

Beyond Positivism Toward a Methodological Pluralism for the Social Sciences

In this essay I will consider what is perhaps the most frequently discussed topic in the philosophy of social science: the relationship between the social sciences and the natural sciences. Elsewhere I have argued that social science explanations share important common features with the natural sciences—for example, the centrality of causal explanation, the utility of quantitative reasoning, and the importance of locating higher-level processes within a framework of causal mechanisms at lower levels (Little, 1991). There are plainly a number of features that distinguish the social sciences sharply from the natural—for example, the explanatory role of individual agency in social science, the need to interpret human actions as meaningful, and the weakness of laws and regularities in social science. What, then, is the proper relationship between social science and natural science?

There are two polar positions that have been argued on this topic in the last century. The first is naturalism: the view that the social sciences are methodologically similar to the natural sciences and that social researches that are *not* similar are scientifically suspect. And the other is anti-naturalism: the view that the social sciences embody one or more features that are radically distinct from the natural sciences. The most common defense of the anti-naturalist position depends on the contrast between types of explanation: the natural sciences provide causal explanations whereas the social sciences provide meaningful interpretations. We will see that neither naturalism nor anti-naturalism is wholly persuasive; against both I will argue for a doctrine of methodological pluralism.

Naturalism

Many philosophers and some social scientists hold that social science should aim to reproduce the methodological features of natural science. David Thomas puts the point this way. “I am concerned with whether the study of human society can satisfy natural scientific methodology. Throughout I pose the question in the following terms. Can social study conform to a naturalistic methodology, that is replicate the methodology of natural science? Is naturalism, the doctrine that there can be a natural scientific study of society, correct?” (Thomas 1979:1). And Thomas believes that his analysis shows that naturalism is a legitimate methodological program for social science.

The program of naturalism is ambiguous between two ideas. We may refer to these as weak naturalism (WN) and strong naturalism (SN).

WN It is possible to use a methodology based on natural science to investigate social phenomena.

SN It is necessary to use a methodology based on natural science to investigate social phenomena.

Weak naturalism holds only that naturalistic social science is possible; while strong naturalism holds that if social inquiry is to be scientific at all, it must be naturalistic social science. Weak naturalism is thus compatible with the view that some social inquiry is not naturalistic. Plainly, strong naturalism is more difficult to defend than weak naturalism.

A second preliminary issue arises as well. The content of naturalism varies according to the account we provide of the methodology of natural science. It is obvious enough that the techniques of research, empirical procedures, quantitative methods, and the like, differ substantially from one discipline to another—even among the natural sciences. Consequently, if naturalism is to be at all plausible, it must be necessary to describe the “logic of natural science” at a level of generality that abstracts from these differences. But what are the features of scientific method that might give substance to this conception of unity of science?

A central question dividing positivist and antipositivist philosophers is whether there is such a thing as a “scientific method” underlying all scientific research. I hold that this question is misguided in that it leads us to gloss over important methodological differences between areas of science. The most plausible view is a core-periphery analysis of scientific method: there are some features that all scientific enterprises must share, and there are a larger number of features that are in common among some but not all scientific enterprises. The former constitute the core criteria, while the latter represent something like family-resemblance characteristics that weave throughout various scientific enterprises.

The core features of science include at least these criteria: an empirical-testability criterion, a logical coherence criterion, and an institutional commitment to intersubjective processes of belief evaluation and criticism. All sciences place a high value on the use of empirical research and observation as a central means of evaluating scientific assertion and hypothesis. All sciences require that systems of belief be logically coherent and developed. And all proceed through a community of inquirers in which the individual's scientific results are subjected to community-wide standards of adequacy.¹

These criteria plainly do not represent a full description of scientific inquiry; rather, they represent a set of minimal standards which any enterprise must satisfy if it is to be judged scientific. (Popper and others offer criteria of these sorts as a

¹ W. H. Newton-Smith offers substantial description of the epistemic importance of the institutional structure of science in *The Rationality of Science* (1981). Robert Merton's *The Sociology of Science* (1973) provides a classic collection of empirical studies of the institutional structure of science.

“demarcation criterion” on the basis of which to distinguish between science and pseudo-science; Popper 1965.) Beyond these shared features of scientific reasoning may be found a large set of peripheral features that vary across scientific disciplines. Important peripheral features of science include: the use of quantitative methods and models; commitment to explanation of observed phenomena on the basis of underlying laws, processes, or mechanisms; a conception of theory as a unified system of hypotheses; use of controlled experimentation to evaluate hypotheses; extensive use of predictions based on theoretical reasoning; commitment to background metaphysical beliefs (e.g., no action at a distance, no explanation of individual behavior presupposing pure altruism). These features are peripheral in that they are general features shared by many sciences and lacked by many others; there are obvious and important exceptions to these features throughout the range of the sciences. Thus the discipline of thermodynamics throughout much of its history deliberately avoided hypotheses about underlying processes; cultural anthropologists rarely use complex quantitative models; and some areas of social science are not concerned with explanation at all, but are content with descriptive accuracy.

If naturalism amounted only to the claim that social science must share the core features of science with the natural sciences, it would be unobjectionable. This would only require that social science give central importance to empirical research and logical rigor, and that it possess the right sort of institutional structure. It would appear, however, that advocates of naturalism intend substantially more. Their view, paraphrased in the terms used here, is that the natural sciences share both core features and a significant cluster of peripheral features: substantial use of prediction, explanation based on hypotheses about unobservables, and testing of hypotheses through predictive consequences.

In another place I offer an account of what I refer to as “predictive-theory naturalism” (P-T naturalism). On this account, the cluster features of a natural-science methodology over and above the core features of all scientific enterprises include these ideas:

- 1 Scientific knowledge takes the form of unified deductive theories.
- 2 Such theories typically describe unobservable mechanisms in order to explain observable conditions.
- 3 Such theories attempt to describe laws of nature.
- 4 These theories permit relatively precise predictions.
- 5 These theories acquire empirical corroboration through their predictive consequences.

- 6 A central goal of scientific theorizing is to arrive at a unified theory of a domain of phenomena: a single comprehensive theory that permits explanation of all phenomena in the domain.²

On this account, natural science is characterized by theories that have predictive consequences, and scientific theories are empirically evaluated through the predictions to which they give rise. The issue of naturalism is whether social inquiry gives rise to knowledge about the social world with this logical and epistemological structure.

What sorts of considerations recommend naturalism as a philosophy of social science? A central motivation derives from the doctrine of the unity of science, according to which all sciences must share a set of methodological features in common if they are to be sciences at all. A second motivation is related; it stems from the program of physicalism, according to which all phenomena are ultimately grounded in the properties of physical objects. Sciences which appear to be concerned with non-fundamental entities therefore need to be reduced to lower-level sciences. The unity of science argument and the case for reductionism will be considered in the next two sections.

Three ideas are particularly important in recommending naturalism beyond these general and programmatic views. First, the strength of the model of theoretical explanation in the natural sciences is a further support for naturalism. The natural sciences have been enormously successful in the program of explaining apparently diverse and disorderly phenomena through formulation of a theory of the underlying mechanisms that produce the phenomena. Thus Newton's theory of gravitation provides a parsimonious explanation of tides, planetary orbits, and the law of falling bodies. It is tempting, therefore, to hold that the goal of social science is similar: to formulate a theory of underlying social processes or mechanisms that permits us to systematize a wide range of social phenomena. And some social theories appear to afford this possibility; thus the theory of collective action allows us to explain instances of collective action and freeriding in a variety of social settings.

A second motivation for naturalism derives from the importance of prediction for practical human purposes. The natural sciences provide the basis for numerous forms of human intervention in the environment based on the ability of natural science theories to predict the behavior of natural systems. Thus engineering rests upon the basic sciences of mechanics, materials, and the like; medicine rests upon the sciences of molecular biology, cellular biology, biochemistry; and so on for many areas of applied science. By arriving at theories of the underlying causal properties of natural systems, the natural sciences have paved the way for substantial human

² These theses are reproduced from Little (1986:14). It should be noted that these theses represent an idealization of scientific knowledge which fails even in application to many examples of natural science.

control of the natural environment. Social phenomena are equally important in the human environment: wars, recessions, and periods of ethnic violence are all social outcomes that human communities would prefer to avoid if possible. And greater economic productivity, greater equality, greater educational attainment by the disadvantaged, higher levels of social solidarity—these are outcomes that human communities would like to attain. It is tempting, then, to view the social sciences as providing the intellectual basis for social policy: by offering theories of social causation, the social sciences should permit policy makers to predict the effects of current social conditions, and to design interventions that bring about desirable outcomes. (Karl Popper emphasizes this aspect of social science as the basis for “social engineering;” 1961.)

A final motivation for naturalism derives from the admirable goals of empiricism: the requirement that knowledge claims should be supported by appropriate empirical data and rigorous logical reasoning. The natural sciences have embodied these goals to a substantial degree, and it is appealing to hold that the social sciences would do well to emulate the natural sciences in these methods. This is particularly important in social science because of the proximity between ideology, social philosophy, social mythology, and social science. We all have theories about what causes racism, what stimulates recession, or why wars occur. If the social sciences are to progress beyond these forms of unschooled social belief, it is necessary that social science theories be subject to rigorous standards of testing and empirical evaluation. And naturalism provides a methodological basis for such standards.

Prediction and theory

Is P-T naturalism a valid basis for social science methodology? Let us consider the central ideas in turn, beginning with the idea that scientific knowledge takes the form of unified deductive theories. Is this a useful model for the organization of social science knowledge? On the whole it is not. There are some examples of social sciences that possess this structure—e.g. neo-classical economic theory. Social sciences do employ theories. But only rarely does the theory function in the way postulated by naturalism—as a system of axioms from which social phenomena can be derived. Rather, on the whole social science explanations depend on what Robert Merton calls “theories of the middle range” (Merton 1967). Merton writes, “Theories of the middle range [are] theories that lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all-inclusive systematic efforts to develop a theory that will explain all the observed uniformities of social behavior, social organization and social change” (1967:39). Social scientists more commonly employ theoretical constructs in the way that Weber characterizes “ideal-types”. According to Weber, an ideal-type is a “conceptual pattern [that] brings together certain relationships and events of historical life into a complex, which is conceived as an internally consistent system” (1949:90).

The theoretical construct functions as an organizing device in terms of which the social scientist attempts to analyze and explain concrete social phenomena. The social scientist works back and forth between the abstract theoretical concept and the concrete social phenomena, shedding light on the concrete social phenomena by showing how various of its elements hang together. But social scientists rarely presume to deduce conclusions about the social phenomena on the basis of the abstract logic of the theoretical construct without consideration of the concrete particularity of the event in question.

Consider one example: efforts by comparative sociologists to analyze collective violence in diverse societies. The concept of a “grain riot” may be useful to characterize bread riots in medieval England and rice riots in Qing China. Each is an instance of collective violence stimulated by immediate food shortages and, perhaps, a popular sense of injustice. This concept permits the social scientist to analyze and discuss events from different cultures. But from beginning to end the social scientist must bear in mind the facts of historical contingency and cultural diversity; so it will be important not to force the English and Chinese events into an over-sparse conceptual space of food shortage and collective violence. The concept of a grain riot is a useful tool in terms of which to probe the historical particular; but it does not provide a basis for deducing the necessary course of development of the phenomena that fall under it. So social science knowledge does not typically take the form of unified deductive theories; instead, it takes the form of a theoretically informed effort to analyze historical particulars.

Turn next to the idea that theories should describe unobservable mechanisms in order to explain observable phenomena. This feature of naturalism corresponds to the idea that explanation of a phenomenon often involves identifying the cause of the events or pattern in question. And the most satisfactory causal explanation is one that identifies the mechanism through which cause and effect are connected. We may quibble, though, about whether causal mechanisms are typically unobservable in the social sciences. For unlike the fields and particles of fundamental physics, social causes are generally familiar and observable. Thus if we hold that Ronald Reagan's election in 1980 was caused by electoral dissatisfaction with the rate of inflation, we have identified as cause an economic variable that is, in the appropriate sense, observable. (By this I mean that there are well-known and justifiable economic measures of this variable.) What is unobservable is not the variable, but the causal connection between it and the outcome. Still, many examples of social science explanations do place central emphasis on the problem of identifying underlying causal mechanisms.

Do social explanations depend on laws of nature? We have seen at various points that social explanations do depend on identifying law-like regularities; but these are not typically laws of nature. Rather, they are regularities that are specific to social phenomena—those that derive from the forms of agency found in the persons who constitute social relations and processes of social change. Elsewhere I emphasize

the rule-governed character of human action and the regularities that derive from individual rationality as the regularities that underlie social causation. The essential point of statement (3), though, is born out by many of the examples of social explanation that we have considered: explanations depend on law-like regularities. The qualification we are forced to make is a narrow one: that social regularities do not derive from the fixed properties of physical objects, but from the circumstances of agency of human actors.

Do social sciences provide a basis for precise predictions? And is it reasonable to hope that they might do so at some point in the future? No, on both counts. Social sciences do admit of predictions, to be sure; but they are rarely precise and rarely reliable. And this fact does not result from the immaturity of the social sciences, but rather from the open-endedness of social causal fields and the indeterminacy of social processes. Suppose that we are interested in predicting the outcome of a hypothetical seizure of power by the New People's Army in the Philippines, and we analyze a small number of variables: the economic crisis that will be induced by the creation of a radical state, the competition for power that will result within the new ruling class, the policy goals that the NPA has announced in advance of its seizure of power (land reform, abolition of United States military bases), and the residual strength of a conservative opposition in the Philippines. Each of these variables can be investigated in considerable detail, and we may arrive at predictions about the sort of influence that each is likely to have on the structure and behavior of the NPA government. But major reservations must be made about the resulting predictions. (1) Predictions about each separate factor are questionable and have a high probability of error. Different analysts may disagree, for example, about how influential stated policy goals are on the actual behavior of policy-makers. (2) The problem of aggregating the separate effects of these factors introduces new uncertainties; for it may be that there are unanticipated interaction effects among them. For example, economic crisis may exacerbate intra-government competition more than expected. (3) Finally, there are numerous other factors that are potentially significant for the behavior of the new state beyond the four enumerated above: for example, the attitudes and influence of international organizations; the behavior of other major international players—e.g. the Soviet Union, Japan, and China; the possibility of popular discontent arising as a result of new government policies and the pace of reform; crop failure; major storms or earthquakes; and so on indefinitely. Each of these factors introduces a new dimension of uncertainty into the analysis. So predictions about the outcome of the new government are highly questionable, and should be regarded as predictions about tendencies rather than predictions about actual outcomes. And these limitations do not derive from the immaturity of the relevant social science disciplines; they are rather inherent in the multiple causation present in any complex social phenomenon.

Do social sciences acquire empirical support through testing of their predictive consequences? The preceding comments about prediction should make us

skeptical about this claim as well. And in fact study of a range of social sciences shows that empirical evidence often does not function in this way in social theory: social theories are not tested as wholes, but instead the various components of the theories are evaluated on more or less independent grounds. In the Philippine example above, the “theory” that our hypothetical researcher arrives at consists of a number of lesser theories—theories of economic process, domestic politics, international institutions, leadership motivation, and so on. And the application of each of these theories and hypotheses can be provided with separate empirical evaluation. So the comprehensive theory is not evaluated in terms of its predictive consequences; instead, the theory is evaluated piecemeal through evaluation of its parts.

Finally, let us ask whether unification is a proper goal for the social sciences. Is there such a thing as a “science of society”—a comprehensive theory of the processes and mechanisms that produce all social phenomena and that provide a basis for explanation of such diverse things as the structure of the capitalist state, the occurrence of ethnic conflict, and patterns of residential segregation? Is there a sort of “grand unification theory” for social science? To pose the question is to go a long way toward settling it. This is a misconceived goal, and one that is impossible to attain or approach. Social phenomena are inherently diverse, reflecting both patterned regularities and creative innovations. And even the regularities that are found among social phenomena derive from radically diverse sorts of causes—individual rationality, the vagaries of individual psychology, the structural properties of social institutions, the unintended effects of social policies, the interactions between culture and politics, and so on. So the goal of arriving at a finished and comprehensive theory of social processes is radically misconceived. Instead, we should think of the social sciences as contributing to an eclectic body of knowledge that sheds light on the various forms of social causation and structured human agency. Such a corpus of knowledge is inherently open-ended and inherently immune to unification under a single comprehensive theory—reflecting the open-endedness of human creativity and capacity for innovation. (Weber takes very much this perspective in “Objectivity ' in Social Science;” 1949:72-81.)

These considerations suggest that the model of P-T naturalism does not fit the social sciences particularly closely. Let us turn now to several more general reasons why naturalism has been an attractive doctrine to philosophers of social science.

Unity of science considerations

One important reason that naturalism has appealed to some philosophers is the power of the unity-of-science doctrine: all sciences are ultimately part of one large, methodologically uniform enterprise. The unity of science doctrine holds that all scientific knowledge ideally conforms to one model of logical organization (the model

of the unified deductive theory) and one method of inquiry and justification (hypothesis formation and theory testing through experiment). The doctrine of naturalism holds that all social scientific knowledge—if scientifically adequate at all—should share fundamental logical and methodological features with the natural sciences. However, examination of a range of social explanations reveals that they share various elements in common, but that there is no single model of scientific reasoning that covers all the cases. The examples considered in this study thus cast doubt on the traditional view that science is a “seamless web” of connected methods and theoretical structures. Rather, I will conclude that the cases considered here support a pluralistic conception of social science.³

Above I provided a core-periphery analysis of scientific method. This analysis permits us to formulate two versions of the unity-of-science doctrine:

WUS All sciences share the core features of science.

SUS All sciences share the core features and a significant cluster of the peripheral features.

The weak version (WUS) holds only that there are minimal standards that must be satisfied before any enterprise may be considered scientific; while the strong version (SUS) holds that all sciences share these minimal features and an assortment of other features. The weak doctrine is probably true but somewhat vacuous, whereas the strong doctrine is probably false.

Study of many examples of social explanation suggests that the weak unity of science doctrine finds support, but that any stronger theory of the unity of science is disconfirmed. Each example shows fundamental commitment to the core standards of scientific research: empirical control, logical rigor, and inter-subjective evaluation of scientific findings. In each case we find researchers who have defined a domain of empirical phenomena and have attempted to provide a systematic and empirically grounded explanation of these phenomena. And many embody an explanatory paradigm that closely resembles the pattern of causal explanation in the natural sciences. Moreover, the course of these debates underlines the institutional aspect of social science research. In each case an investigator advances his hypothesis, interpretation, or theory, to a community of scholars, and sharp critical evaluation ensues. These debates are carried out through professional journals, newsletters, and books, as well as conferences, scholarly meetings, and private correspondence. It is plain that these forms of intersubjective peer evaluation substantially determine the success or failure of a given hypothesis in the discipline. Thus it appears reasonable

³ Alan Ryan provides a clear discussion of the unity of science doctrine in application to social science in his introduction to *The Philosophy of Social Explanation* (Ryan, ed. 1973).

to conclude, first, that the practitioners themselves are guided by the core criteria of scientific objectivity identified above, and second, that the institutions of the social sciences effectively enforce these criteria on social scientific research as effectively as the corresponding institutions do in the natural sciences. So in terms of a core commitment to empirically controlled, intersubjectively evaluated investigation, the social sciences surveyed here satisfy the weak unity of science doctrine.

If we ask whether any stronger version of the unity of science doctrine is born out here, however, the answer appears to be no. Whether we consider methods of research, techniques of factual inquiry, standards of theoretical adequacy, or empirical testing procedures, we find substantial variation in different cases and different disciplines. Each of these debates represents a high level of rigor internally. But the regulative context of the debates—the standards of explanatory adequacy, the background assumptions about what sorts of questions must be raised, and background assumptions about research methods and empirical procedures—are very much the product of the particular histories of the various disciplines. The paradigms of research at work in European economic history, political science research into peasant behavior, and symbolic interpretation of millenarian rebellion are widely diverse. This diversity does not imply that interaction between these disciplines and enterprises is impossible or fruitless; the contrary is true. But it does imply that it is fruitless to look for a general methodology of social science which all these investigations employ, and which can function as a *lingua franca* among them. Unity-of-science considerations, then, do not provide strong support for naturalism as a theory of social science methodology.

Reductionism and the social sciences

Turn now to a second general reason for favoring naturalism: the attractiveness of reductionism as a model of explanation for higher-level sciences. A common view that some philosophers have endorsed is the hope that the social sciences will eventually be reducible to various of the natural sciences. John Stuart Mill, for example, held that the social sciences depend ultimately on the science of “ethology”—the science of human character (Mill 1950:338). Jerry Fodor puts the reductionist program in this way: “All true theories in the special sciences should reduce to physical theories ‘in the long run’” (Fodor 1980:120). On this line of thought, the various sciences are arranged in well-defined hierarchies from higher-level sciences to lower-level sciences. And higher-level sciences should be reducible to lower-level sciences in two respects: it should be possible to demonstrate the equivalence of entities in the two theories, and it should be possible to derive the laws of the higher-level science from the laws of the lower-level.

The reductionist gambit in the philosophy of social science recommends that we attempt to perform a similar reduction from certain central social sciences—e.g. economics or sociology—to the disciplines of individual psychology—personality

psychology, social psychology, and so forth. Suppose, for example, that it is a law within a sociology of prisons that when conditions become more crowded, the incidence of prisoner violence increases dramatically. The reductionist approach would suggest that we attempt to derive this regularity from more basic laws of individual psychology. Consider reductionism as applied to social science as consisting of the following requirements:

- All social entities must be definable in terms of facts about individuals and individual psychology;
- all social laws must be derivable from regularities of individual psychology.

Reductionism is far too strong a requirement on higher-level sciences and that there are good reasons for supposing that there may be autonomous social concepts and laws that are not reducible to individual-level concepts and laws. I conclude, therefore, that the reductionist thesis is not a valid methodological constraint on social explanation and theory. Instead, it is possible that there are autonomous (i.e. non-reducible) explanations and theories in the social sciences that do not derive from regularities at the level of individual psychology. And this in turn discredits reductionism as a ground for naturalism.

Conclusions on naturalism

It thus emerges that the strong doctrine of naturalism is not a valid constraint on social science research. The emphasis on the idea of knowledge as a unified deductive system and the assumption that science is primarily concerned with prediction fare badly in application to typical social explanations. Social explanations makes use of a variety of theoretical premises; but rarely do they take the form of an effort to reduce a large domain of social phenomena to a small set of theoretical axioms. And there are predictions that are associated with social science theories, but they are weak predictions, easily overcome by competing social factors. Finally, typical social science research involves a much larger core of relatively straightforward empirical investigation, independent from abstract social theory, than is suggested by the framework of predictive-theory naturalism.

What survives of naturalism, then, is a thesis about causal explanation and a requirement of rigorous empirical reasoning. If we chose to reformulate naturalism in consideration of these observations, the doctrine could be couched in terms of a principle of “reform naturalism:”

- All social sciences should attempt to provide causal explanations of social phenomena;
- these explanations should be grounded on analysis of the circumstances of agency of participants;

- social theories should be supported with rigorous use of empirical evidence in order to rule out alternative explanations.

This account comes closer to describing many of the examples considered here (and a wide range of actual social science practice). Its flaw is its comprehensiveness; for as we have seen at various points, there are areas of social science that do not take the form of causal explanations. In particular, there is a valid domain of interpretive social science that is based on the interpretation of concrete meaningful social action and practice. As a final emendation, consider “weak reform naturalism”:

- Many examples of good social science explanation conform to the standards of reform naturalism.

Thus the arguments in this section do not lend support to the main forms of anti-naturalism; for if weak reform naturalism is true, then strong anti-naturalism is false. Instead, I suggest an interpretation of social science that is eclectic, both in theory and in method; and I cast doubt on the idea that it should be possible to provide a general account of social science methodology that fits all inquiries equally well. On this approach, weak reform naturalism represents one important current in good contemporary social science; and a suitably revised weak anti-naturalism does so as well. I will return to these issues in the final section.

Positivism

The “received view” in much current philosophy of science holds that the central problem of empirical confirmation is to deploy observational evidence to corroborate or falsify theoretical beliefs. The central theory of confirmation offered by the received view is the hypothetico-deductive model (H-D). Scientific knowledge is held to consist of deductive systems composed of theoretical statements and observational statements. Theories refer to unobservable entities, mechanisms, and the like, and theoretical statements attribute diverse properties and relations to these unobservables. Theoretical systems are tested indirectly, by deriving observation sentences from them and evaluating these predictive consequences. Schematically, Carl Hempel describes the logic of confirmation in the following terms.

H	(a theoretical hypothesis)
A _i	(a set of auxiliary assumptions)
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O	(an observational consequence derived from H and A _i)

A theoretical hypothesis H is formulated using theoretical terms, and a set of auxiliary assumptions (A_i) are proposed that employ both theoretical and observational terms.

(These may describe an experimental procedure, for example.) Finally, an observational consequence *O* is derived from these premises. Since *O* is an observational sentence, its truth or falsity may be directly determined. If *O* is false, then the premises cannot be jointly true; if *O* is true, its truth is taken as some confirmation of the theoretical hypothesis. A hypothesis is taken to be confirmed if a number of observational consequences have been derived, tested, and found to be true.

Philosophers working within the tradition of logical positivism have thus tended to collapse the problems of empirical reasoning onto a highly abstract description of the relation between a range of data and a given hypothesis. Out of this domain emerged the H-D model of confirmation (Hempel 1965), the doctrine of falsifiability (Popper 1968), the bootstraps method (Glymour 1980), and many other variants. And philosophers of social science working from an antipositivist perspective tend to downplay the importance of empirical evaluation of social theory altogether (Althusser 1970, Adorno 1969). I hold that empirical argumentation is critically important to social science—thus rejecting the various forms of skepticism raised by antipositivists—but that the logical positivists and their progeny have placed the focus of their discussion of empirical reasoning at too abstract a level. In the social sciences, the most vexing problems of empirical reasoning lie at the level of the low-level empirical study and the evaluation of fairly low-level causal hypotheses—not at the level of the evaluation of complete theories.

Anti-naturalism

Let us turn now to the opposing position: the view that the social sciences are radically different from the natural sciences, in method and substance. This position is referred to as “anti-naturalism;” it may also be termed a “hermeneutic” or “interpretive” theory of social science. This strand of the philosophy of social science maintains, first, that the social sciences share a set of common and essential characteristics, and second, that these characteristics serve to radically distinguish the social sciences from the natural sciences. The characteristics most commonly attributed to the social sciences along these lines are related; it is held that the social sciences share a method of inquiry—the interpretive method; and they share a distinctive subject matter—meaningful human action rather than causally determined events.

A major critic of naturalism is Charles Taylor. Taylor writes of naturalism in the following terms. “There is a constant temptation to take natural science theory as a model for social theory: that is, to see theory as offering an account of underlying processes and mechanisms of society, and as providing the basis of a more effective planning of social life. But for all the superficial analogies, social theory can never really occupy this role. It is part of a significantly different activity” (C. Taylor 1985:92). There is a crucial disanalogy between social theory and physical theory, according to Taylor: given that social phenomena are partially constituted by the self-

understanding of the participants, a social theory can alter the social arrangements or facts that it describes (C. Taylor 1985:98). “Unlike with natural science, the theory is not about an independent object, but one that is partly constituted by self-understanding” (98).

What, then, is the anti-naturalistic alternative? I will present anti-naturalism as consisting in these claims:

- Social phenomena—behavior, social practices, and social institutions—are inherently meaningful; they are constituted by the meanings that participants attach to them;
- social phenomena can only be explained through a hermeneutic unpacking of the meanings that constitute them;
- interpretations of social phenomena can only be evaluated in terms of their internal coherence and their fit with the behavior and avowals of the participants;
- causal explanation has no legitimate role in social science;
- inductive regularities and predictions have no legitimate role in social science.

Let us briefly consider the first part of the anti-naturalist framework—the assumption that all social sciences share essential characteristics. We have now considered dozens of examples of explanations drawn from the social sciences, so we have some feel for the diversity of social science research. Is it plausible that there is a set of characteristics that all these examples, and the research traditions from which they derive, have in common? There is a trivial affirmative available: they all involve social phenomena, the interactive behavior of human beings in social relations. However, this common feature does not take us very far. And if we take the next step argued by anti-naturalistic social scientists—that all social sciences involve the interpretation of meaningful human action—then we find that the thesis is implausible. Consider some of the explanations that are offered by social scientists:

- Navajo speakers find the sentence “the horse was kicked by the man” amusing because they believe that horses cannot “control” men.
- Classical slavery collapsed because the system was not able to replace slaves fast enough.
- Capitalism experiences crises of underconsumption because employers have an incentive to keep wages low.
- Burmese peasants revolted in the Saya San rebellion because they felt unjustly treated by the state.
- Poor city dwellers have longer life expectancy than poor rural people because the former have access to free health care.
- The practice of prolonged lactation is found in hunter-gatherer society in order to depress fertility.

These examples are drawn from a range of social sciences. Some—e.g. the first and the fourth—conform to the interpretive dictum; they do involve the interpretation of social behavior as meaningful. Others do not fit this requirement; the fifth case, for example, involves identifying a structural difference between urban and rural life, and the second involves identifying a structural constraint on the Roman slave system. The third example is intermediate; it depends on consideration of the incentives presented to the typical capitalist, and in this respect involves interpretation of meaningful action; but the account is highly abstract and culture-neutral, and it gives rise to a standard causal explanation. Thus there is a spectrum of explanatory paradigms at work here, ranging from interpretation of meaningful action to analysis of a pattern of social causation. In every case meaningful human action comes into the story at some point; but this is simply the trivial consequence of the fact that we are dealing with social phenomena, which by definition involve individual action. I would conclude, then, that the strong thesis—that all social sciences have the same logical character—is invalid.

Moreover, there are strands of the anti-naturalistic school that run the risk of violating the core features of science. Consider the particularly sharp rejection of naturalism found in the methodological writings of Clifford Geertz. Geertz emphatically rejects the notion that the social sciences should model themselves on the paradigms of the natural sciences—the discovery of causal relations, covering law explanations, and objective descriptions of objective phenomena. Instead, he urges social scientists to develop their affinities to other enterprises—literary criticism, dramaturgy, and other areas of symbolic interpretation. And he urges social scientists to abandon what he regards as a spurious quest for objectivity and truth. (These views are presented in a number of places in Geertz's work; particularly relevant is “Blurred Genres;” 1983.)

However, this is a radical departure, not only from naturalism, but from the core conception of science described above. It suggests a model of social inquiry that would make social research more akin to literary interpretation—fluid, ambiguous, and radically underdetermined by empirical constraints—than to more orthodox conceptions of science. Geertz's position (in his more extreme methodological moods, in any case) appears to be a change of subject; he is no longer talking about social science, but rather an interpretive discipline within which standards of empirical evaluation are taken substantially less seriously. (Paul Shankman [1984] explores this line of criticism of Geertz in “The Thick and the Thin: On the Interpretive Theoretical Program of Clifford Geertz.”)⁴

⁴ These criticisms, it should be noted, attach to Geertz's explicitly methodological contributions, not his field work. In the latter—e.g., *Agricultural Involution* (1963) and *Negara* (1980), Geertz shows an admirable attention to empirical detail and rigorous, non-speculative analysis. Geertz in fact presents an example of a fairly

These arguments take us part of the way to refuting anti-naturalism, but only part of the way. It is the all-inclusiveness of the doctrine that is its downfall. For we may consider “weak anti-naturalism” which maintains only that some social sciences depend on a method that is radically different from the natural sciences; and this is the interpretive method. (This parallels the similar gambit that we pursued in connection with “weak reform naturalism.”) Is weak anti-naturalism a legitimate position on social science methodology: are there forms of social science research that are primarily interpretive rather than causal?

We have seen enough examples of interpretive social science throughout this work to see that a provisional “yes” is warranted to this question. Geertz's interpretation of the Balinese cockfight, Witherspoon's analysis of Navajo metaphysics, Michael Adas's treatment of millenarian religions, or Robin Horton's treatment of African magical beliefs each constitute strong candidates for interpretive social science. In each case we have a better understanding of a cultural milieu, a better basis for interpreting the actions and words of the persons who live in those cultures; and these are genuine contributions to social science. Moreover, Geertz and Taylor are probably right in saying that, for these questions, no other method will do. In particular, a causal, structural, or reductionist approach will not illuminate the central questions. When we are concerned about the meaning of human behavior and practices, it is unavoidable that we must put forward hypotheses that are couched at the level of meanings, not causes or structures.

The most pressing concern raised by anti-naturalism concerns the role of empirical evidence in evaluating scientific belief. For what distinguishes science from commonsense is the availability of appropriate standards of empirical adequacy for the former. If interpretive sociology should turn out to lack such standards, then it would be reasonable to conclude that interpretive sociology is not social science. Is there any reason to think that this is the case?

Positivistically-minded philosophers have tended to doubt that interpretive social science can be provided with empirical support. However, their skepticism turns on philosophical views that are themselves dubious—in particular, a sort of latent behaviorism. Consider the following argument: Empirical data must be logically independent from the hypotheses for which it is presented as evidence. Ideally, empirical data should be wholly observational. The “data” available for a hermeneutic interpretation is doubly tainted: it requires that we attribute meanings to participant behavior which is in turn used to evaluate hypotheses about participant meaning (thus violating the requirement of logical independence); and meanings

common phenomenon in science—the practitioner whose methodological writings describe a model of scientific thinking that is not to be found in his own work, and that is substantially less convincing than the implicit standards of reasoning embodied in that work.

themselves are not observable, so data reporting meaningful behavior is defective. Purely behavioral descriptions would be acceptable; but purely behavioral descriptions are notoriously incapable of pinning down meanings. Therefore there is no empirical basis for assessing hypothesis about participant meanings, and interpretive sociology cannot be given empirical support.

This argument, however, is unacceptable. First, it is now well-established in the philosophy of science that data is often or always theory-laden. Even in physics there is no purely observational vocabulary in terms of which to couch empirical data; instead, observations bring with them substantial parts of physical theory. And the requirement that social data should be based on purely behavioral description is discredited by the collapse of behaviorism as a viable approach to the problems of thought, consciousness, cognition, language use, and the like in theoretical psychology. Therefore there is no obstacle to interpretation theory's providing empirical support for hermeneutic hypotheses on the basis of observations that themselves presuppose that we understand at least some of the meanings of participants' behavior. The "hermeneutic circle" (the fact that observation and interpretation of meanings are inseparable) is no more damaging for the empirical credentials of interpretive sociology than the corresponding circularity of theory and theory-laden observations in natural science.

This argument establishes that there is no logical obstacle to an empirically well-grounded interpretive sociology. In order to know whether interpretive sociology in fact succeeds in producing an empirically grounded discipline, however, we must examine their practice. And here the results are mixed. Some (like Geertz in some moods) are so distrustful of "positivism" that they flout the requirements of empirical adequacy. But this is not unavoidable, and there are in fact many strong examples of ethnographic and hermeneutic studies that are highly rigorous and strongly committed to providing evidence for their conclusions. Thus Witherspoon's analysis of the Navajo conceptual scheme is strongly supported by evidence ingeniously gathered through study of Navajo grammar (Witherspoon 1977); Victor Turner's analysis of the significance of religious pilgrimages is carefully supported by data from a variety of cultures (Turner 1974:166-228); and Geertz's own treatment of the symbolic and material cultures of Bali in *Negara* is grounded on careful, rigorous assessment of available evidence (Geertz 1980). These examples show that it is possible for interpretive sociology to be supported by appropriate empirical methods; and that is all that we need in order to conclude that weak anti-naturalism is a legitimate approach to some problems of social research.

Thus weak anti-naturalism is sustained by consideration of many examples of social science explanation; the interpretive, hermeneutic method is a legitimate basis for social science investigation. It must be emphasized, however, that it is equally important for interpretive social science to rest upon appropriate empirical methods as is the case in other areas of science. Moreover, this approach is just one out of several

legitimate methods; and methods organized around empirical regularities, causal mechanisms, and rational-choice explanations are equally legitimate in their turn.

Methodological pluralism

These arguments show that neither strong naturalism nor strong anti-naturalism provides a credible basis for understanding the social sciences. Against naturalism we have found that the model of scientific knowledge as a unified deductive theory does not fit the range of social science examples considered here very well. These cases do not typically take the form of unified deductive theories giving rise to predictive consequences. Second, the cases show that theoretical models may be used to different effect and for different purposes in different areas of social science. Third, it emerges that there are significant differences in empirical practices in different areas of social science. The plurality of methods and approaches in the social sciences thus defies simple summary. The social sciences contain a variety of methods and problems, and these are not neatly captured by the traditional categories of interpretation theory, naturalism, hermeneutics, or materialism. Finally, the practitioners themselves do not appear to be guided by a model of scientific knowledge derived from the natural sciences. Few of the scientists whose work is described here appear to be interested in the issue of naturalism, or of the relation between the methods of the social sciences and those of natural scientists.

Does this provide support, then, for a doctrine of anti-naturalism—a view that the social sciences are in principle distinct from the natural sciences? It does not; rather, it suggests that social scientists can, and should, define their problems of research, methods of investigation, models of explanation, and the like, independently from the models available in the natural sciences. This suggests that the constructions of social science will sometimes bear close parallels to theory construction in the natural sciences; and sometimes will make use of models, methods, empirical procedures, and the like, that have little close analogy with natural science methods. Both naturalism and anti-naturalism err in orienting the practice of social science to a few models drawn from the natural sciences—either positively or negatively.

Neither naturalism nor anti-naturalism wins the field, then; and the shortcoming of each position is the same. Each framework makes overly demanding assumptions about the essential features of science, either natural or social. The anti-naturalists err in claiming that all social science involves the interpretation of meaningful phenomena; while the naturalist framework assumes implausibly narrow strictures on explanation and mechanism. Against each claim I put forward the position of methodological pluralism. Methodological pluralism views the sciences more as a fabric of related enterprises than a single unitary activity defined by the “scientific method.” In this way it agrees with anti-naturalism; various strands of science may be more dissimilar to each other than others. Pluralism parts with anti-

naturalism, however, in denying that there is some small set of features in terms of which all social sciences are more similar to each other than they are to any natural sciences (the meaningfulness of social action and the irrelevance of causal analysis). Instead, the fabric is densely interwoven: some areas of social science—e.g. econometrics—are more similar to areas of natural science—e.g. population biology—than they are to other areas of social science, and some areas of natural science are closer to social sciences than to typical natural sciences (weather forecasting, for example, is as distant from classical mechanics as it is from public opinion sampling, it would seem). And we will best understand the logic of the social sciences if we pay close attention to the details of research in a variety of areas, and remain sensitive to the important strands of diversity that exist in methods of inquiry, forms of empirical reasoning, and models of explanation.

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