Book Reviews

Models for a Unified Social Science

The Logic of Social Systems. ALFRED KUHN. Jossey-Bass, San Francisco, 1974. xxxii, 534 pp. $15. Jossey-Bass Behavioral Science Series.

A reviewer approaches with misgivings a work with a title as pretentious as this one's. Will the pretensions be justified? Will it really progress in the direction of a positivist social science, or will it be simply another work of social philosophy? Will it merely repeat what others have said, or will it make a new synthesis? There is a long tradition, dating back to Comte (or even to Plato and Aristotle if one includes social philosophy), of attempts to create a positivist social science. Most of the major works of attempted synthesis—by Spencer, Tylor, Durkheim, Weber, Toynbee, and others—were acclaimed as the beginning of a cumulative science, but their followers have cumulated little beyond amplifying the ideas of the "founders." Each new paradigm, to use Thomas Kuhn's term, has started to build on a completely new base, using few of the empirically tested findings of the previous paradigm. Natural scientists have, with some justice, dismissed the paradigm builders as word spinners and the empirical data gatherers as having no organized theory. Will this book be the different work, the one where paradigm and data come together?

Briefly, my assessment is that the work is a success basically but is less successful in detail. It will gain followers to the extent that the underlying concepts of "social man," information, decisions, transactions, and organization become formalized and taught as basics; it is unlikely to immediately change the work of researchers at the frontier, who are involved in the detail and whose own paradigms are already set, but it should be read by them for its interpretation of the relationship of other disciplines to their own.

This assessment is based on comparison of this work with the "social action" approach to social systems sparked in the 1950's by the Harvard Social Relations Department, where this reviewer was a graduate student. The battery of concepts, starting from systems and motives advanced by Parsons, Bales, Murray, Allport, Homans, Kluckhohn, Schneider, Whiting, Solomon, Bruner, and others did convincingly integrate sociological, psychological, and anthropological thinking, and was adopted also by systems theorists in political science. But disquiet over the 1950 formulation has been felt, not merely by critics who (wrongly, in my view) regarded such a theory as too static, too apologetic for "the system," or too much a matter of word spinning and classification, but also by those who had been trained to use the terminology. That disquiet was over the assumptions that all systems have agreed-on "goals," that communication between individuals is always clear since everyone within a system shares a common culture, or that analogies between systems of different orders are necessarily evidence for homologies. In retrospect it was due also to the absence of economics from the enterprise. This is the one social science discipline where a progression of paradigms, from Adam Smith to Marshall to Keynes to development economics, has shown evidence of theory cumulation and where deduction from a set of assumptions under specified constraints is a normal process of theory formulation.

"Action theory" terminology proved usable in most fields, but many of us worked in fields where the assumptions of the theory were not really valid. Developing countries where pluralism is the statistical rule and agreement on "goals" is problematic provide one such situation; interaction in hospitals or businesses where understandings are not shared by different levels of staff, or the qualitative differences between political behavior at the village level, where constituents interact face-to-face, and at the national level provide other examples in which modifications of "social action" terminology were required. Researchers used whatever terminology was available—conflict theory formulations for situations in which goals are not shared, symbolic interaction terminology to discuss individuals' discrepant cognitions of each other, or strategy analysis or interest group theory to discuss national and local political disparities. Nevertheless, in most social science disciplines there has been an emergence of increasingly formalized theory, of mathematical/logical phrasing, of concern with predictions; disciplines have moved in the direction of economics.

Economics, at the same time, has moved away from formalistic deductive theory based on very strict and limited assumptions to greater consideration of nonmonetary magnitudes, to considerations of uncertainties, and to considerations of nonmarket assumptions. The time is ripe for a meeting.

Kuhn's contribution is to formalize many findings from various social science disciplines, deducing them from propositions in economics, information theory, and organization theory. His naive treatment of anthropology, history, geography, and psychiatry irritates me as an anthropologist, but I realize that the irritation is irrelevant, for almost all his formulations appear somewhere in modern anthropological writings. Kuhn's very wide reading is not encyclopedic. But, though a specialist might do better on a given specialty, Kuhn deals in general theory and has valuable insights on the relationships between specialties.

The basic assumptions of Kuhn's model are simple: (i) that general systems concepts (such as environment, boundaries, entropy, and openness and closedness) apply to social systems; (ii) that information is about patterns and their changes and is communicated between plural entities which independently encode and decode; (iii) that each unit has, in addition to detector functions, selector functions which discriminate preferences between perceived options, and also effector functions; (iv) that no units are perfectly identical, since past experiences condition their detector, selector, and effector (DSE) functions and the codes they use to interpret sense data. To assumptions about "economic man"

they add the crucial point that preferences are subjective and relate to internal psychological states, and not merely to measurable "goods" (Hamlets perceive real costs in making decisions). By contrast with many social science assumptions they imply that individual decisions, meeting in transactions, are the basic unit for social analysis. Blau, Homans, and Boulding (but no transactional anthropologists) are credited as inspirations. Kuhn goes beyond most current theorists, however, in cogently distinguishing transactions from communications. It is highly significant that in the former *control* over goods (or "bads") is transferred, while in the latter information is transmitted but not necessarily control.

Kuhn's simple model of transactions starts from tight assumptions and is made complex by progressive relaxation of specific ones. It exemplifies well his procedure. Two selfish individuals, A and B, possess respectively the two divisible goods X and Y. If A would get more satisfaction from a unit of Y than he gets from a unit of X, and if B would get more satisfaction from a unit of X than he gets from a unit of Y, being selfish they will transact. This occurs when there is an overlap of their effective preferences, arrived at from independent weighing of their own costs and benefits—a zone where varying terms of transaction would benefit both parties, though to varying degrees. A is defined as having *interpersonal power* insofar as he can get B to do what he wants (that is, to transact) and *bargaining power* insofar as he can get good terms in the transaction. This precise definition of power in transactional terms exemplifies how Kuhn tries to systematize thinking in diverse disciplines and to promote standardized terminology. Relaxations of the model assumptions include assuming more parties (coalitions become possible) and the use of "bads" (threats, force, and so on, which imply that resulting transactions are not always positive-sum).

From discussing specific interpersonal power Kuhn proceeds to discuss *aggregate* (that is, generalized) *power*, deriving from it propositions about class and status in sociology and political science and about influences on perception in social psychology.

Organizations are the concern of the second half of the book, and again the treatment starts from a simple model of two persons agreeing to consciously coordinate actions, in a transaction of membership. A *complex organization* has more than two members, and here coordination cannot be subject to repetitive transactions. A complex organization is *formal* if the membership contract specifies kinds of instructions that the member binds himself to obey; by derivation come distinctions between *sponsors* (leaders), *staff*, and *members*, as in Weber's model of bureaucracy. Government and its specific properties are then analyzed as consequent on its being that formal organization that has a monopoly of force and may give all kinds of instructions to all persons in a territory. Organization theory and systems theory in political science provide the illustrative propositions that Kuhn derives deductively.

Informal organizations differ in not having DSE functions for the unit as a whole. Their reactions to external controls are similar to those that occur in ecosystems in not being directed purposively by the organization. Economic theory about market economies and stochastic sociology and demography are used as examples; examples from ecology show the dangers of a functionalism that ascribes purpose to an informal organization. Kuhn also discusses a third model type, *semiformal organizations*, where some, but not all, members feel that the organization has DSE functions as a unit. Although much of sociology and anthropology concerns such organizations, Kuhn examines only the family.

The work closes with discussions of how innovation and social change and development fit in the same logical system and of how concepts belonging to other disciplines could be derived deductively from the same assumptions.

It is a long, tightly argued book of over 500 pages. Definitions, models, and rationales follow each other in confusing succession. Technical problems include the author's having had to select only a few from the plethora of social science findings for his examples of deductions from assumptions; the work would have been intolerable if it had tried to be exhaustive. So too comparison between Kuhn's concepts and those of other theorists is deliberately excluded for reasons of space. This makes it hard to recognize what is new to Kuhn and what is repetition; it also weakens the work, for expectable attacks from, for example, Marxists are not forestalled by the derivation of identical substantive propositions about, say, surplus value or class consciousness from different assumptions.

The result, in short, is a frustrating work with obvious imperfections. It demands systematic reading from beginning to end, for system is its plea. But "the end"—the frontiers of social science research—is rarely reached, and the middle is hard going. The beginning, however, is a major synthesis, showing how transactional and communicational models together provide a basis for an integrated social science. If those models could be taught to beginning students of social science, the next generation of researchers would use the same code in all the disparate disciplines and would create the single deductive social science that existing specialist researchers resist so strongly, given their past experiences and cost-benefit structures.

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Man and Machine

Zen and the Art of Motorcycle Maintenance. An Inquiry into Values. ROBERT M. PIRSIG. Morrow, New York, 1974. 412 pp. $7.95.

Technology, one of the defining characteristics of mankind, has been a part of every human community that ever existed, no matter how primitive, and the influence of science has shaped the intellectual outlook and the style of life in Western society since the Renaissance. Nevertheless, it was not until the 20th century that the significance of these twin forces began to be studied in a systematic way, and we have yet to forge the intellectual and methodological tools necessary for the full comprehension of scientific and technical activity within a wider social and intellectual matrix. The "experts" on these matters—the sociologists, historians, and philosophers who write on the social implications of technology and science as their specialty, and the senior scientists and engineers who turn to the subject after having distinguished themselves in professional careers—have missed the mark. They have yet to make contributions commensurate with the complexity and range of their subject. The appearance