity of Method and Knowledge in Social Science

Donald W. Fiske

Social science has accumulated many diverse bodies of knowledge. Each specific parcel is separate, almost insulated from the others. Among the dozens of discrete discoveries in experimental psychology alone, Newell (1973) lists perceptual illusions and serial position effects in free recall. Social psychology has the Prisoner's Dilemma and the risky shift effect. At an intermediate level, psychology has problem solving and the classical maze learning in rats. Of still larger scope is the comprehensive array of human experience as interpreted by psychoanalysis. The scale varies with the questions being asked.

This diversity has two main bases: the selection of the behavior to be studied and the choice of a way or ways to observe and measure it. These are the two parts of method as the term will be used in this paper. The first part is the protocol, the sequence of behavior of one or more organisms on which the investigator focuses. People's experience can be subsumed under behavior because we can know about that experience only from some behavior, usually verbal behavior. Part of the protocol is the specification of the other physical or psychological events or conditions occurring at the same time as the behavior studied, such as the constancies in the setting for the behavior: What objects are present? What persons? What are the orientations of the various persons?

The measuring procedures are applied to some aspect of the protocol as a whole or to some designated units within it. Obviously the same protocol, such as a conversation, can be observed and measured in a large number of ways, depending upon the investigator's interests. Independent measuring procedures applied to the same set of protocols or even to the same units within a protocol typically generate more or less independent arrays of measurements. Although some convergence may appear, it is notorious
that each array contains much variance specific to it. From the examples of Campbell and Fiske (1959) through the intercorrelation matrices published during the last quarter century, the prevailing specificity of methods is more striking than the modest degrees of convergence.

The argument of this paper is that knowledge in social science is fragmented, is composed of multiple discrete parcels, and that the separateness or specificity of those bodies of knowledge is a consequence, not only of different objects of inquiry, but also of method specificity. Each method is one basis for knowledge, one discriminable way of knowing—perhaps not in the technical epistemological sense that the phrase is used by philosophers, but in a pragmatic sense. Each method, each way of knowing, gives us a kind of knowledge. Each measuring procedure is applied to a protocol obtained under a particular set of conditions and provides information about some aspects or properties of that protocol. Each method sets for the observer a cognitive task that involves the processing of input from a protocol to produce data.

In most of social-behavioral science today, the knowledge in one parcel cannot be firmly related to that in other parcels for several reasons. First, the data and the findings obtained by one measuring procedure typically fail to be duplicated by those from another procedure, even when applied to the same protocol. Second, a single kind of protocol commonly yields data and findings that cannot be coordinated with those from another kind of protocol. Third, the conditions under which the protocol is obtained ordinarily affect the data and the findings.

The challenge to social-behavioral science is to minimize the degree of specificity in bodies of knowledge by reducing the contribution of method specificity. At best, the current bodies of knowledge can be linked to each other only tenuously. Gains are made by identifying significant new protocols involving basic behavioral processes, by recording the protocols, and by controlling the process of producing data so as to minimize the known sources of specificity in measurements.

Another factor associated with the disparateness of our bodies of knowledge is the absence of testable theories that encompass even a few of these parcels. For each parcel that has a considerable accumulation of established findings, some conceptual interpretations and perhaps even a minitheory or two are typically present. But no clear and firm linkages exist between the conceptual work in one body and that for other bodies. The lack of well-developed

inclusive theories can be attributed in part to the specificity of our knowledge. Yet that specificity itself is in part due to the absence of adequate general theory. Theory can guide observation and the interpretation of empirical relationships at the same time that empirical work provides grist for the mill of the theorist. Each can contribute to or hold back the other.

Related to this condition is our poor conceptual understanding of our methods of observing and measuring. In a mature science, each measuring procedure has a rationale based on general substantive theory. Each application of such a procedure is an instance of the phenomena explained by a part of that substantive theory. For example, each of the many ways of measuring temperature is based on a known physical principle. In the absence of conceptually accepted theory in social-behavioral science, we choose measuring procedures that seem to work. Our selection is pragmatic, if not intuitive. Since our measuring procedures themselves involve social-behavioral processes, a better understanding of those processes could be a step toward a more adequate substantive theory. Similarly, any progress toward better theory should contribute to improved theoretical understanding of our measuring procedures (see Fiske, in press).

In distinct protocols, different things are examined, so separate bodies of knowledge are obtained. But when are two protocols distinct and when are they of the same kind? A major difficulty in social science research lies in the categorization of protocols into homogeneous sets. (If only social science could identify large aggregates of homogeneous events or objects, like the particles in a gas, for which precise laws hold!) The investigator decides which protocols are appropriate for the problem being studied. Other scientists must find that selection satisfactory, and they must be able to identify other protocols that can be considered interchangeable so that they can conduct research on the same problem and perhaps even attempt to replicate the investigator's study. For this categorization of protocols, the investigator must provide criteria that are independent of the variables being measured. Such criteria describing the conditions are themselves measurements on at least qualitative (present or absent) scales. Even in experimental psychology, apparently similar protocols may yield different findings when the breed of rat (see Jones & Fennell 1965 on Tolman's rats compared to those of the Hull-Spence group) or the kind of wood used for animal bedding (Vesell 1967) differs.

What protocols can be labeled as the products of a person with a
more basic is the size or duration of the temporal event or events providing the material for the measuring process. Behavior is behaving; it changes over time. Although the fundamental unit of measurement is the assigning of a property to an action or change, most measurement in social-behavioral science assigns a property to a set of actions viewed as having something in common: talking rapidly refers to the rate at which one element in speaking succeeds another; being seen as friendly may involve the rates or intensities of several qualitatively different acts, including smiling, looking at other people, and speaking certain words. In the alienation example, the property “alienated” could be applied to a single adjective in a person’s speech, but more commonly, it is applied to several manifestations over a shorter or longer period of time. Applications to groups of cultures are even more complex; they may in some way aggregate the attributions made to individual members or the inferences made to several behaviors carried out by different persons, as in suicides.

Associated with level of abstraction and with size of that which is measured is the breadth of the conceptual property assigned in measuring. Suicide is more concrete than being alienated. Rate of talking or moving is more specific than being tense or aroused. A Skinnerian bar-press is narrower than “seeks food.” When the property or attribute does not describe a particular action but subsumes many diverse patterns of behavior, there is an apparent gain in conceptual simplicity at the cost of precision. Most common trait and attitude labels refer to heterogeneous manifestations.

The various groups of social-behavioral scientists work with properties at varying levels of abstraction and breadth, applying the properties to units of diverse sizes and extents. Gross-classifications on these scales yield multiple cells, within each of which a body of research can develop. At this time, the conceptual linkages between the resulting parcels of knowledge, even those for adjacent cells, are limited and tenuous.

The Data-Producing Process
Each set of protocols is typically the basis for a single body of knowledge. In the research producing that knowledge, a single procedure is often used to measure a basic dependent variable, and a standard procedure is used to assess each major independent variable. As noted earlier, each datum generated by a given procedure is the product of a behavioral process about which we have little firm knowledge. In contrast to the extended duration of behavioral
protocols or even segments of protocols to which properties are attributed, the process of assigning a measurement is fairly rapid. Recognizing an instance of a designated act may take less than a second. Choosing an answer to a questionnaire item can take only a couple of seconds. Judging the degree to which a trait label applies to a person takes only a little longer. Minutes, hours, or years of experience with the person judged are reduced to a few images or impressions in the cognitive activity resulting in the datum. Although our knowledge of data-producing processes is very limited, we know enough to realize that they are quite complex. For evidence on the process of manifesting mental ability, as in producing responses to items in an intelligence test, see the work of Sternberg (e.g., 1983).

In social-behavioral measurement, the person producing the data is a crucial source of method specificity. The longer and more complex the process by which a datum is produced, the greater the likelihood that characteristics of the particular data producer will affect the process and the resulting datum. The larger the contribution from the individual observer, the lower the agreement between observers and the greater the specificity of each observer’s data. In a sense, each observer can be seen as a specific measuring procedure.

The longer, more complex observer processes involve interpretive or inferential judgments, judgments about the extent of variables with verbal labels and definitions. In addition, the measuring task is presented to the observer in verbal terms. This reliance on words is a major factor in observer disagreement. In addition, the protocols are often in words; for example, they may be verbal reports or conversations. Investigators tend to assume that the meanings of verbal materials are sufficiently shared so that the investigator’s meanings can be taken as those of the observer and even those of the subject to a large extent. Unfortunately, studies of words and their meanings show that not only connotations but also denotations vary among persons using words or perceiving them (see Fiske 1978, chap. 2; and Fiske 1981 for additional discussions of words and language imprecision).

Considerable research has been done on the meanings of words when used as stimuli—as in the questions asked in survey research or in written questionnaires. Frequently, the words used in phrasing a question affect the distribution of responses (Sudman & Bradburn 1982; Turner & Krauss 1978). The problem of course involves, not only the specific word (how often is “often”?), but also the interpretation of the word in a given context (Pepper 1981; Pepper & Prytulak 1974).

Words make a major contribution to procedure specificity, and that specificity severely handicaps research in many areas of social science. The multiple bodies of knowledge in the social and behavioral sciences can be roughly ordered in terms of dependence upon words. The less the data on a topic depend upon words, the more systematic and cumulative have been the findings. Within psychology, there is the range from physiological psychology through psychophysics, cognition, and social psychology to personality. Across traditional disciplines, there is the polar contrast between econometrics and ethnography. Within the field of mental health, the differentiation is not as marked. While the verbal pole is epitomized by psychoanalysis, the other extreme—as represented for example by biological psychiatry—is still handicapped by interpretations of words used in diagnostic classifications.

The dependence on words has another consequence. It provides an opportunity for the individuality, if not idiosyncrasy, of investigators’ personal orientations or world views to affect their research activities—their interpretations and construals of data, their formulations of findings and conclusions. With considerable individuality in these facets of each investigator’s work, any consensus among investigators on generalizations must be somewhat loose. To be acceptable to most of the investigators associated with a particular body of knowledge, a generalization has to be stated in fairly broad terms.

Each investigator can be viewed as a measuring procedure, as an instrument for obtaining knowledge. From this viewpoint, we can consider how the individuality of the investigator can contribute specificity. On the basis of accumulated experience, each investigator has acquired personal connotations for both everyday and technical words. In addition, each has a subjective phenomenal domain that he or she is trying to understand and a distinguishable way of conceptualizing it. Finally, investigators in social science also vary widely in their norms and their styles of work. Some are willing to use and trust data derived from complex cognitive interpretations and inferences of observers; others want behavioral records on which observers agree closely. Some will settle for weak and unstable relationships between variables; others accept only strong effects. Investigators working on a given substantive problem typically converge on a preferred method and agree fairly well on their norms for acceptable data and findings. Thus bodies of
knowledge are differentiated by the style of those who have contributed to them.

Another factor contributing to procedure specificity is the use of delayed reports as raw data. When a lengthy protocol is the basis of an interpretive judgment, the final part of the data-producing process occurs after the experiencing of the protocol and must depend upon images and impressions retained in the observer’s memory. Clear instances are self-reports and ratings by peers who have known the subject over months or years. But even the retrieval of very recent experiences must be used with great care, as Eriksen and Simon (1980) point out. Much more complex is the ethnographer’s use of informants, a practice that adds the informant’s retrieving and distilling of impressions about standard practices and beliefs to the ethnographer’s selective recording of the informant’s words.

So we have specificity in measurement procedures insofar as they vary with the type of protocol and with separate aspects of each type, as in judging traits from an interview in contrast to counting smiles during a conversation. For coping with specificity between procedures, our best strategy is to try to understand how the several types of protocols and the aspects of protocols assessed by discrete procedures contribute to the relative independence of the arrays of data. In addition, we have specificity within the products of a procedure, specificity associated with each application of it. This can stem from the observer’s individualistic cognitive processing of the protocol, including the interpretations given the words in the protocol and the words in the measuring task. For the tasks involved in measuring procedures commonly used today, we have done about as much as we can to reduce observer specificity.

**Can Bodies of Knowledge Be Tied Together?**

Incontrovertible is the empirical fact that findings are largely specific to the method or methods used. The discreteness of the data from each procedure has led to the production of separate bodies of knowledge. These bodies will remain separate. Just as in one day’s newspaper, the sports pages, the neighborhood news section, and the movie reviews report quite unrelated events, so do the various methods in social science. But even when the same event is the object to which several methods are applied, the resulting sets of data can be expected to have little or no covariation. When a sunset is observed by an artist, a sailor, and an air pollution specialist, the three observations are incommensurate. The artist perceives the whole picture, the sailor looks for diagnostic meteorological signs, and the pollution specialist looks for evidence of particulate matter.

The optimist can sustain faith by noting Kuhn’s view of the history of science: “The early developmental stages of most sciences have been characterized by continual competition between a number of distinct views of nature. . . . What differentiated these various schools was . . . what we . . . call their incommensurable ways of seeing the world and of practicing science in it. . . . In the early stages of the development of any science different men confronting the same range of phenomena, but not usually the same particular phenomena, describe and interpret them in different ways” (1970, 4, 17). The pessimist doubts that the history of natural science will be repeated by social science, believing it more likely that diverse bodies of knowledge will always exist in social science because they involve different things known differently.

Findings from data aimed at concepts at one level of abstracting will ordinarily be difficult to link firmly with results pertaining to a different level. When two bodies of knowledge apply to separate objects of inquiry, such as individuals and groups, it is very difficult to integrate their substantive contents. Even when the same protocols are being studied, the units to which properties are ascribed strongly affect the nature of the findings. Compare judgments of thirty-minute videotapes of interactions with codings of occurrences of specific behaviors within each record, as in the work of Shweder and D’Andrade (1979, 1980). As another example, speech examined as sound patterns yields knowledge distinct from speech studied as content with meaning. Note that the protocol for speech as sound patterns is analyzed as a record of moment-to-moment changes while content is interpreted in terms of units with longer durations. Similarly, interaction research can be classified by the types of methods used. Observers can be employed to judge an interaction as a whole, making interpretations leading to inferences about attributes of participants (as in research on the leaderless group discussion). Alternatively, they can code each remark into categories such as those in the Interaction Process Analysis of Bales (1950). Within the growing body of research on the nonverbal side of interactions, some researchers focus on understanding particular kinds of actions, such as greeting behavior (Kendon & Ferber 1973). Others code a set of actions related to the structure of the conversation, as in examining the exchange of speaking turns (Duncan & Fiske 1977, chap. 11). Still another set of investigators work with purely physical methods (e.g., Jaffe & Feldstein
1970; Feldstein & Welkowitz 1978). Thus we have multiple bodies of knowledge about face-to-face interactions, bodies that can be distinguished by the aspect studied and, within aspect, by the particular procedure or type of procedure employed.

In some research areas, bodies of knowledge can be compared and contrasted fairly objectively, rather than by judgmental summaries and evaluations. The techniques of meta-analysis permit the averaging of sets of investigations using the same or similar methods. For example, in The Benefits of Psychotherapy (1980), Smith, Glass, and Miller provide summary statistics not only for kinds of treatments but also for types of methods for measuring the effects: more reactive procedures show larger mean effects, presumably as a result of positive biases in therapists and patients.

Thus meta-analysis enables us to pull together the knowledge that has been obtained by each particular method of obtaining data and then to make comparisons among them as a way to decide on next steps in research in the area. By portraying the variation around each average, it enables the investigator to identify subsets of research studies and to look for previously unrecognized sources of effects. At best, meta-analysis is a fairly objective way of assessing the state of knowledge on a given topic. At worst, people note only the summarizing mean-effect size and jump to broad inferential conclusions that ignore the extensive variation among effects and the diverse conditions generating them.

**How Will Knowledge in Social Science Advance?**

The best prediction of a person’s behavior has been found to be that the person will do what he or she did last time in the same situation. Similarly, the best prediction of what will happen in social science is one based on what has happened. Hence it is most probable that social science will continue to develop the many discrete bodies of knowledge now extant and will initiate additional parcels, each identified with a kind of protocol and with a method or set of methods for producing data.

Some bodies of knowledge go out of fashion and are set aside, residing on library shelves, with no further additions to them. Among these are ones where the findings have proved specific to the method or to a special experimental setting and no fruitful extensions have been established (e.g., maze learning in rats). Other bodies of knowledge persist, with slow accretions. Persistence characterizes many bodies of knowledge that are deemed pertinent to societal problems, to issues with which society con-

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...tends, issues that social scientists want to settle. Examples of societal problems are delinquency, alcoholism, and personal maladjustment (see also Fiske 1978, especially chaps. 9, 10). Bodies of knowledge also persist because they involve verbal abstractions, for example, “aggression” and “culture,” that are derived from the way people have construed their everyday experience. Like everyone else, social scientists want to understand their everyday experience and their conceptualizations of it. Most of the topics studied by social scientists come from such experience. The topics are labeled by terms from the lay language or by terms one small step removed from common speech, for example, “socioeconomic class,” “stages of development.”

Such bodies of knowledge persist and continue to expand in spite of only minimal signs of progress, without showing any major quantal steps or critical transformations. What changes in social science can be taken as scientific revolutions? One reason why social science hangs on to its findings, concepts, and loose generalizations is that it has not developed a consensus on bases for rejecting any of them. To be sure, some findings are viewed skeptically because the studies generating them have apparent artifacts and because potential threats to the validity of the findings have not been eliminated in the plan for the research (Cook & Campbell 1979). But many findings are accepted because they are consistent with the approximate knowledge that social scientists and lay people have acquired from everyday experience.

Similarly, concepts persist, especially those that we find we can apply to our everyday experience. Rarely are concepts rejected, and rarely are generalizations, propositions, and theoretical statements overturned in social science. Most conceptual statements in social science persist because they are formulated in such a way that they cannot be disproved (cf. Popper 1959). Contrary empirical evidence can be ignored as not relevant or as indicating merely that the proposition does not apply under some contrived set of circumstances. Part of the problem stems from the failure of social theorists to specify the boundary conditions, the limits within which their proposition is asserted to be held.

One major strength of the multitrait-multimethod model of analysis (Campbell & Fiske 1959) is that it provides bases for rejecting a concept. If several measures of one concept do not covary highly, the utility of the concept is thrown into question. That model also throws light on method specificity. Although the problem of isolating method factors by quantitative means is still not
well resolved, the model does provide evidence for intrusive effects of methods. If measurements from two methods do not agree well, then one or both methods are introducing excessive specific effects or they are not measuring the same concept. Some assumption must be rejected.

**Significant Progress**

More crucial for the advance of social science knowledge than the persistence of current bodies of knowledge and the occasional shelving of others is the creation of new bodies of knowledge. The most significant of these are parcels where the researchers have managed to avoid or overcome the obstacle of method specificity, and as a consequence, investigators can begin to develop linkages between the parcels. These new bodies have some of the interrelated characteristics examined below.

**Discovering New Major Protocols**

Some bodies of knowledge are simply more important than others because they have major implications for human functioning. For example, Kleiman and his colleagues opened up the study of sleep, and later the study of dreaming, by discovering that dreaming occurred during periods of rapid eye movements (Aserinsky & Kleiman 1958). Another major development was initiated by Sperry's Nobel Prize-winning demonstration of the separate functioning of the two hemispheres in the brain. Although highly atypical clinical cases provided the first clues that the two hemispheres could function independently, this finding led to demonstrations that they do so function in normal cases. The basic variable, the identification of the hemisphere processing the input, can be determined in several ways that seem free of effects from procedure specificity. It is notable that these two advances involved locating the object of study in space and time, thus enabling the protocols to be circumscribed and specified.

These two examples are neurophysiological; it is not as easy to find a clear instance of a major new protocol in the purely behavioral area. The clearest is the identification of instrumental conditioning, focusing on the consequences of an action rather than on the antecedents. The result has been an enormous body of research and knowledge, perhaps best viewed as several related bodies of knowledge. The work on variable-interval reinforcement has broad ramifications, and the research on behavior modifications has had major impact on the field of mental health. The discovery of such major protocols exemplifies the statement of Bhaskar that "perhaps the most significant type of event in the history of any science is that in which it refines—redefines—its object of inquiry" (1982, 276).

**Identifying Basic Behavioral Processes**

The analysis of sleep and the differentiation of hemispheric activity have been fruitful because the resulting research findings seem to hold quite generally, not just within the laboratory. Moreover, the problem of method specificity has been minimized in these fields. For hemispheric activity, similar convergent findings have been obtained for several separate procedures: EEG, relative blood flow, and perceptual asymmetries. These indices appear stable and seem to have minimal specificity problems. The data-production processes can be readily controlled. Thus, with major new protocols pertaining to basic natural processes, highly significant bodies of knowledge can be developed with minimal interference from specificity in the methods used to produce the data and findings. Especially in the early stages of such work, multiple approaches (Campbell 1969) and triangulation (Crano 1981) are fruitful strategies, with the strategy of "convergent operations" probably being more valuable later (Garner 1974; Garner, Hake & Eriksen 1956).

Basic behavioral processes can also be studied as they occur in naturalistic settings. Just look at behavior. This approach is often very difficult because it relies on the investigator's skill in determining when a basic process is occurring. Sometimes the investigator can set up fairly natural conditions and just let the behavior happen. For example, McClintock (1981) constructed a relatively naturalistic environment for rats and then recorded their mating behavior in the dark (using infrared illumination). She found that this behavior differed sharply from mating behavior in rats in small confining cages. Two other research programs of local colleagues have concentrated on naturally occurring behavior, one on casual conversations (Duncan & Fiske 1977) and one on experience as sampled by randomized beeper signals (Larson & Csikszentmihalyi 1983).

In a basic behavioral process, the task of adaptation is carried out. Such functioning can be studied without the difficulty of ascribing meaning to the information being processed. When the task is clear, the type of information and the kind of output or response are determined. What is consistent and replicable is the
way the information is processed, regardless of its particular content in any given instance.

Fixing the Object of Inquiry
Progress in science is associated with pinning down exactly what we are trying to understand. One obvious step toward such delimitation is the recording of protocols. In this way, both the experimenter in the laboratory and the investigator studying naturalistic behavior can obtain more dependable data. Also, a permanent record can be analyzed and subdivided into small temporal units. The coding process can be examined and repeated to check on accuracy. Even more important, as new variables are developed, as new ways of conceptualizing the protocol are created, they can be applied to the permanent record and the resulting data compared to that from the former methods.

When a recorded protocol is used to generate data, the investigator can examine the data-producing process more carefully. There is no time pressure, as there is in the observing of on-going behavior. The process can be repeated with variations to determine the effects of components in the method. In addition, when a protocol is recorded, the investigator can usually specify fairly precisely the conditions under which it was obtained—the time, place, participants, and circumstances. He or she can then circumscribe the class of systems to which the empirical findings and conclusions can be applied with confidence (cf. Cronbach 1982, 65, and chap. 4 in this volume). The use of recorded protocols enables the investigator to assess more exactly the degree of homogeneity in a given set of protocols, an important concern discussed earlier. In his Nobel Laureate address, Wigner perceptively observes:

It is often said that the objective of physics is the explanation of nature, or at least of inanimate nature, ... It is clear that ... physics does not endeavor to explain nature. In fact, the great success of physics is due to a restriction of its objectives: it only endeavors to explain the regularities in the behavior of objects. This renunciation of the broader aim, and the specification of the domain for which an explanation can be sought, now appears to us an obvious necessity. In fact, the specification of the explainable may have been the greatest discovery of physics so far. (1964, 995)

Social scientists have often had too high a level of aspiration. They have all too frequently set out to understand broad, vague things—intelligence, delinquency, and culture—as entities, rather than

seeing them as topics or areas within which to explore. The areas where progress is being made are those where the protocols have been circumscribed and where “regularities in the behavior of objects” have been identified.

Regularity is an attribution made after demonstrating dependability. Dependability, another broad term, has three aspects. First there is the replicability of observations, the extent to which independent observations of the same protocol agree. Second, there is representativeness, the extent to which the findings obtained in a research study agree with those for the populations of people, stimuli, and conditions to which the investigator wants to generalize. Finally, there is the reproducibility of conclusions, of evidence for or against conceptual propositions when the same fundamental proposition is empirically examined by work with different types of pertinent protocols. A high degree of reproducibility requires adequate representativeness, which in turn has to be based on sufficient replicability. Dependability by itself is a necessary but not a sufficient requirement for adequacy of protocols and of data. Some method effects can be highly regular. The first step in science, however, seems to be the identification of “regularities in the behavior of objects,” as a base from which to compare systematic differences in sets of such regularities observed under differing conditions.

Regularity and dependability appear to be maximized when small objects are studied and when the protocol unit being measured is short. Advances in social science have come from examining parts and stages of behavioral and experiential processes: the stages of sleep, the subdividing of intelligent performance (as in mental tests) into components, the successive moments in face-to-face interaction, the sampling of experience by randomly signaling subjects with “beepers.” Locating each observation in space is clearly necessary, but even more critical is subdivision into smaller and smaller temporal units. Behavior is change of action over time, and such change occurs very rapidly. When a protocol can be objectively divided into small units, the production of data about each unit can usually avoid many kinds of procedure specificity associated with processes in the data producers. A fruitful strategy is to select the smallest temporal protocol unit that makes a difference to the actor or the perceiver, that is, that conveys a piece of information. In dyadic interaction, it can be a perceptible action. In verbal content, the whole word is the smallest unit with information content.
Such dissection is rejected by many social scientists, especially those who prefer to work at higher, more abstract levels of analysis. They choose to work on such topics as the mental health of an individual or the efficiency of an organization. But they typically find that they have to break each topic down into subtopics. For example, part of mental health is the adequacy of the mental patient's functioning in personal interactions, and that can be further subdivided into functioning with spouse, with supervisor, or still further, to functioning with such a significant other under a specified condition. To find the answer to a scientific question, the investigator often has to restructure the problem into a set of more restricted questions.

Basic behavioral processes are rapid, each phase being of short duration. Interactions between persons and interactions between an organism and its environment involve very rapid actions and reactions. But social science is also concerned with larger entities, even within the functioning of the individual. A person forms impressions based on extended experiences. Attributions about other people are stored in long-term memory. When talking about others or when asked to judge others for research or administrative purposes, one retrieves these attributive impressions. They are, however, rather elusive and can be known by the investigator only when reported. Because of their adaptive importance, the forming of impressions and the products of summarizing, inferential processes continue to present challenges to social science. Once again, the problem of determining the meaning of specific content arises.

Controlling the Process of Producing Data

Much procedure specificity comes from inadequate control over the process of producing data. When the protocol is recorded, it is much easier to control that process: there is no problem of catching the behavior as it happens. Similarly, the behavioral protocol can be analyzed into smaller segments, a datum being obtained for each segment, rather than resorting to summary judgments. More generally, control is achieved by processing the protocol as directly as possible. The more direct the process, the more dependable the data and the more replicable the data. How public and explicit is that process? If the observing procedure is simple and direct, different data producers generate highly congruent, even interchangeable, sets of data. Moreover, the difficulties associated with delayed reports can be avoided.

Simple and direct procedures for generating data from protocols have another major advantage: They make it easier to analyze the procedure, to discover components in the process that affect the data. They help the investigator to know what is going on instead of being restricted to speculation. In this way, the constant components of the procedure for producing data can be identified and their effects on the data can be evaluated. The best technique is the classic one: change a component and observe the change in the data, as in the contrast between mating in a cage and mating in a free environment (McClintock 1981). Again, by comparing responses to various types of mental test items, Sternberg (1983) has identified components of the responding process that are general across tests but can vary with the individual, as well as components more specific to test content.

In addition to the constant components of data-producing methods, there are components that vary with each application. As noted earlier, much specificity of procedure is associated with specific observers, especially in cases where the observing/judging process is complex. Each observer or rater goes about the task in an individualistic way. The use of simple, direct observations minimizes these individualistic contributions. Where complex processes are unavoidable, the data can be made more dependable and replicable by training the raters—by providing feedback and discussing disagreements. The unreliability of the single rater making complex judgments is often hidden by the reliability reported for the mean of several ratings. Thus, when the mean of seven raters is given as .70, an apparently adequate value, the reliability of the single rater is only .25, an inadequate level for scientific observations.

**Specificity in Research on Societal Problems**

The preceding pages have emphasized what is important to the scientific subculture: basic research, social science knowledge for its own sake. That subculture is part of a larger culture to which social scientists also belong. Important for it are societal problems, such as matters of human welfare. In the investigation of such problems, specificity of method and the consequent specificity of knowledge are also endemic. A prime example is the study of psychotherapeutic effectiveness. Measures of effects of such treatments are relatively specific to the perspective of the person producing the judgments used as data. The views of the patient, of the therapist, of significant others, and of disinterested judges yield quite distinct appraisals. Within each perspective, the particular instrument can also contribute its own specificity (for examples, see Cartwright, Kirtner & Fiske 1963; Garfield, Prager & Bergin 1971). Even when judges identify the patient's target problems and rate
improvements on each, there is very limited agreement between ratings from different sources (Bond, Bloch & Yalom 1979).

New protocols getting at significant behavioral processes are being generated in the area of mental health. Paul and his associates have shown that it is possible to develop highly controlled procedures for the direct, descriptive observation of patient behavior, methods that eliminate the contribution of the specific observer (Paul & Lentz 1977; see also Journal of Behavioral Assessment 1, no. 3 [1979]). Their methods have been demonstrated to have practical value in decisions about patient management and in predictions about subsequent adaptation.

The problem of a taxonomy for patients in terms of amenability to each available form of treatment has not been adequately resolved. It is conceivable that the development of more objective methods for classification and diagnosis may contribute to the solution, for example, the identification of perceptual or cognitive dysfunctions such as in eye-tracking (Lipton et al. 1983). Even more fundamentally, the specific body of knowledge about smooth-pursuit-eye-movement dysfunctions, together with other evidence, may lead to an understanding of a central nervous system factor producing vulnerability to functional psychoses (Holzman 1982).

The need for replicable and dependable diagnostic classification has its counterpart in the problem of dealing systematically with therapist insights into connections between patients’ symptoms and experiences and with regularities observed by therapists in treatment hours (among countless examples, see those cited by Meehl [1983]). Therapists have miniboards of knowledge that may yet be integrated into parcels of knowledge on which not only clinicians but also some of the rest of us may reach consensus. One promising strategy is the study of short-term connections by means of transcripts of therapeutic sessions, as in the search for the immediate antecedents of symptom-onset, for example, psychosomatic symptoms (Luborsky, Docherty & Penick 1973) or momentary forgetting (Luborsky & Mintz 1974; Luborsky, Sackei & Christoph 1979). Equally intensive, fine-grained study of the therapeutic process is still an open challenge; related is the less difficult task of developing standardized ways for describing the treatment a given patient actually receives.

**Summary**

Social science has accumulated many diverse and discrete bodies of knowledge. Each body of knowledge has typically been generated by a particular method or set of methods for obtaining measurements. Since each method produces data that are more or less specific, it is a discriminable way of knowing. The term “method” refers to the protocol studied (the actual behavioral events and their setting) and also to the processes involved in the production of data. In addition to specificity associated with the particular setting, the measuring procedures contribute specificity from such sources as the diverse interpretations of words, the use of retrieved memories, and the specific observer, especially when the data production requires complex cognitive processes. As a consequence of method specificity, the multiple bodies of knowledge remain distinct and unconnected.

Social science progresses by controlling the process of producing data so as to overcome the obstacle of method specificity. New major protocols are being discovered. Basic behavioral processes with very brief phases are being identified. The objects of inquiry can be fixed by recording the protocols and by locating regularities, keeping variables at a low level of abstraction and applying them to small objects and to short units of protocols. Although research on such societal problems as mental health has encountered the difficulties associated with method specificity, it too is progressing by using those strategies.

Social phenomena have always been perceived and known in diverse ways. To such bodies of knowledge, social scientists have added many others, each with a perspective and with one or more methods for observing. Occasionally, one method and the body of knowledge it has generated are put aside in favor of a method that seems more fruitful, that produces some knowledge that is inherently more satisfying. The diversity, however, is certain to remain. Within and without the domain of social science research, there will always be many ways of knowing social phenomena, some more systematic than others. Each body of knowledge has served some purpose and will continue to do so. The recent history of social science, however, suggests that growth in depth of understanding comes primarily from reducing the pervasive effects of method specificity.

**Notes**

1. The discussion at the conference of the earlier form of this paper was valuable. In this revision, I have made use of that material without
References


———. In press. Measuring to understand and understanding measuring.

Specificity of Method and Knowledge


4 Social Inquiry by and for Earthlings

Lee J. Cronbach

Philosophers' "rational reconstruction" has created a legend of science as a transcendental activity, one that could best be conducted by sending teams of observers to hover over Earth. Standing highest on the scale of being, said Kant, are "the most sublime classes of rational creatures, which inhabit Jupiter and Saturn" (see Toulmin & Goodfield 1965, 99); there, if anywhere, must the idealized scientist dwell. Saturn's inhabitants are not bent on exploiting Earth's resources, nor is their quest primarily for knowledge useful on Earth. Hermann Hesse caught their spirit in his Bead Game: Ingenuity is testimony to one's own excellence and, like other art forms, an expression of reverence.

Because observations unordered cannot be an object of contemplation, an integrative story is the most valued product of science. Saturnians cherish retellings that capture most of what observers have reported and that can make sense of (or, better, foreshell) observations yet to be made. The stories that have commanded greatest respect have always been incomplete, some of them have been contradicted by new observations, and there is always the possibility that some genius will rearrange a collage of peephole visions into a graceful gestalt. Saturnians therefore do not expect the Bead Game to end at some moment when clariion certainty is proclaimed.

But Beadmasters do have faith that the universe will yield its secrets to scientific method, as the bandits' cave was attuned to "Open Sesame!" Beings from Jupiter as well as Saturn might begin to play the Bead Game. Learning from the responses and rebufs of Nature, these new players would become better and better at the game. If Jupiter's Beadmasters should happen to make Earth the object of inquiry, say the Saturnians, then their evolving model and the Saturnian model must come closer and closer to agreement.
What is Social?

METATHEORY in SOCIAL SCIENCE

Pluralisms and Subjectivities

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