

SOCIAL SCIENCES: HISTORICAL AND PHILOSOPHICAL OVERVIEW OF METHODS AND GOALS

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Summary

The social sciences have a long history, although they became self-consciously scientific only in the nineteenth century. Early proponents of a scientific approach to the study of society and its problems, including A. Comte and J. S. Mill, proposed a positivist or naturalist program that used the same methods to study both natural and social sciences. This elicited a strong critical response from humanists, who believed that the way to understand human behavior was through interpretation, paying close attention to history. Durkheim rejected Mill's belief that laws of human behavior were ultimately based on laws of individual psychology. He used statistical methods to argue that certain facts about societies could not be explained by facts about individuals. Weber, joined with interpretivists to reject the search for laws in the human sciences, but he did propose a kind of singular causal explanation that performed its explanatory task by demonstrating the rationality of certain types of behavior. Weber also argued for an important tenet of positivism, namely, the neutrality of science with respect to values. Scientists were able, and were required, to keep their own values and prejudices

separate from the issues they studied. In the twentieth century, the positions of naturalists and interpretivists were refined, and some common ground was found. The critical theorists attacked what they saw as the naturalists' attempt to undermine human freedom with a social science that was manipulative and full of evil potential. In the 1960s, T. Kuhn's careful historical study of the growth of scientific knowledge showed the importance of interpretive work in the physical as well as the social sciences. Sociologists of science built on Kuhn's suggestions about factors—other than data and logical inference—that influence theory choice. The chapter closes with speculative remarks about the future of the social sciences.

1. Early History

Social science is both very old and relatively new. It is old in the sense of an organized reflection on how to create and maintain a strong and secure society that provides the best possible life for its citizens. The ideal state in Plato's *Republic* was a stratified society in which social roles were assigned to individuals according to family status, sex and ability. Plato believed to achieve a government free from administrative flaws and capable of providing protection from enemies; it was necessary to let the state be ruled by a group of physically, intellectually, and morally superior citizens. Despite its antidemocratic ethos, *The Republic* continues to influence thought about social reform. As recently as the 1950s, it served as the introduction to many university courses in sociology, and remains one of Plato's best-known works.

In the Middle Ages, and throughout the disruptive years of the reformation and counter-reformation, a central focus of thought about societal organization was how to balance secular and ecclesiastical authority. Nevertheless, some of the greatest work of the period does not fall into this category. Sir Thomas More's *Utopia* (1515) describes an ideal, rationally governed, communist secular state that stands in ironic contrast to the embattled Christian nations of his time. Machiavelli's *Discorsi*, written at about the same time, takes the ancient Roman republic, rather than some ideal construction, as his model state. He tries to show that the political and military features of the Roman republic could be usefully applied to the governance of contemporary republics. Florence, the city-state of Machiavelli's birth, had once been a republic, but at the time he wrote his great works, it was ruled by the Medici grand dukes. Machiavelli's shrewd observations of human behavior in both the *Discourses* and *The Prince*, his famous handbook of advice to rulers of principalities, along with his careful analyses of actual situations, lively examples and cogent arguments for reform—often presented in the form of dilemmas—are not entirely dissimilar to some modern works in social science.

In the 17th and 18th centuries, various philosophers helped to lay the foundations for what is now called "political science." T. Hobbes (1588-1679) and J. Locke (1632-1704), following a tradition that began when a group of King John's barons presented him with the *Magna Carta* (1215), take dramatically different positions concerning competing rights of rulers and their subjects. Locke's views about the origin and purpose of the state, the role of law, and fundamental human rights played a large part in the formulation of the constitutions of the United States and of other countries that reject principles of absolute monarchy. The British empiricists, especially D. Hume (1711-

1776) are acutely sensitive to empirical aspects of human psychology, and their observations and methods provide a basis for later empirical accounts of human nature. Their arguments concerning duty, justice and fairness are grounded for the most part in actual rather than ideal human capabilities, and they maintain that with the proper form of government, societies have the capacity to develop and change for the better.

The German philosopher I. Kant (1724-1804) also dealt with problems of justice and duty in his ethical and epistemological writings, though he thought that the fundamental principles of ethics, causality and even Euclidean geometry are synthetic *a priori* rather than empirically grounded. Kant says, for example, that although judgments about the rectitude of individual actions and the causes of particular events arise from sense experience, such judgments are possible because of intuitive principles of understanding and judgment that determine our way of conceiving how the world is organized. Although with his notion of the synthetic *a priori*, Kant tries to strike a balance between the extreme rationalism of thinkers like Descartes and the opposing views of the British empiricists, the tension in his work between the two poles allows his followers to interpret his work in diametrically opposed ways.

In France, the Enlightenment philosophes, notably Condorcet (1743-1794), revered science, and claimed to draw inspiration from Newtonian physics, but did not make any detailed use of those principles, and in fact had a more organic than mechanical view of the state. Condorcet had little confidence in democratic decision making, arguing instead for a strong monarchy and a state governed rationally by enlightened general laws.

2. The Nineteenth-Century Scientific Study of Society

Those who regard social science as a relatively new discipline usually date its beginnings in the early nineteenth century, the first time that the issue of whether there can be a science of society, modeled on scientific studies of the natural world, was fully addressed. By this time, Europe's scientific and philosophic communities had absorbed the main impact of I. Newton's revolutionary physics, but were continuing to work out its implications for other disciplines. The Newtonian perspective envisions an orderly physical universe governed by deterministic and discoverable laws.

2.1. August Comte (1798-1857)

Comte believed that the time was right for application of methods that were so successful in astronomy, physics and other natural sciences to the social realm. Drawing on work by Plato, Aristotle, Hume, Kant, Condorcet, and Saint-Simon, among others, Comte published his first book, *A Plan for the Scientific Works Necessary to Reorganize Society* in 1822. He coined the word "sociology" to characterize the new approach, and believed that sociology could take its place as a genuine science with empirically based laws capable of predicting and explaining human behavior. Fully aware of the immense difficulty of the task of understanding social organization, he began by dividing the study into a static component, which focused on the social division of labor in societies, and a dynamic component, which was expressed in his evolutionary theory of social

progress. The notion of evolution of social systems was not original with Comte, who probably borrowed it from the historian G. Vico (1668-1744).

Comte, along with most of his famous predecessors who dealt with social issues, was deeply interested in social reform. Like Plato, he believed that rule by the intellectually elite is the best form of government. In this respect, he anticipates the antidemocratic views of later social thinkers, such as the economic theorist V. Pareto (1848-1923). Comte's evolutionary views of society anticipate in a limited way the "social evolutionism" of H. Spencer (1820-1903) as well as Karl Marx's (1818-1883) evolutionary theory of society's inevitable progression to a communist state. Comte, however, believed that with his proposed system of a scientifically designed society, the evolutionary process was complete, and he did not envision further developments.

Comte was a thoroughgoing materialist. Following Saint-Simon (1760-1825), he adopted the term "positivism" to express the epistemological view that the sole basis for genuine knowledge is observation of phenomena and their relationships to one another, and that this is as true of human and social phenomena as it is of the (rest of the) material world. Positivism as an ontological view eschews metaphysical postulation of occult powers or hidden entities as causes of observed phenomena. The term "positivism," which now refers to a variety of positions ranging from the phenomenalism of E. Mach (1838-1916) to a set of loosely formulated principles that emphasize the importance of basing science on observations, experiments and logical inference, quickly became a rallying point for differing views about whether the scientific method is the only valid path to genuine knowledge and indeed about what constitutes the scientific method.

Comte was an early proponent of what came to be called—by the logical positivists of the early 20th century—"the unity of science." In this scenario, sociology represents a further development in the chain of knowledge that begins with mathematics, astronomy, and physics, and proceeds through chemistry and biology. Although the individual sciences differ in subject matter and the "later" disciplines are not reducible to the earlier, the latter do depend on the earlier in the sense of drawing on their findings and remaining consistent with them. The unity-of-science thesis maintains that all the sciences share a fundamental scientific methodology—which has been specified differently by adherents of various forms of positivism—as well as the goal of finding scientific laws that can provide a basis for explanation and prediction.

2.2. John Stuart Mill (1806-73)

Mill was attracted by Comte's views on social and educational reform. He fully embraced Comte's positivism though not Comte's suggestion that the social study of science needed no further refinement. Mill, in contrast, proposed new methods to further the scientific study of society, and thus exerted stronger influence than Comte on future work. Mill's reformist works concerning society and human values, including *Utilitarianism*, *On Liberty*, and *On the Subjection of Women*, continue to be widely read. In *A System of Logic* (1843), he undertakes the formidable project of reforming and expanding logic. He endeavors to keep what is good in the "old" syllogistic logic, and to supplement it with a new inductive logic that specifies methods of scientific investigation suitable for studying the physical, biological and social sciences. *A System*

of Logic ran through eight editions over the next thirty years and remains in print today. In this work, Mill argues that social planning should be founded on a rational basis, and he attempts to provide the logical tools to do just that.

In Book III of *A System of Logic*, "Of Induction," Mill argues that causes of social phenomena can be both discovered and confirmed by using his methods of experimental inquiry. Criticisms of his work, especially by W. Whewell (1794-1866), persuaded Mill that the methods were better suited for justification than for discovery. Contemporary philosophers agree, but scientists today continue to use modified versions of Mill's methods for both tasks. The methods all proceed by examining circumstances antecedent to the phenomena (effect) for which a cause is sought, and looking either for agreement of antecedent circumstances when the effects are similar, or difference of antecedent circumstances when effects differ, or variation in intensity of antecedents when the effects under investigation vary in strength, or by accounting for antecedents that are known (partial) causes of complex effects and then isolating residual antecedents to account for the unexplained part of the effect. Mill does not claim to invent these methods, which he says are already operative in "good" science, but he believes that his codification of the methods can help physical scientists organize and clean up their research efforts. He believes that the adoption of his methods can prevent scientists from lapsing into defective older principles, such as the doctrine of resemblance between cause and effect. He believes that when these methods are properly used, they can offer compelling support for causal claims in the social sciences as well as in the physical sciences. Mill does not think that the social sciences will ever be as "exact" as astronomy in its explanations and predictions, but he thinks that they could rise to a higher level than that possible in some physical sciences, such as meteorology. Meteorology, according to Mill, is an example of an inexact science; it has a very poor record of prediction, but scientists believe that deterministic causal laws govern weather.

Something like Mill's methods, especially his joint method of agreement and difference and his method of concomitant variations, are the basis for many contemporary controlled experiments in both physical and social sciences. The chief difference today is that most controlled experiments employ statistical data, and Mill's statement of the methods is not statistical. It is not difficult, however, to adapt the methods to use with statistical data. For example, the method of agreement can be reworded so that it refers to "agreement in a preponderance of cases" instead of "agreement in every case."

Statistical thinking, which involves the application of the mathematics of probability, was beginning to flourish at the time of the first edition of Mill's *Logic* because of the prevailing scientific attitude of determinism at that time; however, the notion of a statistical law was not easy to grasp. Mill regarded the lack of precision in the inexact sciences, as the result either of the difficulty of measuring the effects of many interacting and unknown, but nevertheless deterministic, causes, or of our ignorance of some part of the causal story. In Mill's view, a poor record of prediction in the inexact sciences does not reflect indeterminacy in nature.

Because astronomy was Mill's primary example of an exact science, it is ironic that one of the strongest impetuses to the rise in statistical thinking came with the work of A.

Quetelet (1796-1874) in his application of the mathematics of probability to observational astronomical data. Gauss (1777-1855), at age 18, had already discovered the principle of least squares, a form of "curve fitting." Gauss showed that the most probable value of something that is measured, such as the intermittently observed path of an astronomical object, could be inferred by making the sum of the squares of the divergences from the assumed exact measure a minimum. This was the beginning of Gauss's work on what is now known as the Gaussian law of normal distribution of errors and its associated bell-shaped curve. Because Gauss did not publish his early work on least squares until 1809, he shares credit for its discovery with A-M Legendre (1752-1833) who independently formulated the principle in 1805. In the 1820s, Quetelet, who was plotting observed positions of astronomical bodies, realized the importance of the regular patterns of deviation from the "normal" or "true" position, and saw the possibility of other applications for the "error curve." This error curve was so-called because deviations were regarded as the result of errors in measuring the phenomena under study. Mill's various revisions of successive editions of *Logic* demonstrate his acquaintance with work in probability theory and its applications. He criticizes Laplace's use of the principle of indifference, and argues for the frequency interpretation of probability. He cites the frequentist John Venn, who discusses Bayes's theorem for calculating the posterior probability of an event, and he also cites Herschel's essay review of Quetelet's work, in which the principle of least squares is discussed. Nevertheless, Mill, instead of incorporating this new work on statistics into his "new" logic of the sciences, warns the reader against inappropriate use of probabilistic reasoning.

Mill's plan for creating a genuine social science involves first establishing low-level empirical generalizations on the basis of historical, observational, and experimental knowledge of regular associations between circumstances and behaviors. At this level, his methods of agreement, disagreement, concomitant variation, and residues serve to discover and justify generalizations about society in much the same way that they function in the early study of a physical science. Such generalizations are weak, however, unless they can be supported by what would now be called crucial experiments, or better yet, can be derived deductively from well-established laws of a higher order. With a sufficient supply of empirical generalizations based on the study of history and observation of contemporary societies, however, Mill argues that the social scientist can proceed to develop and test higher-level laws that link various types of character to typical behaviors. These mid-level laws belong to a science Mill calls "ethology." Mill believes that ultimately such investigations into the laws connecting character and behavior could lead to the establishment of still more fundamental "laws of thought" that provide the deepest explanations of human behavior. The laws of thought that he envisions, for example, laws of similarity and spatial or temporal contiguity, already had some currency in the empirical associationist psychology of his time. Mill sees the further development of associationist psychology as the true foundation for the social sciences.

3. Responses to Positivist's Proposals for a Genuine Social Science

Salient and interrelated points in Mill's naturalist program are (1) It is possible to discover and confirm (deterministic) causal laws of individual and social human

behavior by using the same methods employed in the natural sciences; (2) These laws can be used to explain and predict human behavior, although in an inexact rather than an exact manner; and (3) Ultimately, social behavior can be explained fully in terms of individual psychology. (4) Humans are capable of autonomous action. Behavior that arises from (is caused by) an agent's own beliefs and desires, is free. This notion of freedom contrasts free behavior with coerced behavior, not with uncaused behavior. Coerced behavior is behavior that is caused by some external force rather than the agent's own volition. Such a notion of freedom is compatible with a deterministic universe in which everything that happens has a cause.

Major fault lines in contemporary social sciences result from attempts to refine or to refute one or more of these principles.

3.1. Individualism and Holism: Emile Durkheim (1858-1917)

Mill's psychologism, which in the final analysis attempts to explain all social behavior in terms of the psychology of individuals rather than the social group, identifies him as a methodological individualist. Mill's position puts him on one side of a debate that continues to divide individualists and holists today. Durkheim is an important representative of the other, holistic, side. Durkheim strongly denies that all social phenomena can be explained solely in terms of individual psychological phenomena. Durkheim maintains that there are social facts, that is, facts that pertain to society rather than to individual members of society, and in order to give a complete causal explanation of social facts, we must invoke other social facts as causes. Moreover; he says that social facts are not reducible to facts about individuals' psychological makeup or intentions.

Although Conte, who was also a holist, preceded Durkheim by several generations; Durkheim is often called the father of sociology, in part because of his more strident insistence on the primacy of the social over the individual; more importantly though, Durkheim was the first person to publish a work that applied the new science of statistics to a social problem. This work *Suicide* appeared in 1897.

Durkheim developed his views about the distinctness and importance of social facts through trying to understand such problems as the difference in *rates* of suicide in various parts of Europe when the individual reasons offered for suicide were much the same throughout the continent. Durkheim's use of statistics to study suicide was possible because from the early 19th century governments had collected for administrative purposes massive amounts of information about the peoples that they governed. Besides the basic census counts of births, deaths, marriages, occupation and religion, which were already recognized as important for actuarial science and "political arithmetic" in the 17th century, governments began keep descriptive statistics (counts) of diverse phenomena ranging from matters related to public health (such as numbers of prostitutes and incidence of venereal disease) to the administration of justice (numbers of various types of crime) and even postal administration (numbers of dead letters). Studies of these statistics yielded surprising regularities in rates of some types of events, which suggested to some the possibility of statistical laws that worked in mysterious ways to determine what happened in the world. The appearance of so many regularities

also led people, such as Quetelet, to try to understand the nature of the departure from the normal. Although the methods for gathering, recording and organizing data were crude, there was a great deal of information available to scholars who wanted to examine public records. Durkheim had access to records of suicides and attempted suicides—which were considered criminal activities—that identified "causes" of the suicides, as determined from interviews with survivors, notes left by the suicides, testimony of friends or relatives, or remarks of the investigating police officer.

Durkheim begins his study of suicide by eliminating various proposals that ascribe suicide to extra-social factors, such as individual psychopathology, heredity, geography, and climate. When all such plausible individual and external candidates have been shown not to account for the differing rates of suicide in, for example, northern and southern Europe, Durkheim looks at the different rates of suicide in relation to social phenomena such as religious, political, and national affiliation, and marital and family status. He then identifies (or, more accurately, formulates) distinct social types of suicide, including egoistic, altruistic and anomic suicide. He links to the different types to varying degrees and types of social integration. Egoistic suicide for example is the most common type of suicide, and it is the type that occurs when the individual suffers alienation as a result of not being sufficiently integrated into his or her social group. Altruistic suicide, in contrast, occurs as a result of over-integration, as when the brave soldier throws himself on an explosive device in order to save his comrades. Through classifying different types of suicide, Durkheim can account for observed phenomena, such as the relatively higher rate of (egoistic) suicide in Protestant northern Europe than in largely Catholic southern Europe. The differing degrees of integration into religious or family life among various societies result from difference in social structures, and facts about social structures are not facts about individuals. Some structures promote integration; others discourage it. In Durkheim's Europe, social integration is a bigger problem for Protestants than for Catholics for several reasons. The austerity of the Protestant religion, its emphasis on the individual's relationship with God, its lack of the sacrament of penance and forgiveness, its denial of the possibility that a priest or saints in heaven can intervene for the sinner, and the especially fearsome possibility that one might not be a member of the Elect—all of these Durkheim takes as features of a social structure that tends to isolate its individual members. He argues that this lack of integration is a social fact that makes, *under similar psychological and external conditions*, suicide more likely for the afflicted Protestant than for the Catholic. The result is the social fact of a higher rate of suicide in Protestant countries than in Catholic ones.

Holism comes in two varieties: ontological and methodological. In his works, Durkheim refers to a "collective consciousness" that is distinctive for different social groups. This collective consciousness is sometimes understood as a set of mysterious superorganic causal forces, somehow existing independently of individuals and determining their lives. Such a view would commit Durkheim to ontological holism, or, as it is sometimes called "organic holism" or "essentialism." Some support for this view can be found in Durkheim's emphasis on the importance of the social and its influence on the individual. But there need be nothing superorganic about degree of social integration, which is for Durkheim a prime example of a fact that pertains to a social unit, not to an individual. Durkheim's main point is methodological; that the *rate* of suicide, for example, cannot

be entirely *explained* in terms of an individual's beliefs and desires, and neither can a society's degree of integration. Both are social, not individual facts. Although there is some evidence for claiming that Durkheim is an ontological holist, it is reasonable to interpret him as a methodological holist, that is, one who employs holistic principles of explanation, but not an ontological holist who postulates independent existence for social facts.

Holism appeals to those who are interested in maintaining the independence of the social sciences as separate disciplines, not capable of being absorbed into or reduced to psychology or biology. Disciplinary territorial disputes are fairly common when a discipline is relatively new; anthropology is a good example, and some anthropologists believe that the existence of non-reducible social facts justify their study in a discipline separate from psychology. Strong support for Durkheim's holism probably springs from such motives in the work of the twentieth-century social anthropologist, A.R. Radcliffe-Brown (1881-1955). He believes that social laws can be discovered through comparative studies of societies, and tries to explain social institutions and customs on the basis of the social functions that they fulfill. He is adamant about anthropology's ability to provide, by means of these functional explanations, information about societies that is not reducible to information about the individuals that make up the society.

Not all functional anthropologists are holists, however. B. Malinowski (1884-1942) for example, argues that all social behavior ultimately derives from attempts to satisfy basic individual needs, such as the needs for food, shelter, and reproduction. Other derived functions are present in societies as well, but the biological and psychological functions form the basis for everything else. Today most scholars regard the position of ontological holism as indefensible, but both methodological holism and methodological individualism continue to find adherents among anthropologists and sociologists.

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