

private passenger vehicle occupants place on their travel time. There is a brief return to occasional mathematics.

Finally, Chapter VI presents an empirical analysis which attempts to estimate the "value of travel time implied by the relationship between land values and time distance from Seattle." The statistical analysis seems to have been extremely thorough; the results, as the authors state, are not very conclusive, (e.g., p. 179).³

Despite these several comments, it must be emphasized that this book makes a valuable contribution to the methodology of measurement and analysis of highway investment benefits. It incorporates precise terminology with thorough discussion. For anyone who concerns himself at all with such problems, this book is well worth the careful reading which it requires.

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Man, Mind and Land: A Theory of Resource Use. By Walter Firey. New York: The Free Press of Glencoe. 1960, pp. 256. \$6.50

Theory has not played a conspicuous role in the study of natural resources. An *a priori* acceptance of the desirability of resource conservation in the developed society or conversely an unqualified acceptance of resource development as a desirable goal for the lesser-developed society is widespread. Given these goals, one is little troubled by the need for theory.

Challenging these assumptions are a series of pertinent and troubling questions posed to conservationists, often by economists. How does a society decide what to conserve and for what length of time? If there is validity to a doctrine of natural resource scarcity, why is this not reflected by rising real costs of natural resources? What weight should be given to natural resource development in economic growth? In raising these questions, theory plays a conspicuous role, but in general a theory falling within existing economic thought and not a distinctive theory of natural resource use.

The need for a distinctive natural resource theory has been felt by workers from varied disciplines. In part this is due to the feeling that existing economic theory is weakest when applied to the many extramarket situations found in natural resource use, and in part to the many disciplines that contribute to resource study. Each possess distinctive conceptual frameworks for which economic explanations do not always ring true.

In this state of the arts, Professor Walter Firey's volume, *Man, Mind and*

³ As a very minor aside, one might question the following: "In addition, it [Lake Washington in Seattle] has been polluted for some time. Thus, proximity to beaches is not a determinant of property values. While a lake premium does appear to exist, it is primarily dependent on view rather than proximity as such, (pp. 76-177). Although Lake Washington has become more and more polluted, the Seattle Park Department continues to operate a number of public beaches on its shores during the usual summer period. (To some this may not be persuasive evidence of a lack of pollution). More importantly, surely boating activities still draw people to lake front property, and the real prospect and anticipation of an improvement in the pollution situation, one might suppose, would induce people to continue to want waterfront property. It is, nonetheless, puzzling that the "distance from lake" variable so often has a negative sign.

Land: A Theory of Resource Use, is a major contribution. Firey, a sociologist, provides us with a theory essentially socialpsychological in nature. However, in its development we are treated to a tour of three diverse schools of resource management and four cross-cultural case studies.

From hitherto existing knowledge of resources use, Firey extracts three major approaches to resource use which he labels ecological, ethnological, and economic. In every resource-using system, there is a set of practices that are physically possible, and one or more of these practices represents an ecological optimum, or an anthropogenic climax. In every system there is also a set of practices potentially adoptable in the sense that it is valued in terms of a population's culture. Among these practices are those comprising an ethnological optimum, consistent with a people's culture themes. Finally, Firey suggests an economic optimum arising out of a set of gainful practices which would be the minimum cost-maximum profit optimum only in a free competitive market economy.

Firey would have us think of his sets of possible, adoptable and gainful practices as Venn diagrams, and asks us whether there is an intersection of the three optima? From a study of the Tiv people of Nigeria he concludes such optima do not necessarily coincide. He then examines a shifting-agriculture system of Northern Rhodesia, the open field farming system of the mediaeval English Midlands, and the development of groundwater in the South Plains of Texas and New Mexico for further insight into the intersection of the possible, adoptable, and gainful.

Firey's conclusions relate to two different *resource systems*: a *resource complex* which is stable for long periods of time and an unstable *resource congerie*. The practices that characterize the resource complex lie wholly within the set of possible and adoptable practices but only partially within the set of gainful practices. Why do resource users employ non-gainful, productively inefficient practices? Firey would propose, by way of answer, the principle of "willing conformity" with which a resource user represses his own personal opportunism for the "security of expectations" of knowing the likelihood of other resource users' actions. And this is the characteristic lending stability to the complex. In the congerie, "...the fragile balance between gainful and likely practices which characterize a resource complex is upset. The incentive to employ gainful processes, which has previously been held in bounds by each person's prudential regard for expectations of his fellows can now press beyond the limits of social tolerance."

This is the essence of Firey's theory of resource use. To arrive at it he has employed formal logic complete with syllogisms, symbols, set and lattice theory, and a variety of heuristic and expository devices that at times tend to obscure rather than improve the argument. Although obviously helpful to the author in developing his thinking, this reviewer finds these formal statements as well as repeated references to laws and universals somewhat pretentious for a pioneering effort.

Equally confusing is the use of the various optima. While most resource students would agree that seldom if ever would there be an intersection of the ecological, ethnological, and economic optima, there could be found intersections of possible, adoptable and gainful practices that are less-than-optimal but rea-