

Title of Project: Logical and psychological bridges and barriers between the natural and behavioral sciences in the history of science, analyzed as they appear in the literature of the history of social science and in the social science statements of a series of important innovators in the natural sciences.

Investigator: Alfred de Grazia

Sponsoring Institution: New York University, Graduate School of Arts and Sciences, Washington Square, New York.

Duration of Project: 15 months, beginning June, 1962.

Description of the proposed investigation: summary

The proposed investigation is in two parts, the first of which is an examination of the literature of the history of social science for what it has to say on the contributions of natural scientists to the development of a conscious social science, and the second part of which is an examination of the writings of three important natural scientists with respect to the conscious attention to social science as such that they exhibited in their writings. The scientists involved are Galileo Galilei, Antoine Lavoisier, and Charles Darwin. If the scheme of analysis proves useful, it might subsequently be applied to a numerous series of natural scientists such as Newton, Franklin, Pasteur, Pearson, and Einstein. Guiding the investigation will be a set of hypotheses outlined below, the most general of which may be stated as follows: that the formal logical and psychological structure of thought in natural science is neither ahead nor behind that of the leading elements (humanistic, behavioral, etc.) in the same society in regards to behavioral science conceptualization. Correspondingly, the "conscious scientism" of a social science develops independently of natural science and as a specific product of a specially caused "social science mentality."

Description of the proposed investigation: details

The literature of social science history is meager. The development of such a history has come largely via "asides" by historians of natural science, the discussions of the politics and lives of great natural science innovators, and histories of ideas and philosophy. None of these is adequate, although all may be helpful, because, as the social and behavioral sciences become more specific and precise as to scope and method, the record of their origins and continued development must become more attuned to the authentic peculiar procedures and concepts of social science. An analogy may be made with social history in relation to political history; taking into account the transformation of interests from individuals to societies, from wars to culture, etc., required the rewriting of much of history to embrace and explain events that had been largely ignored as unimportant or intangible by previous historians. So, in a sense, one objective of this project is to open up the field of the history of social science, using ~~to~~ historiographical methods that are advanced rather than wholly conventional in kind. Inasmuch as the literature of the field has not been collected hitherto in a useful form and published, the first phase of this project has this as its objective.

The second phase of the project is, however, regarded as more time-consuming and important, the preliminary scrutiny of the literature being essential but not as demanding. The second phase will seek to test, on three important natural scientists from three different periods of the history of science, seven related hypotheses:

That, as the natural scientist innovator gives attention to the fields of behavioral science, he:

1. Encounters problems of perception. He does not "see" well.
2. Undergoes confusion of values and facts (The definition of and distinctions between fact and value used as a standard for the content analysis will be positivist-operationalist.)
3. Has psychic problems of some intensity.
4. Suffers confusion of goals (hypotheses). He states goals that are demonstrably less precise and stable than his goal-statements (hypotheses) in natural science.
5. Is balked by a profusion of social symbolism (a "semantic noise belt") that distorts perception and cognition.
6. Encounters and recognizes problems of limitations of data or unavailability of all the means needed in solving a critical problem.
7. Is not acutely aware of the existence of a separate realm of social phenomena demanding orderly analysis.

The planned method of study of the second phase is principally that of collecting the social-scientific statements of the scientist and subjecting them to logical and psychological analysis alongside the typical modes by which they address problems of natural science, using as a "constant" the modes of social-scientific discourse prevalent in the age.

The investigation does not intend to examine political and social ideas of the scientists, but only explicit or implicit statements and attitudes concerning the possible existence, scope, method, and principles of a science of human behavior.

Furthermore, this is not a study of the truth-value of the behavioral science utterances of the men under consideration. It is a study of the conditions and outcomes of transferences of thought from natural to behavioral science. It is therefore basically an inquiry into the logic and psychology of science in the history of science.

Nor are the studies intended to be biographies in any conventional sense. They are part of a larger plan for the preparation of a history of behavioral science, which would have several more or less distinctive traits as historiography. These would consist of the breakdown of thought complexes into substantive items that can be related ideologically and possibly quantitatively. Given a degree of success, the technique might have some general use in the historiography of science.

The findings themselves may contribute to an understanding of scientific creativity (particularly with regards to social and psychological conditions thereof); they may illuminate some of the less obvious connections (and differences) between behavioral and natural science. They may add something to the study and principles of historical causation.

The investigator will use the collected works of Galileo, Lavoisier, and Darwin as the data for analysis, together with biographical materials on the men. Several libraries, including the Library of Congress, will be consulted in the preparation of the bibliography. He does not know presently of a study precisely to the point of the proposed investigation. However, certain writings of Karl Mannheim, Hans Vaihinger, Harold Lasswell, Ernst Cassirer, Giorgio Santillana, Nathan Leites, Morris Stein, John Dewey, Louis Bredvold, J. B. Bury, and Howard Becker, among others, may have considerable utility.

Background of the Investigator: Presently Professor of Social Theory in the Departments of Government and Sociology, New York University.

University of Chicago, A.B., 1939; Ph.D., 1948. Member of the faculty: University of Indiana, 1940-41; University of Minnesota, 1948-50; Brown University, 1950-52; Stanford University, 1952-57; New York University, 1959 - present.

Present courses offered at New York University include Methodology; Social Invention; World Cultural Relations and UNESCO; Principles of Political Power.

Works related to the present project include: Public and Republic: History of Representation in America (Knopf, 1960) (In this work the investigator developed a method of analyzing the historical flow of ideas by breaking down concepts into specific items, psychologically and ideologically interrelated, and capable of being traced with greater accuracy than the larger concepts such as representation and democracy.) Michels' First Lectures in Political Sociology (University of Minnesota, 1949). "Mathematical Derivation of an Election System," ISIS, LXIV (June 1953), 42-51. "The Process of Theory-Research Interaction," J. of Politics, XIII (1951), 88-99. "Elements of Social Invention," American Behavioral Scientist, V (1961), 6-9. "Studies Related to Social Invention," ibid., 11-32. "The Hatred of New Social Science," American Behavioral Scientist, V (1961), 5-13. "The Science and Values of Administration," Administrative Science Quarterly (Dec. 1960), 363-98, and (March 1961), 557-583.

Works less closely related to the present project include Elements of Political Science (Knopf, 1952); The American Way of Government (John Wiley, 1957); Elites Target Analysis (1955); American Welfare (with T. Gurr, NYU Press, 1961); The Western Public (Stanford U. Press, 1954), etc.

Research and related offices held:

The investigator is the founder and editor of The American Behavioral Scientist, a monthly journal. He is a member of the Executive Council of the American Political Science Association; was U.S. Social Science Advisor to the General Conference of UNESCO, Paris, 1960; Director, Center for Applied Social Research, New York University, 1959-60; Executive Officer, Committee on Social Science Research, Stanford University, 1952-55; Consultant, Operations Research Office, Johns Hopkins University, 1951-52; Member of the Laboratory for Research in Social Relations, University of Minnesota, 1948-50; psychological warfare officer, U.S. Army, 1942-46; studied history of sociology under Louis Wirth and did extensive work in the history of political philosophy at the University of Chicago prior to his doctorate. He is qualified in the languages concerned in the present project, Italian and French.

Budget for the proposed project:

Salaries:

Investigator: full-time, July-August, 1962; 10% time September-June, 1963; full-time, July-August 1963	\$7,894.00
Research Assistant (doctoral candidate level) \$250 per month, 15 months	3,750.00
Secretarial assistance: 10% time for 13 months; full-time, July-August, 1963	1,097.00
Supplies and materials	200.00
Photocopying; reproduction and distribution of annotated bibliography (80 pp.)	500.00
Travel (Washington 2, Cambridge 1); maintenance 15 days	500.00
Phone calls (long distance)	60.00
Overhead (New York University)	2,800.00
TOTAL	\$16,801.00

Approved:

_____ Alfred de Grazia
Investigator

_____ Marshall E. Dimock
Head, All-University
Department of Government

_____ Sidney G. Roth
Director, Office of
Research Services.

15. Proposed Plan of Study

Applicant proposes to spend a year in Europe for study and research into the history of social science, perfecting his knowledge of European languages and inventorying the resources on this subject in key European libraries.

The applicant views the possibilities of research in the history of behavioral science as being a search for the first tangible evidences of scientific procedure in human affairs and the explanation of the conditions behind their invention and development. (The implications of this for the study and fostering of creativity in science today are apparent.) The applicant holds a conception of the history of science that he believes can form the basis for a new sub-field of knowledge, the applications of which may extend into the science of administration and the administration of science, both of these being rapidly growing concerns of the physical and behavioral sciences. He requires a period of intensive study and preparation in this field, particularly via the documentary resources of earlier periods of history.

The literature of social science history is meager. The development of such a history has come largely via "asides" by historians of natural science, the discussions of the politics and lives of great natural science innovators, and histories of ideas and philosophy. None of these is adequate, although all may be helpful, because, as the social and behavioral sciences become more specific and precise as to scope and method, the record of their origins and continued development must become more attuned to the authentic peculiar procedures and concepts of social science. An analogy may be made with social history in relation to political history; taking into account the transformation of interests from individuals to societies, from wars to culture, etc., required the rewriting of much of history to embrace and explain events that had been largely ignored as unimportant or intangible by previous historians.

So, in a sense, one objective of this project is to open up the field of the history of social science, using, too, historiographical methods that are advanced rather than wholly conventional in kind. Inasmuch as the literature of the field has not been collected hitherto in a useful form and published, the first phase of this project has as its objective a considerable documentary exploration.

Other areas to be scrutinized are: the first indications of concern with problems of social perception; the beginnings of attempts to distinguish fact and value; the psychic problems of early innovators; their mathematical logic; the problems of coping with changing goals in early applied social science; problems of a profusion of social symbolism which distorts perception and cognition; the earliest developments of bodies of raw data consciously for scientific purposes; the awareness of fields and disciplines of social science; the role of government and other associations in fostering or blocking growth of early social science. Perhaps a scheme may be devised for further investigations along logico-empirical and instrumentalist lines, permitting some element of measurability.

The applicant plans to work out of the University of Pavia, Pavia, Italy, a university with an excellent historical tradition and a forward-looking program in the new theories of social science. Pavia is especially convenient to Milan, Venice, Florence, and Rome, all locations where early modern social science is indicated to have begun and where considerable bodies of unresearched materials are said to exist. From Pavia, three sets of resource locations are within reasonable range and it is hoped to spend a short time in Naples and Palermo for medieval and

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15. Proposed Plan of Study (continued)

(in Naples) later studies; a month in Germany and Switzerland for 18th and 19th century repositories; and a month in Paris and London for their general collections. I hope in the course of the year to assess fully the possibilities of a new type of historical theory of the social sciences.

- On Hardware Invention as Social Invention

Defeat the main examples =

the wheel

the use of fire? Cooking?

the bow & arrow

the ship

the clock

gunpowder

the pyramid

the telegraph

the airplane

the radio

etc.