Introduction

This volume reassesses the problem of explanation in social science from what remains a marginalized, realist perspective. Because the problem of explanation is central to inquiry in social science, the volume also provides a systematic philosophy of social science. It begins with the idea that the fundamental goal of theory in both the natural and social sciences is not, contrary to widespread opinion, prediction and control, or the explanation of events (including "behavior"). Rather, more modestly, theory (at least in one of its clear senses) aims to provide an understanding of the processes which jointly produce the contingent outcomes of experience. We understand why the planets move in ellipses, why materials burn, and why salt dissolves in water (if and when it does) when we have a physical theory that provides a causal mechanism. By providing the principles detailing the nature of molecules, the atomic structure of salt and water, the principles of their action, and so on, we can understand combustion and solubility – and other chemical processes. Indeed, while the theoretical work of physical scientists often begins with the effort to understand patterns, they are not interested in, nor generally capable of, providing either "explanations" or "predictions" of particular events. For example, the trajectory of a boulder splintering as it rolls down a hill is fully understood in terms of physical principles, but neither the trajectory nor the final positions of the splintered parts can be explained or predicted. But an adequate understanding of the outcome is easily available. The foregoing does not seem either surprising or novel. But, for good historical reasons, reigning assumptions both in the philosophy of social science and in much current social scientific practice violate what thus seems commonsensical.

It seems hardly deniable that understanding such natural processes as splintering, oxidizing, dissolving, fertilizing and dying requires one to understand the causal mechanisms at work – physical, chemical and biological, some available in direct experience, some not. No one will ever see a photon but they are among the important non-observables posited in a physical theory that enables us to understand a range of phenomena.

The argument thus joins "realist" criticisms of empiricist conceptions of theory and Humean notions of causality. Once this is in place, it is easy to see why fairly long-standing objections to both the dominant view of theory and the still dominant covering law model of explanation are fatal.

But by developing the ideas of agents as causes and of social mechanisms as agent-generated causal mechanisms, the book extends, in a novel way, the argument to the social sciences. Here we join old debates over so-called "methodological individualism," and the critical role of hermeneutics, and recent debates in the philosophy of social science regarding the ontology of society as provoked by Giddens, Bhaskar, Bourdieu and others. Thus, the ontological status of "social structure" is clarified and resolved. Understanding in social science is achieved when, as in the physical sciences, we have a causal mechanism, but unlike the physical sciences, minded persons working with materials at hand will be constitutive of social causal mechanisms.

Because these themes are interconnected, the volume introduces a philosophy, or meta-theory, for social science. Uncritically influenced by long outdated doctrines in the philosophy of science, the volume argues that, among both philosophers and social scientists, there remains a widespread set of misconceptions about the tasks and limits of social science. We need to understand that there are important differences between the scientific study of nature and the scientific study of society, but we need first to be clear about the nature and goals of science more generally. By drawing on and integrating recent developments in the philosophy of science, this volume aims to do this.

The structure of the argument is as follows: Chapter 1, "Explanation and understanding," begins with a close examination of the so-called "Deductive-Nomological" (D-N) or "covering law" model of explanation. It is of considerable interest to note that while the critical literature of this model is now of long standing, and that while many writers, both in philosophy and the social sciences, have rejected the *epistemology* of empiricist ("positivist") theory of science, many of these same writers fail to see that a powerful alternative to the D-N model of explanation is available. Once it is shown that understanding is the primary goal of the sciences, the whole edifice of science's empiricist philosophy crumbles – from its metaphysically implausible event ontology, including its contra-empirical constant conjunction conception of causality, to its conception of theory. We show then that understanding requires appeal to causal mechanisms properly conceived as productive powers. The chapter provides both illustration and argument for these ideas.

Chapter 2, "Theory, experiment and the metaphysics of Laplace," argues against what is sometimes termed "deductivism," the idea that

theories in the physical sciences can be fully expressed as a deductive system, with axioms and deductions therefrom. Rather, following the too often neglected work of Rom Harré (1970), it is argued that theories identify how "things" – molecules and atoms, for example – are structured, and how they interact. Theories, of course, are representations, but they are meant to represent reality, as it is in-itself. We look then at anti-realist criticisms of this view of theory, provide an account of experiment as it actually functions in science, and offer a post-positivist (post-Kuhnian) account of theory acceptance. The chapter concludes with a criticism of the Laplacean metaphysics assumed by empiricist theories of science. In our world, most events – birth, growth, rain, fires, earthquakes, depressions, revolutions – are the products of a complex nexus of *causes of many different kinds*, conjunctively at work. Indeed, it is for this reason that the natural sciences, instead of seeking to explain concrete events, more modestly seek to understand the mechanisms and processes of nature. This means that while everything is caused, there is radical contingency in both natural and human history. The implications of this are critical for a human science, as Chapter 3 shows.

On the basis of the foregoing account of science, Chapter 3, "Explanation and understanding in the social sciences," offers a philosophy of social science, making clear the critical points of difference in the subject matter of the natural and social world and the implications for inquiry. After setting out and rejecting, by way of summary, the key prevailing assumptions regarding science, an account of "persons" is developed. The view of causality already set out is critical here. Once we notice that a host of causal mechanisms, biological, psychological and social, are epigenetically implicated in the constitution of a human being – and of their concrete actions – we can see that "nature" and "nurture" are inextricably involved and that, in consequence, there is no reason to believe that any one science, psychological or social, could improve on the way we ordinarily explain and predict behavior. As with the natural sciences, the task of the social sciences is understanding how social mechanisms "structure," but do not determine, outcomes. We turn then to an account of how this is to be conceived, drawing on the key distinction between "brute facts," or facts about features of the world that exist independently of us, and "institutional facts," or facts about features of the world which require human institutions for their existence (Searle, 1995). The usual "subjective / objective" dichotomy is fruitfully undermined. Following Giddens (1984), then, social structure is conceptualized as "real," incarnate in the activities of persons, but, accordingly, having no independent existence. If so, versus stronger forms of the idea of social structure, it cannot, like a magnetic field, for example, be causal.

Chapter 4, "Agents and generative social mechanisms," applies the causal mechanism analogy to physical science. In the physical sciences, regression to more fundamental mechanisms is sometimes possible. So quantum theory offers a generative mechanism of processes in molecular chemistry. But in social science, since persons are the critical causes of everything that occurs in the social world, the generative mechanisms are the actions of persons "working with materials at hand," and no further reduction is either possible or necessary. Drawing on the argument of agent / structure duality, a systematic account of the construction of models of social mechanisms is offered. The chapter offers a range of illustrative examples drawn from writers including Marx, Willis, Goffman, Tilly, Ogbu, Burawoy and others. For example, following Willis, a social mechanism can be theorized which gives us an understanding of why working-class kids get working-class jobs. Typically this involves identifying their place in society, their beliefs about their "world" – some true and some false – typical behavior predicated on these beliefs, and the mostly unintended consequences of this behavior. The argument shows that an ethnographic (and hermeneutic) moment is essential to grasping a social mechanism, but as Weber had long since noted, it was but the first step in social scientific inquiry. That is, while we need to understand the social world as its members understand it, we need to go beyond this and to consider the adequacy of their understanding of their world. Since social process is the product of our activity, and since members may well *mis*understand their world, social science is potentially emancipatory.

Chapter 5, "Social science and history," is very much influenced by the work of Max Weber. It looks critically at the question of history and its relation to sociology, beginning with the century-old debate over the distinction between two kinds of science, "nomothetic" and "idiographic," and the attending argument that explanation in the nomothetic sciences proceeds by appeal to "general laws," while explanation in the human sciences requires *verstehen* and a narrative rhetorical form. The idea of a historical sociology gives us direct access to current versions of the pertinent issues, including the role of comparative analysis in identifying causes. Disagreements over the nature of a historical sociology can be resolved with a proper understanding of the nature and goals of social science. Briefly, if the goal is understanding, for example, why working-class kids get working-class jobs (Willis) or why in "total institutions" (Goffman) outcomes are inconsistent with their explicit goals, one does not require history, even if, as Weber insisted, our interest remains the historically concrete. That is, unlike the natural sciences where there are "general theories" of generative mechanisms, in the social sciences, the generative social mechanisms are always historically situated. Thus,

while the generative mechanisms of, for example, oxidization are the same everywhere, the mechanisms that explain why working-class kids get working-class jobs need to be concretely theorized. Social science very often goes beyond the effort to understand a social process. Unlike the "abstract" natural sciences, it seeks to explain concrete events and episodes, for example, the collapse of a regime, a depression, a dramatic rise in divorces. To achieve this goal, in addition to an understanding of the pertinent concrete generative mechanisms, one *also* needs history – as Weber rightly contended. In these cases, explanation takes the form of a narrative that identifies the critical social mechanisms and links them sequentially with the contingent but causally pertinent acts of persons.

Chapter 6 looks critically at one of the most influential and thoroughly theorized social mechanisms in the social scientific literature: the market model of neo-classical economics. This tradition was quite correct in what it sought to do, and its difficulties do not stem from its attempt to offer explanations in terms of actors. The problem is not that markets are not social mechanisms which can give us an understanding of outcomes by appeal to the actions of persons – the bogey of methodological individualism – but that the basic model makes assumptions about explanation, and very strong assumptions about the actors, their conditions and their behavior, which simply are not sustained, except perhaps in the remotest of cases. Mainstream neo-classical theory accepts the covering law model of explanation and a deductivist conception of theory. If this idea of science is misconceived, however, then these models are, on their face, poor grounds for thinking that economics is an advanced social science. Moreover, in order to carry out its deductivist program, the assumptions of the theory bear little relation to reality. Put succinctly, on the mainstream view, persons are conceived as atomized, and as historically indifferent "rational beings" with approximately similar motivations. Even more importantly, they are conceived as having approximately equal powers and capacities. But CEOs of corporations, mom and pop Chinese restaurateurs, heart surgeons, immigrant farm workers, non-unionized plumbers, unionized auto workers, part-time female sales clerks, public school teachers and drug dealers – one could go on – do not have similar beliefs *or* capacities, either as producers or consumers. Drawing on familiar criticisms, the chapter examines critically the neo-classical model and argues that it has been burdened by a spurious (positivist) theory of social science. Markets are important social mechanisms, but, drawing on the account of the preceding chapters, a sociologically richer model is shown to be both possible and necessary.

There are four appendices. They are included as appendices because they address the critical literature and provide supplementary materials

not essential to the central argument of the volume. Appendix A treats the limits of multiple regression and similar techniques, given a proper understanding of causality and explanation. Appendices B and C pick up on arguments in the current literature that are highly relevant to the arguments of the volume. Appendix B considers the dispute between Theda Skocpol and William Sewell regarding narrative and causal analysis. A very recent defense of the use of Mill's methods in historical sociology is examined critically. The goal of comparative work is further clarified. Appendix C considers the lively debate in *The American Journal of Sociology* over the pertinence of rational choice theory in historical sociology. The effort is made to clarify the argument and to resolve it. Finally, appendix D offers some additional explication and criticism of neo-classical theory.

1 Explanation and understanding

Introduction

Despite some contentiousness between both working social scientists and many philosophers, ideas about explanation in social science are remarkably taken for granted. Worse, when examined in the clear light of day, there is good reason to say that these taken-for-granted ideas are downright wrong. Most social scientists have been socialized to carry on inquiry as defined by their disciplines, they have well-defined research projects and, perhaps quite reasonably, they are content to leave the philosophical problems to the philosophers. No one presses them to wonder whether, indeed, key assumptions unreflexively absorbed are problematic. Some very good work is done that cannot be squared with their implicit or, sometimes, explicit background assumptions. Not only is it not always easy to tell others exactly what we are doing, but we can be mistaken about what we *are* doing. In his 1933 Herbert Spencer lecture at Oxford, Einstein, often ahead of most people, offered pertinent advice: "If you want to find out anything from the theoretical physicists about the methods they use, I advise you to stick to one principle: Don't listen to their words, fix your attention on their deeds."[1]

A good deal of the responsibility for the taken-for-granted ideas about explanation among social scientists owes directly to philosophers in the latter half of the twentieth century, although the antecedents are found as early as Comte in the early nineteenth century. Comte, inventor of the term "positivism," had argued that "the explanation of facts is simply the establishment of a connection between single phenomena and some general facts," or in other words, a scientific explanation was a deduction from general laws. His reasons for this are also pertinent. He was much concerned to put science on a secure empirical foundation, to expunge "fictitious ideas," both metaphysical and religious, from scientific explanation. These concerns and ideas were powerfully reinforced by a host

[1] Quoted from Holton 1970 in Manicas, 1987: 242.

of philosopher / physicists in the later quarter of the nineteenth century. The list is impressive and included G. R. Kirchoff, Wilhelm Ostwald, Ernst Mach, Ludwig Boltzman, Karl Pearson, Henri Poincaré, Pierre Duhem and William Thompson (Lord Kelvin).[2] The philosophers of the so-called "Vienna Circle" picked up on these ideas in the 1920s and developed what came to be the dominating theory of science, "logical positivism" (or "logical empiricism"). Central to these doctrines was what came to be called the "Deductive-Nomological" (D-N) or "covering law" model of explanation.[3]

The majority of social scientists working today are not particularly aware of this history or of their indebtedness to these ideas. But they appear in seemingly innocent phrases like "the search for laws is the goal of science," "science aims at prediction and control," "a theory is a deductively organized set of propositions and law-like statements," "a good theory predicts." The relatively few methodologically oriented discussions by social scientists paying special attention to the social sciences have taken the D-N account for their point of departure, either to show its pertinence to their domain,[4] or to argue that if this is the correct model of scientific explanations, then the human sciences cannot provide them.[5]

The covering law model of explanation

While in some quarters at least, the critique of the covering law model will be old news, if we are to make sense of explanation, both in the natural and social sciences, we need to be clear about the model and its failings. Consider first the classic formulation as put forth by Carl Hempel.[6] For

[2] See Manicas, 1987 and for an excellent fuller treatment, John Passmore, 1957: chapter 14.

[3] An excellent history of views of causality and explanation from the Greeks to the logical empiricists and their critics is found in Wallace, 1974. While the covering law model is a defining attribute of "empiricist" (positivist, neo-positivist) understandings of science, there is now a substantial critical literature which has subjected this assumption to fatal criticisms. See, among others, Scriven, 1959, 1962; Harré, 1970, 1986; Dretske, 1977; Bhaskar, 1975; Salmon, 1978, 1984; Achinstein, 1981; Aronson, 1984; Woodward, 1984; Lewis, 1987; Kim, 1987; Manicas, 1987, 1989a. In what follows, I draw on some of the main lines of such criticism.

[4] Outstanding examples include Friedman, 1968 and Merton, 1957. More recently, see Turner, 1987 and Alexander, 1987. While Turner defends a neo-positivist theory of science, Alexander is explicitly "post positivist," endorsing the developments following Kuhn's *The Structure of Scientific Revolution*. But as with many others who would consider themselves "post-positivist," Alexander remains committed to the covering law model and thus to the idea that it is the goal of social science to "search for laws."

[5] This is the route of so-called "interpretative sociology." See below and chapter 3.

[6] His important papers are gathered together in the volume, *Aspects of Scientific Explanation* (1965).

him a scientific explanation takes the form of a deductive argument, with premises and a conclusion:

$$\frac{C_1, C_2, \ldots C_k \quad L_1, L_2, \ldots L_T}{E}$$

The "explanans," C_1, C_2, . . . C_k, are statements describing the particular facts invoked, sometimes called "the initial conditions," and L_1, L_2, . . . L_r are general laws. The event to be explained (the "explanandum"), E, is a logical consequence of the premise set. As he said: "The kind of explanation thus characterized I will call *deductive-nomological*; for it amounts to a deductive subsumption of the explanandum under principles which have the character of general laws." This is helpfully termed an *epistemic* conception of explanation since the relation between explanans and explanandum is logical.[7] The simplest case takes the form of a syllogism:

If *a*, then *b* (the form of a general law)
a (the relevant "conditions")
b (the event to be explained)

Of course, this will count as an explanation only if the premises are true.

Hempel subsequently enlarged his model to include "probabilistic explanation" or "inductive-statistical" (I-S), where the "laws" are not strictly universal, as in the deductive model. Instead of the premises entailing the explanadum, the event to be explained is but probable on the strength of the premises. So roughly,

The probability of *b*, given *a*, is very high.
a
probably *b*.

Moreover, Hempel went on to argue that nomological explanations, deductive and inductive, could be found in historical writing, where the "relevant generalizations" are sometimes suppressed, and in two special cases of explanation in history, what he termed "genetic explanations" and "explanation by motivating reasons." It was assumed, to be sure, that the models applied also to all explanation in the social sciences.

In the 1950s, a hardly noticed critical literature of what came to be called "the standard view" began to develop. By now there are a number

[7] Epistemology is inquiry into the grounds of knowledge (Greek: *episteme*, Latin: *scientia*) and thus includes, critically, logical analysis. Our alternative account is termed "ontic." Ontology is inquiry into the nature of the "real," which, after Kant, became scientifically suspect.

of fatal objections to the model, but before we get to these, notice first that there is currently no consensus among philosophers of science for an alternative account. This chapter attempts to provide at least the sketch of an alternative. Secondly, and as important, the critique of the covering law model has not yet filtered into the disciplines of the social sciences.[8] Hempel's overall conclusion is also important. He insisted that his claims did not

> imply a mechanistic view of man, of society, and of historical processes; nor, of course, do they deny the importance of ideas and ideals for human decision and action. What the preceding considerations do suggest is, rather, that the nature of understanding, in the sense in which explanation is meant to give us an understanding of empirical phenomena is basically the same in all areas of scientific inquiry. (1965: 41)

For most inquirers, this was reassuring, which contributed to the account becoming conventional wisdom. To be sure, not everyone agreed with Hempel on these matters, often dubbed "naturalism" in the philosophy of the human sciences. A variety of writers, called "anti-naturalists," could not see how, given any of Hempel's models, one could escape a "mechanistic view of man, society, and historical process." This was usually joined to the claim that getting an understanding of human action in society and history was not at all "basically the same" as getting an understanding of nature, that a very different idea of explanation was required. On this view, any sort of *causal* explanation in the human sciences was wrongheaded. The alternative, then, was the idea that human action could only be explained in terms of the meanings of actors; hence the appeal to *verstehen* (understanding) or what is sometimes called "interpretative sociology." Weber, of course, had insisted, rightly on the present view, that there was no opposition between *verstehen* and causal explanation (*erklären*) and that, indeed, both were required in the human sciences.[9]

In chapter 3, we need to consider carefully these objections. In some ways they go to the heart of the problem of a human science. But the problem we need to address first is not whether there are important analogies

[8] Some evidence for this assertion may be found in chapter 6 and appendix C below. See also Tilly, 2001: 25. See also, of course, the standard textbooks for the entry-level courses in the social sciences.

[9] Originally, "hermeneutics" referred to the effort to understand and interpret religious texts. In opposition to the Comtean view that there were laws of history, Droysen argued that we needed to understand mind (*Geist*) differently than nature. Thus, *verstehen* gives humans access to meanings. Dilthey developed this idea. His work motivated Weber's effort to resolve the opposition between understanding, understood as *verstehen*, and causal explanation. This became part of the important *Methodenstreit.* See below, chapter 5.