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CHAPTER 3

META-METHODOLOGY: CLEARING THE UNDERBRUSH

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Meta-methodology is in many ways just another word for philosophy. The meta-methodology of political science is the philosophy of social science. More particularly, meta-methodology is the deliberate attempt to reflect theoretically about what methods are appropriate to the study of what aspects of politics and on what occasions. It is the attempt to clarify what kind of knowledge and what kind of explanations fit the kinds of objects that are the concern of political science.

The importance of meta-methodology should now be clear. Only when we know what kinds of knowledge and explanation are apt for political science can we intelligently decide what methods are best suited to producing them. Whether any method is apt in any given instance always depends on underlying philosophical issues. We should not let the importance of methodological rigor obscure what are prior philosophical issues about the adequacy of the commitments entailed by any claim that a particular method is an appropriate means of generating knowledge about a given type of object.

In this chapter, I explore the philosophical issues that are indispensable to any discussion of the role of a given methodology. At times I press the claims of certain positions, notably holism, constructivism, and historicism. But my main point is simply that political methodologists are dangerously out of touch. Philosophical thinking has altered dramatically in ways that render highly problematic the meta-methodological

assumptions of many political scientists. Discussion of methods and their utility are profoundly impoverished by a lack of thought about their epistemological, ontological, and explanatory assumptions.

1 Meta-methodological Concepts

The concepts of concern here generally refer to traditions, subfields, or doctrines. A grasp of the differences between these three types of concepts will help us appreciate the structure of this chapter. Some meta-methodological concepts refer to traditions. Examples include behavioralism, rational choice, and institutionalism. While traditions are often recognizable by political scientists, there can be something misleading about couching meta-methodological debate in such terms. For debates to be couched in terms of traditions, the traditions would have to contain coherent and stable philosophical ideas. But traditions generally include philosophical ideas that need not logically go together, and, moreover, the content of a tradition can change dramatically over time. Hence meta-methodology often involves clearing the underbrush of confusion that arises when people reflect on methods in terms set by familiar traditions. It unpacks traditions of political science so as to relate them to specific philosophical doctrines. In this chapter, the next section on "Traditions of Political Science" discusses the philosophical doctrines that are associated with modernist empiricism, behavioralism, institutionalism, and rational choice.

Other meta-methodological concepts refer to philosophical subfields. Prominent examples include epistemology, which is the theory of knowledge, and ontology, which is the theory of what kinds of objects exist. Any political methodology, any application of any method, and indeed any study of anything entails philosophical commitments. Yet political scientists often leave their commitments implicit and fail to reflect on them. In contrast, meta-methodology is the attempt to think explicitly about philosophical issues and their implications for political science. Typically there are numerous positions that someone might adopt on the relevant philosophical issues. No doubt most of us will believe, moreover, that political science should be a pluralistic space in which different people might adopt different epistemological and ontological positions. But it is one thing to believe one's colleagues should be allowed their own views, and it is quite another to believe that any individual political scientist can hold incompatible philosophical ideas. If a particular individual adopts one philosophical stance toward one problem and another toward some other problem, they are showing themselves to be not generously pluralistic but rather intellectually confused. Hence meta-methodology is also the attempt to promote particular philosophical ideas. Any meta-methodology tries to develop clear, defensible, and consistent ideas across the relevant philosophical subfields. In this chapter, each section after that on traditions of political science concerns a particular subfield of philosophy—epistemology, ontology, and explanation.

Still other meta-methodological concepts refer to particular doctrines. The particular theories that we hold, whether implicitly or explicitly, constitute our meta-methodology. Substantive meta-methodological debates are about the adequacy of various doctrines and what they do or do not imply about the adequacy of approaches and methods in political science. This chapter explores the main doctrines in each subfield. The section on epistemology studies theories such as falsificationism and Bayesianism. The section on ontology considers theories such as realism and constructivism. The section on explanation considers theories such as the covering-law one and historicism.

It is important to add, finally, that disparate meta-methodological doctrines are sometimes clumped together under collective labels that are used to refer to philosophical traditions. A good example is positivism. If we were to define positivism, we would surely have to appeal to theories perhaps including verificationism and naturalism (that is, belief in the unity of science). These bundled philosophical concepts can be useful: They help intellectual historians who want to examine the history of meta-methodological and philosophical ideas; they help philosophers who want to debate the merits of various types of philosophy; and they can have a role in political science provided we clearly stipulate the ideas we associate with them. Nonetheless, we should remember that these bundled philosophical concepts are like the traditions of political science mentioned above: Their content might change dramatically over time, and they often combine positions that need not logically go together. Certainly logical positivism in the twentieth century had little in common with the evolutionary positivism of the late nineteenth century, let alone Auguste Comte's religious and ethical ideas. In this chapter, I generally use these bundled philosophical concepts to refer to broad intellectual movements. Indeed, one aim of the next section is to relate familiar approaches to political science, such as institutionalism and behavioralism, to broader intellectual movements, such as modernist empiricism and positivism.

2 Traditions of Political Science

Political scientists often make much of the distinctions between various traditions in their discipline—behavioralism, rational choice, and institutionalism. One aim of this section is to flatten these distinctions. Of course there are philosophical differences between behavioralism and rational choice, and some of these differences will concern us. Nonetheless, with the partial exception of rational choice, the leading approaches to political science rely on an empiricist epistemology, realist ontology, and formal modes of explanation. To understand the dominance of these philosophical ideas, we may briefly look back at the emergence of modern political science.[1]

[1] The broad historical sweep of what follows draws on Adcock, Bevir, and Stimson (2007).

2.1 Modernist Empiricism

The emergence of modernist empiricism in political science must be set against the backdrop of developmental historicism. Nineteenth-century political scientists relied on historical narratives to make sense of the world. They were committed to empiricism and induction: They believed that valid narratives depended on the systematic and impartial collection and sifting of facts. Yet they made sense of the facts by locating them in a teleological narrative about the gradual development of principles such as nationality and liberty along fairly fixed paths. In their view, nation states were organic units defined by ethical and cultural ties, and political scientists made sense of the facts by showing how they fitted within an account of a state as a developing historical expression of just such an organic nation. Political science was, to echo E. A. Freeman's famous remark, "present history."

During the early twentieth century, this developmental historicism gave way to modernist empiricism. The First World War more or less decisively undermined the idea of developmental progress. Political scientists increasingly replaced historical narratives with modernist modes of knowing. They remained committed to induction: knowledge arose from accumulating facts. But they increasingly made sense of facts by locating them not in historical narratives but in ahistorical classifications, correlations, or systems.

Modernist empiricism has been the dominant orientation of political science since the early twentieth century. Modernist empiricism is atomistic and analytic. It broke up the continuities and gradual changes of elder narratives, dividing the world into discrete, discontinuous units. Modernist empiricism then makes sense of these discrete units by means of formal, ahistorical explanations such as calculations, typologies, and appeals to function. Consider one notable example: In 1921 Herman Finer included in a study of comparative government an analytical index of topics to enable the reader to compare similar institutions across countries; in 1932 his new study of modern government moved from analytical topic to analytical topic, treating an institution in relation to ones in other states that he classified alongside it rather than in the specific history of its own state (Finer 1921; 1932). More generally, the shift from historicist to formal modes of explanation brought appeals to new theories and objects. Behavior was explained by reference to increasingly formal psychological theories. Processes were explained in terms of structures and systems.

The meta-methodological orientation of modernist empiricism continues to dominate much political science. Consider each of the philosophical subfields that are explored later in this chapter. In epistemology (the theory of knowledge), modernist empiricists justified their claims to knowledge inductively by reference to accumulated facts based on experience. In ontology (the theory of what exists), modernist empiricists ascribed a real existence and causal properties to formal objects such as structures and systems. Finally, in terms of explanation, modernist empiricists rejected historicism in favor of formal approaches such as classifications and correlations; they treated history as a source of data, not a way of explaining data.

2.2 Behavioralism

As modernist empiricism spread, so some political scientists began to worry about "hyperfactualism" (e.g. Easton 1953, 66–78). This hyperfactualism arose precisely because political scientists had given up on the narratives by which developmental historicists controlled and managed facts. Ironically, it was the rejection of developmental historicism that thus created the space in which behavioralists were soon to promote their general theories.

By the 1950s, the behavioralists were drawing on a relatively new positivist concept of science. Modernist empiricists equated science with the rigorous collection and sifting of facts: theories emerged from accumulated facts. In contrast, twentieth-century positivists often emphasized the role of general theories as a source of hypotheses that were then confirmed or refuted by factual investigations.

It is worth emphasizing that this new concept of science was all that was really new about the so-called "behavioral revolution". Neither the techniques nor the topics associated with behavioralism were particularly novel: Modernist empiricists had long used a range of statistical techniques to study topics such as policy networks, parties, and voting behavior. What behavioralists challenged was the modernist empiricist view of science. David Easton argued that political science was falsely wedded to "a view of science as the objective collection and classification of facts and the relating of them into singular generalizations" (Easton 1953, 65–6). What behavioralists promoted was a view of science that privileged general theories as a source of verifiable hypotheses. As Easton again argued (p. 25), "the purpose of scientific rules of procedure is to make possible the discovery of highly generalized theory."

While the behavioralists promoted general theory, they rarely strayed too far from modernist empiricism. Their epistemology remained empiricist, albeit that it shifted slightly from an inductive empiricism to what we might call a more experimentalist orientation. In their view, general theories can only generate hypotheses, not establish knowledge. All theories are ultimately confirmed or refuted by the way they stand up to experiments and other factual experiences. Similarly, the behavioralists' ontology remained realist. If some of them toyed with the idea of referring only to observable phenomena, most were happy to treat data as evidence of real if unobservable attitudes, and most were happy to appeal in their general theories to structures and systems as if these too were real objects with causal properties. Finally, the behavioralists favored formal, ahistorical explanations. The whole point of theories such as structural-functionalism and systems analysis was that they were to apply across time and space.

2.3 Institutionalism

The rise of behaviouralism led some modernist empiricists to define themselves in terms almost diametrically opposed to those with which their predecessors broke with developmental historicism. Historical institutionalism emerged as modernist

empiricists defined their approach as comparative and historical in contrast to the general theories of the behavioralists. Ironically the historical institutionalists thereby forget their own debt to the modernist empiricist rejection of developmental historicism in favor of formal correlations and classifications.

Historical institutionalists are skeptical of general theories as a source of hypotheses, and some of them even appear to be hostile to large-*N* statistical analyses. Nonetheless, they do not return to historicism, but only restate modernist empiricism. Historical institutionalists advocate a process of "analytical induction" in which small-*N* comparisons and case studies generate mid-level theories (Skocpol 1985, 3–43). Moreover, they want the case studies to be selected on analytic grounds, and they want the mid-level theories to be correlations and classifications couched in terms of formal concepts and theories. They conceive of history as little more than a series of atomized episodes that can provide data for more timeless variables, mechanisms, and processes.

Given that historical institutionalism restates modernist empiricism, we should not be surprised that it embodies a similar meta-methodology. Institutionalists believe in inductive empiricism. In their view, knowledge is built up on cases that verify or falsify theories. Similarly, institutionalists adopt much the same ontology as earlier modernist empiricists. They ascribe a real existence and causal powers to objects such as institutions and structures: Institutions such as markets, networks, and democracies have intrinsic properties that explain outcomes and events. Finally, while institutionalists sometimes deploy the label "historical" to set themselves up against those who propose general theories, they remain wedded to formal, ahistorical classifications, correlations, and mechanisms.

2.4 Rational Choice

Even as modernist empiricists began restating their approach as an institutionalist alternative to behavioralism, so rational choice theorists had begun to study institutions. Hence a minor scholarly industry now seeks to distinguish between varieties of the new institutionalism (e.g. Hall and Taylor 1996; Pierson and Skocpol 2002; Thelen and Steinmo 1992). At stake in this industry is much the same question as that which split behavioralists and modernist empiricists: What is the role of general theories as a source of hypotheses? On the one hand, rational choice institutionalists echo earlier concerns about hyperfactualism: They complain of a "stockpiling of case studies" (Levi 1988, 197). On the other, historical institutionalists bewail the lack of comparative and historical sensitivity of rational choice in a way that again ignores their own preference for formal explanations rather than historical narratives.

While behavioralism and rational choice assign a similar role to general theory, we should not associate rational choice with the positivist concept of science that inspired behavioralism. To the contrary, the meta-methodology of behavorialism has more in common with institutionalism than with rational choice. Rational choice

extends modes of knowing linked to neoclassical economics, which itself was a part of the modernist break with the nineteenth century (cf. Schabas 1990). However, while rational choice is modernist in its rejection of history for atomization and formal models, it can seem to be rationalist rather than empirical. Rational choice is less tied to modernist empiricism than are the other traditions of political science we have considered.

Let us begin by considering epistemology. Rational choice is rightly described as a deductive approach: it derives models as deductions from axioms (Elster 1986; Monroe 1991). Yet, epistemology has as much to do with the nature and justification of valid knowledge as the procedures by which models or explanations are constructed. We should consider, therefore, how rational choice theorists justify their axioms and how they justify applying a model to any particular case. The axioms are usually justified empirically by the claim that they, or more usually the models to which they give rise, correspond to facts about the world. Similarly, the application of models to explain particular cases depends on empirical claims about the beliefs and preferences of the actors standing in relation to one another as the models suggest.

Next consider ontology. The axioms of rational choice are micro-level assumptions about individual action. Rational choice theorists often believe that these assumptions account not only for individual action but also for the institutions that arise out of these actions. Their micro-theory invokes beliefs and preferences in a way that suggests they have no qualms about ascribing existence to unobservable objects. Yet their emphasis on the micro-level often implies that they do not want to ascribe an independent existence or causal properties to objects such as institutions and structures.

Consider, finally, the rational choice view of explanation. Most of the apparently epistemological differences between rational choice and modernist empiricism are better conceived as differences about forms of explanation. Whereas modernist empiricists champion inductive correlations and classifications, rational choice champions deductive models. Equally, however, we should not let this difference obscure the fact that rational choice too rejects historical narratives in favor of formal explanations that straddle time and space.

2.5 Political Science Today

Perhaps we might be reassured to learn that so much of modern political science coalesces around an empiricist epistemology, realist ontology, and formal explanations. Yet before we become too comfortable, we might pause to wonder: Has philosophical thinking too changed so little since the rise of modernist empiricism? Alas, the answer is a ringing "no." Philosophy has long since moved on. As early as the 1970s philosophers were writing surveys of the ways in which various linguistic turns had transformed both the philosophy of science and political theory over the last twenty years (e.g. Bernstein 1976). By the 1990s, after another twenty years had passed, some textbooks in the philosophy of social science were opening with a brief preface on

the demise of modernist empiricism and positivism before devoting themselves to introducing undergraduates to the new perspectives and issues that had arisen in their wake (e.g. Fay 1996). When our inherited meta-methodology is so out of date that it barely appears in undergraduate textbooks, surely it is time to reconsider what we are about?

The rest of this chapter examines recent discussions of epistemology, ontology, and explanation. While I provide an overview of broad directions in philosophy, I also make an argument about the rise of meaning holism and its implications for political science. Meaning holism undermines the long entrenched meta-methodological faith in inductive or experimental empiricism, realism, and formal explanations.[2]

3 Epistemology

Political scientists are generally empiricists. Empiricism can be defined as the belief that knowledge comes from experience. While empiricism has an obvious appeal, it often lapses into skepticism. Some skeptics ask how we can know that our experiences are experiences of an independent world. We will not pay much attention to the debates that flow out of such skepticism.[3] Other skeptics want to know how we can assume that patterns found in past experiences will persist in the future. This skepticism poses what is known as the problem of induction. What is the justification for assuming that events in the future will follow similar patterns to those of the past? The problem of induction also applies to attempts to prove theories by appeals to observations. What justification is there for assuming that a generalization based on previous observations will hold for other cases? How can any number of observations of black ravens justify the conclusion that all ravens are black?

The insurmountable problem of induction led philosophers of science to shift their attention from inductive proof to questions about how evidence supports theories.[4] Indeed the idea of inductive logic as a general theory of how to evaluate arguments only really emerged in the early twentieth century as part of a modernist break with nineteenth-century modes of knowing. It then gave rise to theories of confirmation.

[2] The arguments I make are in accord with broad shifts in philosophical thought. But philosophy is all about reasoned disagreement, and there are extensive debates about the validity of meaning holism and about its implications. Readers who want to explore the debates in more detail than I am able to here might begin by exploring the introductory philosophical texts to which I refer in the footnotes below. If there are any readers interested in the details of my own views, they might look at Bevir (1999)

[3] General introductions to epistemology usually cover these debates about perception, memory, reason, and skepticism. See, e.g., Audi (2003).

[4] A good introduction to the philosophy of science is Godfrey-Smith (2003).

3.1 Confirmation Theory

Confirmation theory is associated with the logical positivists.[5] Contrary to popular misperception, few logical positivists argued that brute facts proved general claims. Rather, they hoped to provide a logical theory of the way in which evidence can confirm scientific theories. A logical theory is, in this context, an abstract statement of why certain arguments are compelling and even irrefutable. The paradigmatic example is deductive logic, which covers arguments where if the premises are true, the conclusion too must be true. The logical positivists aimed to provide induction with a logical basis akin to that of deduction. This aim had three components. First, inductive logic would be a generalization of deductive logic: Deduction would be the extreme case of a larger inductive spectrum that included partial entailment and partial refutation. Second, probability would provide a conceptual basis for developing a suitable analysis of this larger spectrum of arguments. Third, the resulting spectrum would give an objective logical basis to the relations of premises to conclusion in inductive arguments. So, for the logical positivists, inductive knowledge rested on purely formal, logical relations between propositions. As Rudolf Carnap argued, confirmation was a logical relation between a proposition describing empirical evidence and a proposition describing a hypothesis.

By the mid-1960s not much remained of logical positivism. Arguably the most important reason for its demise was the rise of the kind of holism to be discussed later. For now, we might mention other reasons. The quest for a formal, logical account of induction led the logical positivists to neglect the psychological, social, and historical practice of science; their logical studies did not reflect what scientists actually did. In addition, the logical positivists' attempts to develop an inductive logic ran into a series of insurmountable obstacles. These obstacles—especially Nelson Goodman's "new riddle of induction"—led many philosophers to conclude that there could not be a formal, logical theory of confirmation.[6]

3.2 Falsificationism

The dilemmas confronting logical positivism provide part of the context in which Sir Karl Popper shifted attention from confirmation to refutation (Popper 1959). Popper initially had little interest in the broader issues of language and meaning that had preoccupied the logical positivists. He sought to describe science in a way that would demarcate it from pseudo-science. In addition, Popper believed that inductive logic was a myth. He argued that observations and evidence never confirm a theory. It is worth belaboring what this argument implies, as a surprising number of political

[5] Social scientists might be interested to learn that some of the basic ideas of inductive logic come from Keynes (1921). The leading development of confirmation theory was, however, Carnap (1950).

[6] Goodman (1955). As a result of such arguments even when contemporary textbooks use the term "inductive logic," they often do not mean to imply that probability and induction are indeed logical. For an example that also includes interesting discussions of the import of these issues for decision theory and so rational choice see Hacking (2000).

scientists appear to think that Popper lends support for their uses of induction. In Popper's view, it is impossible to confirm a theory to even the slightest degree irrespective of the amount of observations one amasses in accord with it and irrespective of the number of observations it predicts successfully. For Popper, no matter what methods we use, we simply cannot create data or correlations that give us a valid reason even to increase the degree of faith that we place in a theory.

Many of us might worry that scientific knowledge is profoundly threatened by the suggestion that induction and confirmation have no validity. Popper sought to allay such worries by arguing that science depends not on confirmation but on refutation. Science is distinguished from pseudo-science, he argued, by its commitment to falsificationism. In this view, a proposition is scientific if and only if there is an observation (or perhaps a set of observations) that would show it to be false. Science is all about testing hypotheses. Scientists propose theories, deduce observations from them, and then go out and test to see if the prediction works. If our observations are not as predicted, the hypothesis is false. If our observations are as predicted, then we cannot say the hypothesis is true, or even that it is more likely to be true, but we can say that we have not yet falsified it.

3.3 Meaning Holism

So far our philosophical story does not pose many problems for the inherited meta-methodological commitments of political science. Popper's resolute opposition to induction suggests that there is something odd about the way institutionalists appeal to him, for his views actually fit better with the use of statistical and other experiments by political scientists often with a stronger debt to behavioralism.[7] Nonetheless, it is scarcely too neat to suggest that logical positivism provides an account of confirmation that fits well with the inductive empiricism of institutionalists while Popper provides an account of refutation that has a loose fit with the experimental empiricism of the behavioralists.

The problems for the inherited meta-methodology of much political science arise from the rest of our philosophical story. Epistemology and philosophy of science have moved far from the views of the logical positivists and Popper. Arguably the most important move has been that towards holism following the work of philosophers such as Thomas Kuhn (1962), W. V. O. Quine (1961*a*), and Ludwig Wittgenstein (1972).[8] Meaning holism asserts that the meaning of a proposition depends on the paradigm, web of beliefs, or language game in which it is located. Hence what would have to be the case for a proposition to be true (or false) depends on the other propositions that we hold true.

Meaning holism decisively undermines the earlier concepts of confirmation and refutation. It implies that no set of observations can verify or falsify a proposition.

[7] See the frequent references to Popper as inspiring experimentalism in Campbell (1988).

[8] For a comparatively skeptical survey of the utter dominance of various types of holism see Fodor and LePore (1992).

We can reject or retain any proposition in the face of any evidence provided only that we make appropriate changes to the other propositions that we hold true. No proposition can ever confront the world in splendid isolation. We can only evaluate whole bundles of facts, theories, and assumptions. We can present evidence only to overarching research programs or webs of belief, and even then the evidence will be saturated by theories that are part of the relevant webs of belief or research programs.

Meaning holism renders implausible the inductive and experimental empiricisms that are implicit in so much political science. Yet to reject these forms of empiricism is not necessarily to propose out-and-out relativism. Contemporary philosophers have offered a range of alternative accounts of evidence and justified knowledge. To review all these alternatives is beyond the scope of this chapter. We will look only at two of the most prominent among them: Bayesian theories of evidence and comparative approaches to theory choice.

3.4 Bayesianism

The demise of logical positivism led to new theories of the way in which evidence supports scientific theories. Bayesianism has become the main example of the use of probability theory to explore the role of evidence.[9] Bayesianism is the most technical philosophical theory introduced in this chapter. I will try to give a general feel for how it works. For the technically minded, Bayes's theorem states that: $P(h/e) = P(e/h)P(h)/P(e)$. This formula provides a way of calculating the difference that a piece of evidence e makes to the probability of a hypothesis h. It allows us to say that confirmation occurs when the evidence increases the probability of the hypothesis: e confirms h if $P(h/e) > P(h)$. For the less technically minded, the key innovation here is that the probability of a hypothesis being true is no longer defined statically in relation to a given body of evidence; rather, it is defined in terms of the changes made by a series of shifts in accord with Bayes's theorem. This innovation leads to two important features of Bayesianism. First, as one adjusts the probability of one theory, so one simultaneously can adjust the probability of other theories within a wider web. Second, confirmation or justification can appear less as a property of a single proposition relative to given evidence and more as a property of the ideal beliefs at which we would arrive if we continuously adjusted them appropriately. Advocates of Bayesianism argue that these features of the theory overcome the problems associated with taking the prior probabilities of theories to be subjective. They argue that subjective differences get washed out through the constant adjustments: Wherever we start, we all end up at the same teleological end state.

Bayesianism has been subject to various criticisms, most of which are beyond our scope. Perhaps the most important point for us is the limitations of what Bayesianism has to offer. If Bayesianism works, it justifies a process of induction and the beliefs at

[9] Short introductions are provided by Godfrey-Smith (2003, ch. 14); and Hacking (2000, ch. 21). Also see Earman (1992).

which we will converge, but the overtly subjectivist account of probabilities leaves it unable to tell us what probability we currently should assign to theories. Likewise—and this is a serious philosophical concern—Bayesianism does not seem to tell us how much relevance we should assign to bits of evidence when assessing competing theories.

3.5 Comparing Theories

The demise of falsificationism led to new accounts of theory choice. Recognition that theories can be tested only as webs of belief inspired attempts to think about domains in which, and criteria by which, to choose among rival webs of belief.[10] These domains and criteria may be seen as either alternatives to Bayesianism or ways of supplementing a Bayesian justification of induction with a viable account of theory choice.

In the philosophy of science, holism arrived forcefully with Kuhn's emphasis on research paradigms. Kuhn insisted that ordinary science occurred within a paradigm that went unquestioned. Most philosophers of science accepted the holism associated with the concept of a paradigm but not Kuhn's idea of a single unified paradigm ruling over any given scientific field. In their view, science is a competition between competing research programs or competing traditions. Hence the question of theory choice comes down to that of how to compare rival traditions.

The trick is, of course, to find valid philosophical ways of generating a domain and criteria of comparison. It might appear that the validity of the domain and criteria requires that they do not privilege a particular framework. But, to some extent, meaning holism suggests that such neutrality just is not possible. Hence the validity of the domain or criteria appears to depend instead on their having a suitable relationship to the kind of holism that motivates the turn to comparison as an approach to theory choice. One very common idea is to locate the domain of comparison in the ability of a tradition to narrate itself and its rivals. My own view is that we also might try to generate criteria of comparison as something akin to deductions from holism itself (Bevir 1999, 96–106).

3.6 Issues for Political Science

Why should political scientists worry about the shift from inductive and experimental empiricism to comparative approaches to theory choice? Let me mention just one obvious reason. A comparative approach implies that political scientists are wrong if they think methods—models, regression analyses, etc.—can ever justify causal claims or even the data they generate. Methods merely create data the validity of which is still open to debate. The validity of the data and any related causal claims

[10] A useful collection of essays by the main philosophers of science involved is Hacking (1981). The most famous example, and certainly the one most allied to Popper, is Lakatos (1978).

depends on comparisons between rival bundles of facts, theories, and assumptions. Moreover, these comparisons often depend less on methodological rigor than they do on philosophical coherence, theoretical imagination, fruitfulness or breadth, and synergies with other ways of thinking.

4 Ontology

Now that we have covered the rise of meaning holism, we will be able to move more quickly through questions of ontology and explanation. At issue is the extent to which meaning holism inspires constructivist and historicist positions that are in tension with the meta-methodological assumptions implicit in much political science.

Ontology seeks to answer the question, what exists? More broadly it seeks to describe the basic categories and relationships of existence thereby providing an account of the types of things there are and the manner (or mode) of their being. Ontology thus covers an array of philosophical debates.[11] For a start, there are debates about whether we should ascribe existence to kinds, properties, relationships, mental states, and even propositions. These debates include the well known one between nominalists and realists on the status of universals. Do abstract nouns refer to things that exist of themselves or do they refer only to particular examples or collections of things? Does society exist in itself or does it refer only to objects such as people and events such as their interactions? In addition, there are debates about modes of existence, including temporality, necessity, and possibility. Can an object remain identical with itself even if its parts change over time? Do legislatures remain the same object when all of their members change?

4.1 Naive Realism

Most of us find realism appealing. We believe that science reveals the world to us; it shows us that we live in a world that contains electrons, atoms, waves, and genes. Most of us also believe that the world always contained these objects even when people did not have our knowledge and so did not realize that it did so. By analogy—although, as we will see, far less plausibly—many political scientists believe that social reality has a structure independent of our beliefs. In their view, there are objects such as institutions and social classes, and these objects would exist even if we did not have the words and concepts that refer to them. This naive realism denies social reality is a construct of our concepts.

As naive realists, political scientists claim that there is a world out there. Perhaps there is. But we need to be careful how we unpack this claim. After all, our concepts

[11] General introductions to metaphysics usually cover these debates. See, e.g., Loux (2002).

are part of the world, and when we act to change the world, the world becomes as it is only by virtue of our having acted on certain concepts. Hence we cannot simply claim that the social world exists independently of our concepts or beliefs. What we might say is that the world exists independently of our beliefs except when reality itself is causally dependent on our beliefs. To rewrite realism in this way is, however, to make the ontology of much political science notably more controversial. Naive realism implies that institutions exist, or at least have properties, independent of our concepts and beliefs.

The first half of the twentieth century was a hostile environment for metaphysics, and that environment could make it seem as if scientists might be able to decide ontological issues as they wished or even dismiss them as meaningless.

Logical positivists appealed to verification less as an epistemological position than as a theory of meaning. They argued that ontological propositions are meaningless because they cannot be verified. As we saw earlier, Carnap wanted philosophers to develop formal languages that established a clear relationship between experience and scientific theories. He thus distinguished two ways in which philosophers might pose ontological questions (Carnap 1947). On the one hand, philosophers might ask questions internal to a formal language. But these internal questions are trivial. If we have a formal language in which we introduce numbers, the question of whether it contains numbers is decided. On the other hand, philosophers might then ask questions external to formal languages. They might ask: Are numbers found in reality? But, Carnap continued, the words in external questions are meaningless, for it is only in the context of a formal language that we are able to tie hypotheses, theories, or questions to evidence. To simplify his argument, we might say: Without a formal language, we cannot know what evidence we would need to verify ontological propositions, and if we do not know what evidence would verify a proposition, then that proposition is meaningless.

4.2 Ontological Commitment

A philosophical story that ended with logical positivism would arguably pose few problems for the inherited meta-methodological commitments of political science. The dismissal of ontological questions as meaningless might appear to sanction a neglect of questions about objects and modes of existence. Once again, however, meaning holism transformed the philosophical terrain in a way that proves more troubling.

Holist critiques of the dogmas of empiricism undermined the logical positivists' rejection of ontology as meaningless or trivial internal questions. Consider Quine's use of holism to attack Carnap's distinction between internal and external questions. For Quine, scientific theories constitute a web, where no empirical evidence can ever compel the rejection of a particular part of the web, and yet where no part of the web is immune from empirical evidence. Because no part of the web is immune from evidence, there simply cannot be purely internal questions. Rather, as Quine

insisted, the distinction between internal and external questions must fall along with that between analytic and synthetic truths.

While Quine rescued ontology from the attacks of the logical positivists, he did not believe that we could pose ontological questions prior to, or apart from, the rest of our knowledge. Hence he reintroduced ontology as a study of the commitments associated with our best theories. To be more precise, Quine (1961*b*) proposed the slogan: To be is to be the value of a bound variable. This slogan captures the idea that we commit ourselves to the existence of F if and only if we say "there is an F (bound variable) that is . . ." It is, however, one thing to know how we thus commit ourselves to an ontology and another to know what ontology we should commit ourselves to. Quine argued that we might decide ontological matters by examining the logical form of the sentences that make up our best account of the world. An F exists if the logical form of those sentences is such that we quantify over it, that is, if F is a predicate of a property or a relation.

Quine's argument is that we posit the existence of Fs if and only if we say in our best theories that there is an F. It is worth pausing to note that in this view we perfectly reasonably can ascribe existence to unobservable things such as beliefs. It is also worth pausing to note that political scientists still might propose that the logical form of their sentences ascribes existence not only to beliefs, persons, actions, and events, but also to social classes, institutions, and the like.[12] Quine's argument is broadly indifferent as to which ontology we should adopt. It does, however, pose the question: What ontology is entailed by our best theories? I will argue here that meaning holism, as one of our best theories, implies that while social classes, institutions, and the like may be real, they are definitely linguistic constructions.

4.3 Constructivism

Let us look briefly at some very general implications of meaning holism for ontology. Holism implies that the world, as we recognize it, consists of things that we can observe and discuss only because we have the web of beliefs we do. For example, when we observe and discuss malaria conceived as a fever caused by the presence in the body of the protozoan parasite of genus *Plasmodium*, we rely on beliefs about parasites and diseases. Holism thus suggests that any given object or event could not be part of our world unless we had the appropriate beliefs. We could not discuss malaria if we did not have certain beliefs about parasites: We might use the word "malaria" to describe certain symptoms, but we could not discuss malaria conceived as a fever produced by a certain type of parasite. Again, holism thus suggests that things are constructed as real only in particular contexts. We construct malaria as real only with our beliefs

[12] The best-known attempt to approach the ontology of action though logical analysis of the relevant sentences is Davidson (1980*a*). There have also been major developments in logical approaches to modes of existence—see Chellas (1980)—but, alas, I do not understand the more advanced aspects of quantified modal logic well enough to assess their relevance to this chapter.

about parasites. Hence, we can say, more generally, that an object F did not exist at a time T. To echo Quine, we might say that before T, there were no variables to bind F.

The general implication might appear to be that holism entails a constructivist ontology according to which we make the world through our concepts. However, that is not quite the right way of putting it.[13] Holism certainly leads to a constructivist view of the objects in "our world" as we conceive of it. But there are philosophical debates about the relationship of "our world" to "the world" as it is. Some philosophers are reluctant to evoke a real world that lies apart from our world and so is something that by definition we cannot access. Others are equally reluctant to give up their realist intuitions. They want to argue that even if an object F comes to exist only at a time T in our world, it either does or does not exist in the world. Hence they want to postulate "the world" as apart from the world we make through our categories.

Fortunately we need not resolve the philosophical debate about "the world" to grasp the profoundly constructed nature of social things. Instead we can return to the fact that we make the social world by acting on beliefs. Even if we postulate "the world," the social things in it depend on beliefs, and holism implies that these beliefs are themselves socially constructed as part of a wider web of beliefs. Holism thus points toward a type of linguistic constructivism according to which we not only make the social world by our actions but also make the beliefs or concepts on which we act. Our concepts, actions, and practices are products of particular traditions or discourses. Social concepts and things, such as "the working class" or "democracy," do not have intrinsic properties or objective boundaries. They are the artificial inventions of particular languages and societies. Their content depends on the wider webs of meaning that hold them in place.

4.4 Issues for Political Science

Why should political scientists worry about the shift towards constructivism in social ontology? Constructivism suggests that political scientists are generally mistaken if they conceive of institutions or structures as fixed or natural kinds. It challenges the widespread tendency to reify social things, and to ascribe to them an essence that then determines either their other properties or their consequences. Legislatures, democracies, wars, and other social things are meaningful and contingent. We cannot properly identify them—let alone count, correlate, or model them—unless we pay attention to the possibly diverse and changing beliefs of the relevant actors. But let us end our study of ontology, for I am beginning to move on to the ways in which holism overturns formal, ahistorical explanations.

[13] For reflections on the complex nature of the constructivist ontology that arises from holism, see Hacking (1999; 2002).

5 Forms of Explanation

Political scientists generally evoke institutions and structures as if they were given objects in an attempt to explain why something happened. When concepts such as class, legislature, and democracy are used purely descriptively, they usually can be unpacked as social constructions: We can treat them as simplified terms for patterns of actions based on webs of subjective meanings. In contrast, when these concepts are used to explain actions or outcomes, they often take on a more formal or fixed content: They are reified so they can be treated as causes that either operate independently of the actors' beliefs or stand in for their beliefs. Political scientists sometimes aim just to describe the world, but they more often aspire to provide explanations, and it is this aspiration that encourages them blithely to reify all kinds of social concepts.

The aspiration to explain is, of course, widespread among scientists and lay folk alike. Most of us conceive of our beliefs as giving answers not only to what-questions (what exists? what happened?) but also to why-questions (why is it like that? why did it happen?). Philosophers, in contrast, often find the idea of explanation troubling, or at least a source of puzzles. Consider, for example, the tension between the aspiration to explain and the empiricism avowed by so many political scientists. Empiricists are often skeptical of any claims that go beyond or behind our experiences and purport to discover underlying causes. They are suspicious of explanations that point toward purportedly deep claims about the world as it is rather than the facts of our experience.

5.1 Covering Laws

Arguably we are most likely to be able to reconcile empiricism with explanatory ambitions if we defend a thin concept of explanation. The logical positivists upheld just such a thin concept of explanation that gave it little more content than the Humean idea of experiences of regular successions. According to the logical positivists explanations are a type of argument that appeals to a covering law (Hempel and Oppenheim 1948; Hempel 1942). So, to explain X by reference to A, B, and C is to evoke a covering law (a general proposition) that correlates things of the same type as X with things of the same type as A, B, and C. Hence explanations are just arguments whose premises include not only factual claims but also a law of nature. The relevant arguments might be deductive or inductive provided that they evoked a covering law. The logical positivists' account of explanation thus largely sidesteps the substantive issues about causation that trouble empiricists. It suggests that an *explanandum* is just the conclusion of an argument that has the *explanans* as its premises, where whether or not a particular explanation is good depends on the truth of its premises including the relevant covering law. Questions about the nature of causation are put aside as matters for the analysis of concepts such as "law of nature."

The covering-law theory is no longer a contender in philosophy. It fell before recognition of the asymmetry problem (Bromberger 1966). Explanation is asymmetrical in a way that the covering-law theory is not. The standard example has become that of a flagpole that casts a shadow on the ground. Imagine that we want to explain the length of the shadow. The covering-law theory suggests that we explain it as a deduction from the height of the pole, the position of the sun, a bit of basic trigonometry, and laws of nature (optics). However, we can also reverse the explanation so that it applies to the length of the flagpole. The covering-law theory suggests here that we might explain the length of the flagpole as a deduction from the length of the shadow, the position of the sun, a bit of trigonometry, and the laws of optics. There is no logical difference between the two explanations as they appear given the covering-law theory. The explanation of the height of the flagpole, like the explanation of the length of the shadow, stands as a deduction from premises that include a law of nature. As the example of the flagpole clearly shows, explanations are directional in a way that the covering-law theory just does not capture. Philosophers now take that to be an utterly decisive objection to the covering-law theory.

5.2 Reasons as Causes

The directional nature of explanation suggests that the concept of explanation cannot easily be divorced from causation: When we go in one direction, we have an explanation since X causes Y, whereas when we go in the other, we do not have an explanation since Y does not cause X. The demise of the covering-law theory thus sparked a renewed interest in questions about causation. Some of these questions are very general ones about determinism, conditionality, and causation.[14] Others are more specific to the study of human life. How should we think about the causes of our actions and so the practices and institutions to which these actions give rise?

Discussions of the causes of actions often begin with recognition of intentionality. The concept of intentionality captures the idea that, as we saw earlier, our actions depend on what we believe whether consciously or not. Human life is thus meaningful in a way that purely physical events are not. Recognition of the intentionality of human life poses the question of mental causation: How can mind (or intentionality) make a difference in a world of physical things (atoms, tables, genes, human bodies, etc.)?

Meaning holists generally responded to the question of mental causation in one of two ways, inspired respectively by Wittgenstein and Donald Davidson. The philosophers inspired by Wittgenstein deny actions have causes (e.g. Anscombe 1957; Winch 1958). In their view, causal explanations present events as instances of a lawlike regularity, whereas explanations of actions show how the action fits into larger patterns of belief and rationality. Even though Davidson's argument set him apart from this view, he drew heavily on it (Davidson 1980*b*; see also Heil and Mele 1995). He too proposed

[14] For a useful set of essays see Sosa and Tooley (1993).

that we explain actions in terms of intentionality: We explain actions by reference to a "primary reason" consisting of the belief and pro-attitude (or desire) of the actor. He too accepted that we thereby make actions intelligible by locating them in a larger pattern of belief and rationality. But for Davidson the primary reason for an action is also its cause. Davidson treats a primary reason and an action as distinct events. He then adapts a Wittgensteinian suggestion that actions can be intentional under one description ("I wanted a drink") but not under others ("I knocked the cup over") to argue that the connection between these two events can be described in different ways. Under one description, the connection is a rational one that we cannot assimilate to a lawlike regularity. Under another description the same connection can appear as a lawlike regularity.

Davidson offers us a way of combining folk psychology with physicalism: We can explain actions rationally using folk terms such as belief and desire, while conceiving of the world as composed of physical objects and their interactions. For philosophers, the main questions this view raises are those about the relationship between these mental and physical languages. Davidson himself argued for an "anomalous monism" according to which the mental supervenes on the physical but there are no laws relating them. In this view, any mental event, such as "my wanting to swim," can in principle be paired with a physical event, but no strict law relates "wanting to swim" to a particular type of brain activity (Davidson 1980c). Other philosophers have rejected this argument for various reasons. Some philosophers complain that it leaves the mental with no real causal powers. Others hold to a physicalist vision of a time when folk psychology will be replaced by the language of neuro-science or at least translated into it. For our purposes, however, it seems sufficient to accept that we cannot yet reduce folk psychology to a physical language, so political scientists currently are bound to deploy the kind of rational explanations associated with terms like intentionality, belief, and desire.

5.3 Historicism

Some readers might not yet realize how meaning holism challenges the formal explanations that dominate political science. Rational choice theorists might think that they already explain actions by showing how they are loosely rational given a set of beliefs and desires. Other political scientists might think that they can fairly easily treat their appeals to social categories as stand-ins for appeals to beliefs and desires: Provided they do not reify social categories, they can treat a claim such as "workers generally vote for social democratic parties" as shorthand for a set of claims about the kinds of beliefs and desires workers have and the kind of voting pattern to which these beliefs and desires give rise.

The challenge to formal explanations arises once again from the holism apparent in the idea that rational explanations work by locating an action within a larger web of beliefs or reasons. Holism pushes us to move from formal and ahistorical explanations to contextualizing and historicist ones.

Holism pushes us, firstly, to adopt contextual explanations. It implies that we can properly explain people's beliefs (and so their actions and the practices and institutions to which their actions give rise) only if we locate them in the context of a wider web of beliefs. Holism thus points to the importance of elucidating beliefs by showing how they relate to one another, not by trying to reduce them to categories such as social class or institutional position. We explain beliefs—and so actions and practices—by unpacking the conceptual connections in a web of beliefs, rather than by treating them as variables.

Holism pushes us, secondly, to adopt historicist explanations. It implies that people can grasp their experiences and so adopt new beliefs only against the background of an inherited web of beliefs. Hence we cannot explain why people hold the webs of belief they do solely by reference to their experiences, interests, or social location. To the contrary, even their beliefs about their experiences, interests, and social location will depend on their prior theories. Hence we can explain why they hold the webs of belief they do only by reference to the intellectual traditions that they inherit. Holism suggests, in other words, that social explanation contains an inherently historicist aspect. Even the concepts, actions, and practices that seem most natural to us need to be explained as products of a contingent history.

Perhaps I should admit here that most of the meaning holists I have discussed do not themselves argue for historicism. When they discuss social explanation, they often emphasize the importance of locating an action within a wider web of beliefs that shows it to be loosely rational. Buy they do not suggest the importance of then explaining these webs of belief by locating them against the background of inherited traditions. However, my own philosophical work has attempted not only to bring meaning holism to bear on historical inquiry but also to suggest how meaning holism leads to historicism. It is that latter suggestion that I have now repeated here (Bevir 1999, 187–218).

5.4 Issues for Political Science

Why should political scientists worry about the shift toward contextual and historical forms of explanation? In stark terms, the answer is that it implies that their correlations, classifications, and models are not properly speaking explanations at all. They are, rather, a type of data that we then might go on to explain using contextualizing historical narratives. Correlations and classifications become explanations only if we unpack them as shorthands for narratives about how certain beliefs fit with other beliefs in a way that makes possible particular actions and practices. Similarly, although models appeal to beliefs and desires, they are mere fables that become explanations only when we treat them as accurate depictions of the beliefs and desires that people really held in a particular case (cf. Rubinstein 2006; 1995). Finally, even after we treat correlations, classifications, and models as shorthands for narrative explanations, we then should provide a historical account of the contingent traditions behind these

beliefs; we cannot treat the beliefs as epiphenomena explicable in terms of objective facts about the world, social formations, or a purportedly universal rationality.

6 Conclusion

As this chapter draws to a close, I hope it has delivered rather more than it first promised. It has certainly tried to clear the underbrush of confusion that arises from reflecting on methods in terms of traditions of political science rather than philosophical subfields and doctrines. Yet, in addition, this chapter has tried to make a start at clearing the underbrush of confusion that arises from political scientists relying on philosophical doctrines that the rise of meaning holism has left looking increasingly implausible. It has argued that political science is too often committed to forms of empiricism, realism, and formal explanation that increasingly lack philosophical plausibility. It has suggested that we need to rethink political science and its methods so as to give greater scope to theory choice, constructivism, and historicism. We might still defend empiricism, but we must recognize that the justification of knowledge depends on comparing whole webs of belief. We might still defend realism, but we must recognize that much of social reality is linguistically constructed. We might still defend naturalism, but we must recognize that the human sciences require historicist forms of explanation.[15]

Let me be clear, the problem is not that holism repudiates any particular method for creating data; it does not. The problem is that holism undermines the dominant meta-methodological commitments in terms of which political scientists think about their data. Holism poses awkward questions about how political scientists should use and explain the data generated by multiple methods. To be harsh, the real problem is that political scientists have not even begun to think about these questions, let alone respond to them and modify their practice accordingly.

It is true that critical and constructivist approaches to political science sometimes try to foreground such questions. Alas, however, other political scientists are prone to dismiss these alternative approaches for lacking methodological rigor—as if the nature and relevance of methodological rigor could be taken as given without bothering to think about the relevant philosophical issues. To be harsher still, therefore, political scientists are in danger of becoming dull technicians, capable of applying the techniques that they learn from statisticians and economists, but lacking any appreciation of the philosophical issues entailed in decisions about when we should use these techniques, the degree of rigor we should want from them, and how we should explain the data they generate.

[15] My own view is that historicism entails an antinaturalist view of social explanation but not an antinaturalist ontology. For the antinaturalist view of explanation, see Bevir and Kedar (forthcoming).

Many political scientists have long worried about hyperfactualism—the collection of data without proper theoretical reflection. Today we might also worry about hypermethodologism—the application of methodological techniques without proper philosophical reflection.

References

Adcock, R., Bevir, M., and Stimson, S. (eds.) 2007. *Modern Political Science: Anglo-American Exchanges since 1880*. Princeton, NJ: Princeton University Press.

Anscombe, G. 1957. *Intention*. Oxford: Basil Blackwell.

Audi, R. 2003. *Epistemology: A Contemporary Introduction*. London: Routledge.

Bernstein, R. 1976. *The Restructuring of Social and Political Theory*. Philadelphia: University of Pennsylvania Press.

Bevir, M. 1999. *The Logic of the History of Ideas*. Cambridge: Cambridge University Press.

—— and Kedar, A. forthcoming. Concept formation in political science: an anti-naturalist critique of qualitative methodology. *Perspectives on Politics*.

Bromberger, S. 1966. Why-questions. In *Mind and Cosmos*, ed. R. Colodny. Pittsburgh, Pa.: University of Pittsburgh Press.

Campbell, D. 1988. *Methodology and Epistemology for Social Science: Selected Papers*. Chicago: University of Chicago Press.

Carnap, R. 1947. Empiricism, semantics, and ontology. In *Meaning and Necessity: A Study in Semantics and Modal Logic*. Chicago: University of Chicago Press.

—— 1950. *Logical Foundations of Probability*. Chicago: University of Chicago Press.

Chellas, B. 1980. *Modal Logic: An Introduction*. Cambridge: Cambridge University Press.

Davidson, D. 1980*a*. The logical form of action sentences. In *Essays on Actions and Events*. Oxford: Clarendon Press.

—— 1980*b*. Actions, reasons and causes. In *Essays on Actions and Events*. Oxford: Clarendon Press.

—— 1980*c*. Mental events. In *Essays on Actions and Events*. Oxford: Clarendon Press.

Earman, J. 1992. *Bayes or Bust? A Critical Examination of Bayesian Confirmation Theory*. Cambridge, Mass.: MIT Press.

Easton, D. 1953. *The Political System*. Chicago: University of Chicago Press.

Elster, J. (ed.) 1986. *Rational Choice*. New York: New York University Press.

Fay, B. 1996. *Contemporary Philosophy of Social Science*. Oxford: Blackwell.

Finer, H. 1921. *Foreign Governments at Work: An Introductory Study*. New York: Oxford University Press.

—— 1932. *Theory and Practice of Modern Government*. London: Methuen.

Fodor, J., and LePore, E. 1992. *Holism: A Shopper's Guide*. Oxford: Blackwell.

Godfrey-Smith, P. 2003. *Theory and Reality: An Introduction to the Philosophy of Science*. Chicago: University of Chicago Press.

Goodman, N. 1955. *Fact, Fiction, and Forecast*. Cambridge, Mass.: Harvard University Press.

Hacking, I. 1981. *Scientific Revolutions*. Oxford: Oxford University Press.

—— 1999. *The Social Construction of What?* Cambridge, Mass.: Harvard University Press.

—— 2000. *An Introduction to Probability and Inductive Logic*. Cambridge: Cambridge University Press.

Hacking, I. 2002. Making up people. In *Historical Ontology*. Cambridge, Mass.: Harvard University Press.

Hall, P., and Taylor, R. 1996. Political science and the three institutionalisms. *Political Studies*, 44: 936–57.

Heil J., and Mele, A. (eds.) 1995. *Mental Causation*. Oxford: Oxford University Press.

Hempel, C. 1942. The function of general laws in history. *Journal of Philosophy*, 39: 35–48.

—— and Oppenheim, P. 1948. Studies in the logic of explanation. *Philosophy of Science*, 15: 135–75.

Keynes, J. 1921. *Treatise on Probability*. London: Macmillan.

Kuhn, T. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Lakatos, I. 1978. *Philosophical Writings*, vol. i: *The Methodology of Scientific-Research Programmes*. Cambridge: Cambridge University Press.

Levi, M. 1988. *Of Rule and Revenue*. Berkeley: University of California Press.

Loux, M. 2002. *Metaphysics: A Contemporary Introduction*. London: Routledge.

Monroe, K. (ed.) 1991. *The Economic Approach to Politics*. New York: HarperCollins.

Pierson, P., and Skocpol, T. 2002. Historical institutionalism in contemporary political science. In *Political Science: The State of the Discipline*, ed. I. Katznelson and H. Miller. New York: Norton.

Popper, K. 1959. *The Logic of Scientific Discovery*. New York: Basic Books.

Quine, W. 1961*a*. Two dogmas of empiricism. Pp. 20–46 in *From a Logical Point of View*. Cambridge, Mass.: MIT Press.

—— 1961*b*. On what there is. In *From a Logical Point of View*. Cambridge, Mass.: MIT Press.

Rubinstein, A. 1995. Microeconomic theory: wonders or miracles. Address to the Israeli Academy of Sciences, 19 December.

—— 2006. Dilemmas of an economic theorist. *Econometrica*, 74: 865–83.

Schabas, M. 1990. *A World Ruled by Number: William Stanley Jevons and the Rise of Mathematical Economics*. Princeton, NJ: Princeton University Press.

Skocpol, T. 1985. Bringing the state back in: strategies of analysis in current research. In *Bringing the State Back In*, ed. P. Evans, D. Rueschemeyer, and T. Skocpol. New York: Cambridge University Press.

Sosa, E., and Tooley, M. (eds.) 1993. *Causation*. Oxford: Oxford University Press.

Thelen, K., and Steinmo, S. 1992. Historical institutionalism in comparative politics. Pp. 1–32 in S. Steinmo, K. Thelen, and F. Longstreth, *Structuring Politics: Historical Institutionalism in Comparative Analysis*. New York: Cambridge University Press.

Winch, P. 1958. *The Idea of a Social Science*. London: Routledge and Kegan Paul.

Wittgenstein, L. 1972. *Philosophical Investigations*. Oxford: Basil Blackwell.