

V. PHILOSOPHY OF SCIENCE AND THE FOCUS ON FACTS: AssignmentsOctober 20:

- Hempel, Philosophy of Natural Science, C
- Chapter 1, "Scope and Aim of This Book"
 - Chapter 2, "Scientific Inquiry: Invention and Test"
 - Chapter 3, "The Test of a Hypothesis: Its Logic and Its Force"
 - Chapter 4, "Criteria of Confirmation and Acceptability"
 - Chapter 5, "Laws and Their Role in Scientific Explanation"

Comments: The philosophy of science, as a general approach to the development of knowledge, trades in matters of fact rather than value. There is merit in studying the philosophy of science in the context of the natural sciences rather than the social sciences, where values are not so easily avoided. Hempel's little book probably represents the most straightforward and readable account of this subject from the standpoint of the natural sciences. According to Hempel, are theories "discovered" or "invented"? What does he mean by a "crucial test"? By a "scientific" explanation?

October 25:

- Hempel, Philosophy of Natural Science
- Chapter 6, "Theories and Theoretical Explanation"
 - Chapter 7, "Concept Formation"
 - Chapter 8, "Theoretical Reduction"
- Bernstein, The Restructuring of Social and Political Theory, " xi-54
- "Introduction"
 - Part 1, "Empirical Theory"

Comments: What is the difference between a "bridge principle" and an "internal principle" for Hempel? Can you offer examples from the social sciences? What is the difference between "reductionism" in science and "methodological individualism" in the social sciences? Although it is useful to study the philosophy of science from a natural science perspective, there are problems in translating the issues into a social science context. Bernstein helps us by identifying the scientific commitment of "mainstream social scientists."

October 30:

- Moon, Donald J. "The Logic of Political Inquiry: A Synthesis of Opposed Perspectives," in Greenstein and Polsby, 131-228.

Comments: Hempel establishes the model of scientific explanation as a deductive-nomological one. Bernstein further clarifies that model while preparing to attack it. Moon foreshadows some of Bernstein's criticisms by asking if the scientific model is sufficient for explanation in the social sciences. Study his alternative model of explanation and be prepared to evaluate the utility of each model for providing you with the type of understanding that you seek within your own fields of interest.

V. PHILOSOPHY OF SCIENCE AND THE FOCUS ON FACTS: Other Readings

The literature on the philosophy of science is ponderous in both size and readability. In this section and the next, "The History of Science and Progress in Political Science," we will barely scratch the surface of the topic. But I am convinced that the philosophy of science needs to be pursued in an iterative fashion--a basic introduction, a shift to mundane research problems, then a return to further study--rather than through a concentrated program of total immersion. Indeed, I am afraid that the philosophy of science can slowly drown a person under the deep problems confronting political inquiry, so one must avoid becoming mesmerized by the dancing shadows on the waters.

Despite my concern about the seductive power of the topic, I strongly suggest that next year you consider taking D01-3 (previously taught by James Caporaso), which is devoted to the philosophy of science. His syllabus approaches the subject far more systematically and comprehensively, but here are a few readings that come to mind for those who might want to explore the turf in the immediate future.

Rudner, Richard S. Philosophy of Social Science. Englewood Cliffs, New Jersey, 1966.

This book is in the same series as Hempel's, but I don't think it makes its points as sharply. He does have a fine chapter on the objectivity of social science. The books below tend to be more open to social science examples than Hempel's.

Bergmann, Gustav. The Philosophy of Science. Madison: University of Wisconsin, 1958.
Nagel, Ernest. The Structure of Science. New York: harcourt Brace & World, 1961.
Kaplan, Abraham. The Conduct of Inquiry. San Francisco: Chandler, 1964.'

Bergmann's book is a classical statement of logical positivism. The Nagel and Kaplan texts are more open in their approaches and more attuned to the social sciences.

Graham, George J. Methodological Foundations for Political Analysis. Waltham, Massachusetts: Xerox, 1971.
Gibson, Quentin. The Logic of Social Enquiry. London: Routledge and Kegan Paul, 1960.
Ryan, Alan. The Philosophy of the Social Sciences. London: MacMillan, 1970.

These books are more along the lines of the Rudner volume, investigating the role of scientific theories within the social sciences, the nature of explanation in social science, and the role of values in social research. Graham's book is of particular relevance for political scientists.

Brown, Robert. Explanation in Social Science. Chicago: Aldine, 1963.

As argued in the Moon reading, there is more than one meaning of "explanation" suitable for the social sciences. Brown expands Moon's two-fold conceptualization and identifies seven types of explanation: genetic, intentions, dispositions, reasons, functions, empirical generalizations, and theories.

V. PHILOSOPHY OF SCIENCE AND THE FOCUS ON FACTS: Other Readings (cont)

Miller, Eugene F. "Positivism, Historicism, and Political Inquiry," American Political Science Review, 66 (September, 1972), 796-817.

In this sweeping and stimulating article, Miller contends that the behavioral movement in political science has its epistemological roots in positivism--a largely Anglo-American theory of knowledge dominant in the philosophy of science--which has virtually died out as a philosophical movement. The principal foe (and successor) of positivism in epistemology (and in philosophy generally) is "historicism," which Miller defines as "the view that all human knowledge is essentially relative to time and place" (p. 797) Miller examines the growth of historicism and isolates certain major challenges to positivism: (1) There is no direct awareness of pure sense-data; data of experience are structured by categories of the mind. (2) These ordering principles or categories of the mind have varied with the succession of epochs and cultures. (3) Truth is relative; knowledge cannot be "objective" in the sense of grasping nature as it really is. Miller asserts that the positivist influence in the philosophy of science has been challenged by the antipositivism of historicism, mainly through the later work of Wittgenstein (which argued that experience receives its meaning from language, not the other way around) and through the new interpretation of the history of science (promoted by Kuhn). The result of this onslaught in the philosophy of science is a reinterpretation which suggests that "the guiding presuppositions of scientific inquiry are variable from one context to another and are ultimately arbitrary inasmuch as they have no absolute basis in reason or experience." (p. 806)

Despite the decline of positivism in the philosophy of science, Miller argues, "the methodological literature in political science continues to treat the positivistic model as though it enjoyed the full endorsement of philosophers of science." (p. 807) But there has been evidence of historicist influence in the postbehavioral movement. This can be seen in rejections of deductive explanations in favor individual action interpretations, phenomenology, and Kariel's consistent relativism. However, historicism as a theory of knowledge leads "to an epistemological relativism that renders questionable that very possibility of science or philosophy as understood in the Western tradition." Hence: "The conviction that neither positivism nor historicism can provide a satisfactory basis for political inquiry lies behind the renewed interest in traditional approaches to political philosophy." (p. 816) This last observation of Miller's, however, comes at the tail end of a long article and is not well developed. The reader knows for sure that he finds positivism wanting and historicism also unsatisfactory, for it questions the objective knowledge of both facts and values.

Braybrooke, David and Alexander Rosenberg. "Comment: Getting the War News Straight: The Actual Situation in the Philosophy of Science," American Political Science Review, 66 (September, 1972), 818-826.

Contrary to Miller's claim, "there has been almost no serious exchange of views either in epistemology or in the philosophy of science between German-speaking philosophers and English-speaking philosophers during the past half century." (p. 818) There has been substantial modification of the original logical positivist position, but it has come from internal self-criticism by positivist scholars, not from historicist criticism from the outside. Thus, Hempel, who 30 years ago had complete confidence in the distinction between analytic and synthetic propositions, later acknowledged the force of Quine's arguments against the analytic/synthetic distinction. He also changed his position on the status of nontheoretic terms, which remains an issue in positivism. If no distinction can be made between theoretical and nontheoretical

terms within a theory because the theory itself determines the meanings of its terms, then there is no basis to evaluate one theory against another. Feyerabend in particular has posed this challenge, but his position is not generally accepted. Indeed, the positivists' stronghold within the philosophy of science has been retained. Contrary to some social scientists' uncritical acceptance of the Kuhn-Feyerabend arguments, the concept of truth is not relative in the actual pursuit of science.

Miller's article is neither good political science nor good philosophy. Political scientists are most likely to make contributions to philosophy "when they are rooted in the study of actual political phenomena and in turn visibly feed the growth of such study. ... Why should a political scientist think it necessary to choose sides for or against positivism? As an outsider, he is even more likely than philosophers themselves to get the proportions of the issues wrong. He cannot expect to follow a doctrine through all its transformations; or to identify precisely the key issues that lead from one transformation to another." (p. 825)

Rudner, Richard S. "Comment: On Evolving Standard Views in Philosophy of Science," American Political Science Review, 66 (September, 1972), 827-845.

In part contrary to the previous criticism of Miller's article, Rudner believes that serious social scientists should be au courant in contemporary philosophy of science. But Miller is "egregiously mistaken" in his pronouncement of the demise of positivism in the philosophy of science and in the revolutionary attack upon positivism by Miller's "historicism"--which Rudner thinks is a mixed bag of philosophical perspectives. Like Braybrooke and Rosenberg in the previous essay, Rudner holds that changes in positivism (or logical empiricism) have come about through a continuing internal critique rather than an external assault.

The current "standard position" (SP) in the philosophy of science is still quite positivistic. Scientific theories are construed as "(1) sets of sentences of statements (in any case, linguistic entities) which are (2) systematically related, (3) include some law-like generalizations (i.e., statements asserting nomologically regular connections among events of various kinds), and (4) furnish an empirically testable account of a thereby empirically determinable subject matter." (p. 834) Discussion of each of points has occupied much of the literature for the past fifty years. Interpretations have changed, but the outline of the standard position remains the same.

In any event, behavioralism in political science is logically independent of many of the epistemological stances in the history of philosophy. Assuming that "the central tenet of behavioralism in political science is that political behavior be adducible as evidence relevant to the acceptance or rejection of political hypotheses, ... it is hard to see how this is incompatible with any of the usual flavors of epistemology" (p. 845) Moreover, the ultimate point of Miller's essay is ambiguous, for at the end he rejects both positivism and historicism as a basis for science or philosophy, favoring the study of political philosophy in its traditional forms.

Landau, Martin. "Comment: On Objectivity," American Political Science Review, 66 (September, 1972), 846-856.

Landau criticizes Miller's loose construction of "historicism," which embraces a confusing variety of characteristics and fails to distinguish between historical "determinism" and historical "relativism." Miller's historicism is relativism, and it has definitely not become our leading theory of knowledge. His historicism--better labeled as "epistemological relativism"--"challenges the concept of objectivity, denying outright that there can be objectively true facts." (p. 848) This thought

fits with "Mannheim's Paradox": a statement on the decline of ideology is itself ideological, for all knowledge is dependent on the subjective standpoint and social situation of the knower. But there is a "self-referential inconsistency" in Mannheim's thought. "We can never be sure of x because of y , but y is an instance of x ." (p. 849) So we have a thesis that maintains its own falsity.

If epistemological relativism indeed holds as our leading theory of knowledge, we can no longer distinguish between correct and incorrect hypotheses--there is no need to make our assertions accountable. The Vienna Circle sought to distinguish cognitive from noncognitive statements, inveighing against metaphysical statements because they pretended to be cognitive. A lengthy example from Heidegger is shown to be cognitively meaningless sentences. Distinctions between sense and non-sense, truth and error, is indispensable to science and society.

The concept of historicity of the mind can be used to refute the principle of objectivity only if neutrality is equated with objectivity, but the two are not the same. The enormous difficulty of attaining neutrality in science has led to the system of regulatory controls that constitute "objectivity." A scientist's proposals must be subject to error-correcting procedures. To say that conceptualization affects observation is not to say that it necessarily controls observation. "It is accountability, not neutrality, that marks the principle of objectivity." (p. 854)

Miller, Eugene F. "Rejoinder to 'Comments' by David Braybrooke and Alexander Rosenberg, Richard S. Rudner, and Martin Landau," American Political Science Review, 66 (September, 1972), 857-873.

Braybrooke and Rosenberg: They speak about Anglo-American epistemology and philosophy of science, while I include European thought more generally. Logical positivism may have left a legacy behind, but they do not prove it is still a vital force. Historicism is mainly ascendant in epistemology generally, and it makes little difference if modifications in positivism came from internal self-criticism. Concerning their suggestion that "political scientists should leave disputes about philosophical doctrines to philosophers and turn their attention instead to the study of actual political phenomena," . . . "speculation about politics is inseparable from speculation about the character of human knowledge." (pp. 861-862)

Rudner: Many of his criticisms are similar to those of Braybrooke and Rosenberg and can be answered similarly. I did not claim that historicism was triumphant in the philosophy of science, only in epistemology more generally. Rudner's caricature of my position on behavioralism and its future is uninformative. Although I did not contend that the "'death' of positivism entails the 'death' of behavioralism," one might question the soundness of behavioral political science given the theoretical defects of positivism. (p. 868)

Landau: We both "agree that historical relativism is untenable and that it cannot provide a sound epistemological basis for political inquiry." (p. 869) He questions my usage of "historicism." I mean "radical" historicism rather than "theoretical" historicism. "Radical historicism rejects the possibility of final knowledge of nature or history and embraces relativism." (p. 870) A historicist also might offer his own definition of "accountability," which might include the acceptance of full responsibility for his choices. [But this shifts the definition considerably and thus does not address Landau's criticism.] "... one could formulate a view of knowledge that avoids the difficulties of positivism and historicism by following out rigorously and completely the implications of these common-sense assumptions of what we know." (p. 872) If we know the "whatness" (essence?) of things, we discover meanings and do not create them. Philosophic inquiry can help us in this ontological quest, searching for the nature of political things and of the right or good political order.

Kaplan, Abraham. "Positivism," in INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL SCIENCE, VOLUME 12. New York: Macmillan and the Free Press, 1968. Pp. 389-395.

Two positivisms: 19th and 20th century, with both rooted in the 18th century philosophy of the Enlightenment. "The name 'positivism' derives from the emphasis of the positive sciences--that is, on tested and systematized experience rather than on undisciplined speculation." (p389)

The earlier positivism saw human history progressing through three stages: the religious, metaphysical, and the scientific--which was the last and best.

Twentieth century positivism came to be known as logical positivism to emphasize the rationalist component. (The movement itself preferred the name, logical empiricism.) It began in the 1920s with the Vienna Circle: Schlick, Carnap, Neurath, and Feigl among others. It moved to Chicago in the late 1930s where Carnap went and became to be called "scientific empiricism," publishing the INTERNATIONAL ENCYCLOPEDIA OF UNIFIED SCIENCE.

The positivist conception of the nature of philosophy saw philosophy not as "wisdom" but as an activity. Its business was to make propositions clear. The later "analytic philosophy" differed in that its method was more linguistic than logical and its subject matter is provided as much by everyday life as the positive sciences.

Logical positivists seeks clarity and are ready to recognize some of the great questions as "pseudoproblems," incapable of solution because there is nothing to be solved. It rejects agnosticism, because the agnostic in maintaining that the existence of God is unknown acknowledges the genuineness of the question. "To the categories of truth and falsehood, into which statements were previously classified, the positivist added a third category: nonsense." (p390) Because positivism was concerned with establishing the verifiability of statements, it was linked with operationalism.

Positivists contend that moral judgments are devoid of meaning, drawing a distinction between cognitive and emotive meanings. The first conveys beliefs while the second conveys attitudes.

The dispersal of European scholars at the outbreak of WW II marked the beginning of the end of positivism as a movement. It had a great impact on analytical philosophy, but had generally less impact on philosophy proper than on science. It cultivated the growing emphasis on observation and data in psychology and sociology.

"Unintentionally, and even contrary to its own purposes, modern positivism may have contributed to a 'myth of methodology': that it does not much matter what we do if only we do it right." (p394)

Bergmann, Gustav. "Logical Positivism," in Vergilius Ferm (ed.), A HISTORY OF PHILOSOPHICAL SYSTEMS. New York: The Philosophical Library, 1950. Pp. 471-482.

The movement derived from the Cambridge School of Analysis and the Vienna Circle. In terms of cautious generalities, logical positivists

1. hold Humean views on causality and induction
2. insist on the tautological nature of logical and mathematical truths
3. conceive of philosophy as logical analysis, a clarification of the language which we all speak in everyday life
4. such analysis rejects metaphysics in the sense that many of the old points of dispute cannot be stated in a properly clarified language.

"an ideal language must be (1) complete, (2) formally constructed, and (3) it must allow for the resolution of all philosophical puzzles." (p475)

Brunner, Ronald D. "An 'Intentional' Alternative to Public Opinion Research," AMERICAN JOURNAL OF POLITICAL SCIENCE, 21 (August, 1977), 435-464.

Brunner notes the existence of alternative epistemological traditions in contemporary social science. The "scientific explanation" tradition seeks to subsume individual cases under a "covering law." The "intentional" alternative accounts for behavior in terms of a logical connection between the purpose of action and the action itself. In this perspective, the relevant context for understanding an action is the actor himself or herself, the meaning or significance of any variable may depend upon the configuration of other variables in the context, and there is no a priori assumption that observations on a particular variable have the same significance across cases or even across two points in time for the same actor. "If the first mentioned tradition can be described as causal, mechanistic, and nomothetic, then the second can be described as teleological, finalistic, and ideographic." (p439)

Given individual-level, cross-sectional data, the scientific explanation model explains attribute k for individual i through the co-occurrence of attribute j. But for the intentional point of view, attribute k for individual i is explained by all other M attributes of i. Indeed, selection of subsets of M may not do for the linkage of attributes may be indirect. Thus, cross-tabulations of variables in a sample survey just will not do for an intentional explanation. More intensive methods of observation and analysis are necessary, as in the study of one person rating 40 adjectives over a succession of days. The resulting factor analysis dealt with observations on the same individual. The results were consistent with Laswell's hypothesis that private motives of the individual from childhood tend to function long after childhood. Studies for 30 other cases tended also to support the hypothesis. But from the "intentional" viewpoint, this only means that Lasswell's displacement hypothesis is a good heuristic for directing attention to functional patterns in a variety of cases.

Given aggregate, longitudinal data, the scientific model would seek to correlate values for two variables over time. But the intentional model requires that attention be paid to all observations on group g at time t. An example of research done under the intentional model is reported. It involves weekly survey data on the gasoline shortage from December 30 to February 10, 1974. While the data were not ideal (not extensive enough on the individuals), Brunner contends that an "intentional" interpretation can be given the results. [There is considerable room for disagreeing about the distinctiveness of the "intentional" interpretation. It seems that the research is consistent with covering law interpretations, once motivations and perceptions are entered into the analysis.]