urally any collection of papers cannot have the unity attainable by a single author. Thus many gaps can be attributed to format. Bastin's editorial comments are welcome additions in this respect. The book's greatest merit is that it reveals the wide range of suggestions currently under consideration relating to a field long thought by many to be closed.

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Applying a Social Science

Development Anthropology. GLYNN COCHRANE. Oxford University Press, New York, 1971. xii, 126 pp. $5.

This book attempts to explain applied anthropology's lack of academic respectability and of policy successes and to prescribe a cure for both its theoretical and its practical weaknesses. Cochrane argues that academic training in "development anthropology" is poor and that anthropologists are overspecialized, having little sensitivity to the administrative context in which policies for the development of newly independent nations are embedded. Development, he says, is a national matter, and the anthropologist's efforts to achieve it in single communities are therefore not profitable. Rather, development should be defined and approached as a national problem with local dimensions. Anthropology stresses community development just because it is politically neutral. This explanation seems to me to miss the mark, however; it has been politically neutral because anthropologists have stressed community enrichment rather than community empowerment.

The serious practical problem raised is the conflict between anthropologists and administrators, which Cochrane attributes mainly to academic preciousness and utopianism. According to him, the hard reality is that work in development means acceptance of administrative directives about what to study and what to do. Though the only proposal he makes is that anthropologists accept these conditions, he has identified a reason why many anthropologists leave development work and why few are willing to embark on this career.

Applied anthropology also has long-standing ethical problems, for, as Cochrane recognizes, there is no set of scientific values to guide the development process. Also he points out that our ethics are overwhelmingly negative, stressing what we should not do and ignoring what our responsibilities for action are. However, he does not raise the issue of the anthropologist's responsibility to those he studies, nor does he follow through with a definition of development to clarify the ethical issues. He argues that development is painful but not that it may be inherently bad, thus blaming only our approaches to it, never the process itself.

Proceeding from this point of view, Cochrane suggests a reorientation of the field, chartered by his unexamined belief that anthropology's potential in development is yet unrealized, the potential lying in its knowledge of "culture" and "social reality." He rightly argues that development poses interdisciplinary problems requiring the practical collaboration of academics and administrators. Development requires a knowledge of local cultures, of many aspects of the development process everywhere in the world, and of the means to implement plans. So he suggests that we train anthropologists for this by a dual approach: First, we must create an academic development anthropology to deal with theoretical analysis, modeled on development economics or development administration. Then we must train a class of "general practitioner" anthropologists or "non-specialized specialists" with action orientations.

Though Cochrane's definition of the problems of applied anthropology is searching, it is very narrow, raising serious doubts about his remedial program. He accepts on faith that anthropology's potential is unrealized, when its utility in development is in grave doubt among both academics and administrators. Just what this potential is ought to have been explored, for invocations of "culture" are not convincing. His critique of anthropological utopianism is perhaps fair, but it misses the point. Anthropologists are aware that underlying all approaches to development is a vision of the kind of society we are striving to create. This is at variance with anthropology's relativistic philosophy and creates profound difficulties for the anthropologist working in this field. In a world of imperialistic forces, these misgivings cannot be discarded as merely utopian. Here again he fails to provide any definition of development and to face the real problems that definitions of it raise.

Moreover, in laying his charge against ivory-tower academia Cochrane shows no awareness of the existence in our colleges and universities of the fields of rural sociology, agricultural economics and engineering, extension education, communication arts, and nutrition, to name only a few. These also send workers into development. Often having more field experience than anthropologists, they are educationally equipped to deal with both research and administrative problems at local and national levels. Their approaches and their academic organization practice the program that Cochrane thinks he invented. Whatever anthropology has to say about development, it must be said to these workers, and they will not be patient with invocations of anthropology's unnamed potential.

The book does not mention the role of educated citizens of developing nations. Yet major efforts, in all the fields named above and in some anthropology departments, are being made to teach such people what we know, with the idea that they will make their own programs. Apparently Cochrane sees development as our message to an unenlightened world, a view that is intellectually antiquated and politically naive.

Finally, the book is polemical and so leads one to expect solutions more impressive than those offered. Like so many polemics it hides both the strengths and weaknesses of its views by repetitiousness. I do not find Cochrane's invective matched by a knowledge of the present development field, and though he is not beating down an open door his polemical strategy seems to have put him on the front steps of the wrong building.

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Peaceful Uses

Man and Atom. Building a New World through Nuclear Technology. GLENN T. SEABORG and WILLIAM R. CORLISS. Dutton, New York, 1971. 412 pp., illus. $10.

The Atomic Energy Commission has been in existence for approximately 25 years. During this time it has had a number of ups and downs, and it is now being attacked by conservationists and others concerned with preserving the environment. This book, therefore,

may be a timely one, consisting as it does of a justification of the activities of the Atomic Energy Commission in supporting research on and development of peaceful uses of atomic energy. For in spite of its all-encompassing title, that is precisely what the book is.

It is somewhat difficult to decide which segment of the population the authors were trying to address, for it cannot be said that this book will appeal to the general public. In spite of valiant attempts to explain such difficult concepts as half-life and, indeed, radioactivity itself, the book is replete with charts and diagrams which it is doubtful a layman not already versed in mechanical concepts would be able to understand. And on the other hand, these explanations might appear superfluous to those who can comprehend the details of the working principles of, for example, a breeder reactor.

The book contains adequate descriptions of the nuclear power program of the Atomic Energy Commission, the Plowshare program (the use of nuclear explosions for earth moving and canal building), the usefulness of radioisotopes in agriculture and biology and medicine, and many ambitious and highly imaginative projects in space travel and planetary engineering, some of them verging on science fiction. However, one emerges from reading the book with a distinct feeling of uneasiness. Each chapter reassures us of the inherent safety of the development described and explains the enormous care which is undoubtedly taken to protect the public. And it would be hard to find fault with any of these precautions. Yet one cannot help feeling that if all the things that are described in this book come to pass, then our lives and our health will depend upon three factors: the ability of the medical profession to make a quantitative assessment of the hazards of radiation exposure, the ability of engineers to provide the necessary precautionary engineering, and finally overcoming the much more difficult problem of maintaining administrative controls that are not subject to the whims of international politics or capricious domestic exigencies. Should any of these three lines of defense fail, then the entire population of the world could be in serious danger. While the authors may be able to reassure us about the knowledge available in the field of medicine and the skills available in the field of engineering, it is not within their capacity or intent to reassure us about the stability and wisdom of administrative decisions by our government or anyone else's.

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Mechanisms of Behavior

Neal E. Miller: Selected Papers. Aldine, Chicago, 1971. xiv, 874 pp., illus. $15.

Neal Miller is one of a very few who have made truly significant contributions to the elucidation of the mechanisms that control behavior. Thus this collection of his writings will be of great interest not only to professional workers in experimental, physiological, and clinical psychology but to those in other disciplines who are particularly interested in behavior. A number of facets of his extraordinarily diverse research career emerge from the selected papers.

First, there is Miller as Innovator. To take a limited sample, there are crucial findings concerning approach and avoidance behavior in animals, trenchant comment and experimentation on the physiological processes involved in memory, ideas about the relevance of information theory in studying the nature of reward, and most recently the demonstration that visceral "involuntary" responses can be brought under the control of "voluntary" reward mechanisms.

These in turn lead to a second facet of his work, that of Miller as Generalizer. This appears, for example, in the pervasive effort to bring laboratory, infrahuman data to bear on clinical phenomena that range from the psychopathologic to the cardiovascular, and again in a pioneering, integrated approach to drug action from which we learn not only something about selected drugs but also how such an analysis can be brought to bear on basic psychological phenomena.

The latter example brings up the most important theme implicit in this collection, the role of Miller as Integrator that is inherent in his research style. This style is one in which ideas and concepts from one domain are clarified (often no small task in itself) and brought to bear on yet another domain; that is step 1. Step 2 is a refinement of concepts in the second domain that typically lead to feedback to the first, as well as to an extension to yet a third domain. What emerges is a research style that is truly, not merely nominally, interdisciplinary.

This rare research style emerges, however, only for the relatively sophisticated reader, because by and large the papers or clusters of papers stand in isolation without adequate integration into the several mainstreams of behavioral inquiry of which they have been such an important part.

For instance, one of Miller's early ideas was to bring experimentally derived gradients of approach and avoidance behaviors to bear on psychoanalytic ideas about displacement. That attempt is now classic. But we now know that the determinants of the relative shapes of approach and avoidance gradients are more complex than once seemed to be the case. What bearing does this more recent complexity have on the application to displacement, and what does Miller have to say about the matter?

Again: In an early paper with Coons, Miller raises the question of whether electroconvulsive shock produces its effects by producing amnesia or punishment-induced conflict. In later papers Miller and other co-authors went on to provide important data relating to memory, on the assumption that electroconvulsive shock produces amnesia. There is no doubt that it does. But what about the punishment idea? Only the sophisticated reader will know about the transition from an important earlier concern about punishment to our present understanding of electroconvulsive shock, its utility and its limitations.

A third example relates to the recent work on the training of autonomic responses by means of operant techniques once thought to be applicable only to skeletal responses. It is now clear that, for example, the heart can be trained to decelerate by essentially the same devices that can be used to train a dog to roll over. These data have enormous implications. First, they have opened up a new vista in the treatment of diseases with autonomic symptomatology. Second, they have upended a conceptual framework that was a commonplace in psychological thinking; there was a time when sets of rules about conditioning were thought to be neatly divided in terms of the response systems to which they applied. What will the general reader