Book Reviews

A Social Science for All of Society

Economic Organizations and Social Systems. ROBERT A. SOLO. Bobbs-Merrill, New York, 1967. 519 pp., illus. $8.75.

This is an important work, a milestone on the long and difficult road toward the development of an adequate theory of the dynamics of the world social system, or sociosphere, as I have sometimes called it. Its importance and its originality are all too likely to be overlooked because, no doubt in order to get it published at all, it has been disguised in the format of a textbook, with paragraph headings, summaries at the ends of chapters, and all the apparatus of intellectual predigestion. Furthermore, it is very uneven in style, with some long, textbookish passages of rather dull though usually accurate and insightful analysis of social systems interspersed with passages that are on fire with intellectual and humane passion, and historical vignettes which are masterpieces of condensation and insight with not a word wasted. Also, the best parts of what is rather a long book are toward the end, and the reader may get discouraged by the beginning. For all these reasons the book may not receive the attention it deserves.

Sensitive economists have long been aware that when it comes to the dynamics of economic development their intellectual apparatus, not only of price theory but even of macroeconomics, is sorely deficient, being based too firmly on equilibrium and comparative statics. Many economists have likewise been aware of another difficulty, that the developmental process is a process in the dynamics of the total society and includes essential elements which are not capable of analysis with the abstractions of pure economics. On the other hand, economics, dealing as it does with exchange as a prime social organizer, is well equipped to become the center of a general social science, in that its special skills perhaps cover a wider range of social phenomena than do those of any other science. Solo is sensitive to all three challenges. He starts with the third and develops three ideal types of economic organization, each of which is a focus of analysis. The first he calls the decentralized, market-directed form, the second the centralized, politically directed form, and the third the organizational, market-negotiated form. None of these, of course, ever exists in a pure state. Nineteenth-century English and American capitalism, however, approximates the first, the economics of socialist contries the second, and 20th-century corporate capitalism the third. Each of these Solo sees favored by a peculiar set of historical circumstances; 19th-century capitalism comes out of Protestantism and the Puritan ethic (and perhaps, though I do not recall that this is mentioned, a land frontier); the centralized, politically directed economy comes out of socialist revolutions in countries which have been accustomed to centralized, autocratic government; the organized, market-negotiated economy emerges because of the organizational revolution, the rise of large-scale enterprise within the decentralized market. From the point of view of development, each of these forms has peculiar strengths and weaknesses, which Solo delineates with great skill and perception.

The central problem of the work is what the author calls the economics of transformation, that is, transformation from traditional and stagnant economies to economies of continually increasing productivity as a result of continual transformation in productive processes and in cognition. Solo sees very clearly that cognition is the key to transformation, that economic development is not just a matter of capital accumulation or investment but is a matter of large-scale transformation of the cognitive structure of large numbers of people. It involves the transformation, also, of what he calls culture, that is, the basic value system. Solo sees that there is a constant interaction between culture, cognition, and technology. He sees that each of the three ideal types of economic organization produces a characteristic syndrome in the social environment and in all aspects of human life. He sees that if transformation is to be achieved out of a traditional society there has to be revolutionary leadership in the sense of a group of active people who are willing to abandon tradition, to do things in new ways, and to propagate actively these new ways. He sees, however, that revolutionary leadership can take a great many different forms.

In part 2, which is headed, rather misleadingly, The National Economy, he distinguishes four interdependent and interpenetrating, though partly autonomous, social systems within all societies; he calls these the enterprise economy, dominated by the market; the political economy, dominated by government and budgets; the institutional economy, constituted of such entities as the church and the educational system, devoted mainly to the production of information, values, and culture; and the household economy, which combines certain elements of the three others. Readers of this journal will be particularly interested in chapters 24, on research and development, 26, on the crisis in western education, and 27, on the organization of academic science. Solo is highly critical of the present methods of the financing of science by grants to projects and argues that this leads to a low rate of return, at least in terms of fundamental scientific revolutions. He argues his case convincingly, and one hopes that he will write further on this. He has certainly opened up a dialogue of extreme importance for the whole scientific profession. The question of the productivity of investment in science is an area of fairly massive ignorance, but it might be fatal to assume that we live in the best of all possible worlds and that nothing further could be known or done about it.

The third part, headed Social Systems and Economic Development, develops further the theme of cognition and cultural change as the essence of the developmental process, and is enriched by three brilliant case studies, of Russia, Mexico, and Puerto Rico. Solo sees the weakness of the American position in the world to be that we

do not promote revolutionary leadership; he sees the weakness of the communist position as the promotion of the wrong kind of revolutionary leadership, a kind which is likely to make disastrous mistakes once it gets into power.

In a sense, this work is a lively resurgence of an important if somewhat subterranean stream of American thought, that of institutional economics. This is a book in the tradition of Commons, Veblen, and Mitchell, but it is Commons without obscurity, Veblen without rancor, and Mitchell without statistics. I am convinced that the social sciences must develop along these lines, and that the social sciences must be both unified and dynamic. We still have a long way to go, however. If this is a work of insight rather than of science it is because of the absence of an adequate system of social instrumentation. Most great advances in science seem to have come from a combination of new theoretical insight with new methods of instrumentation. This is true even of the Keynesian economics, the success of which depended in no small measure on the development of national income statistics. The cognitive theory of social change, which Solo is propounding, will remain in the realm of insight until we develop an adequate information system for what might be called a mass cognitive structure. This we do not now have, and in its absence we have to rely on illustration rather than demonstration. It may be that the real importance of Solo's book is as a demolition job. In chapter 7, for instance, he demolishes in a few pages almost 200 years of capital theory, apparently with a single firecracker, but with astonishing thoroughness. He does a similar job in chapter 11 on what might be called vulgar Malthusianism, although he is very well aware of the real importance of the demographic crisis. These, I believe, are necessary demolition jobs. As in urban renewal, however, it is harder to build new structures than to clear away the old ones, and while there are some fine blueprints in these pages, a great deal of the actual building is yet to come.

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The Inner and Outer Causes of Behavior

Mechanisms of Animal Behavior. PETER MARLER and WILLIAM J. HAMILTON, III. Wiley, New York, 1966. 783 pp., illus. $14.95.

The problems of selection and organization are particularly acute for the compilers of a textbook on animal behavior. The subject is so diffuse, embracing neurophysiology at one end and at the other including a good deal of ecology. Everyone will have his own ideas on how best to bring some semblance of order to this vast and diverse material. Marler and Hamilton try to do so by concentrating on what might be called the middle ground of this range. I find their title somewhat misleading because they do not define or discuss what they understand by the term "mechanism," either in physiological or behavioral terms, but state their aim as the analysis of the interplay between internal and external factors in determining when behavior occurs and what form it takes. Clearly certain aspects of behavior are best suited for analysis on these terms. Social behavior is deliberately omitted, nor is there any general account of evolution or learning, although much that is relevant to these topics can be found here.

Marler and Hamilton begin with a number of chapters on short- and long-term rhythmicity in behavior. Here we can pose most directly the question of exogenous versus endogenous control. An account of circadian rhythms is typical of the best parts of the book. It is clearly written, shows a remarkable familiarity with the whole range of literature in English and German, and never loses sight of the selective forces which have operated to produce the behavior we observe.

The other chapters in this opening section, covering, among other topics, reproductive cycles, feeding, exploration, aggression, and conflict, are rather less successful. They provide good reviews of the literature, integrating ethological and psychological work, but the way the book is oriented hampers the development of certain themes which are of great relevance here—the problem of specific motivational states and their physiological basis, for example. I think the account of aggression and conflict is not long enough to do justice to the importance of recent ethological work for behavior studies in general.

These criticisms fall into perspective when set alongside the central section of the book. This core of ten chapters accounts for about half its length and concerns the characteristics of animal sense organs and the way they are employed in communication and orientation. This section is quite outstanding, and nobody, undergraduate or research worker, can fail to be stimulated by it.

Animals never respond to more than a fraction of the potential stimuli which impinge upon them. This section begins with a general discussion of factors that lead to "stimulus filtering" and those situations which may favor the evolution of selectivity or generality of responsiveness. There follow accounts of the main sensory modalities, chemoreception, vision, and audition. Each is prefaced by some account of the physical basis of perception and details of sensory capacities through the animal kingdom. The full references will enable anyone who wishes to do so to augment the sensory physiology which is provided here, but Marler and Hamilton's treatment will prove sufficient for most behavior workers. The authors then survey the "uses" to which each modality has been put. The range of literature covered is huge, and it is reviewed with such perceptiveness that the common functional and adaptive features of otherwise disparate material are clearly revealed. Habitat selection by birds, egg-mimicry by cuckoos, disruptive coloration in herbivores, eye-spots in moths, honey-guide patterns on flowers, and the visual aspects of threat and courtship display in birds, fish, lizards, and fireflies—this sample of topics covered under visual communication will give some idea of the breadth of approach. Other accounts are equally broad, and one must mention a particularly good, up-to-date account of acoustical orientation in bats. Throughout this section experimental work is described attractively and clearly and the text is lavishly illustrated, so that the work the authors draw on can be examined in some depth.

In the closing section of their book, Marler and Hamilton turn to the consideration of behavioral development, emphasizing the interaction of genetic and environmental factors. The forma-