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The Economics of Land Use, Wilderness Designation, and Resource Regulation in the American West *

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1. Introduction¹

The systematic use of natural resources has been a feature of life in the western part of the United States for well over two hundred years. Grazing, mining, and ranching have all been an important part of the economies of the various states in

this region. With use has come federal and state involvement; this involvement has been primarily regulatory in nature. Further, the nature of this regulatory relationship between the regulating and the regulated party has changed considerably over time. Increased public expertise of resource management issues, dissatisfaction with governmental resource management policies, and new attitudes toward conservation have all combined dramatically to alter the character of this relationship (Cawley, 1993).

In the American west, the most visible manifestation of this altered relationship has been conflict. There is conflict over

¹ For a more detailed discussion of the issues raised by this paper, the reader may wish to consult another one of my papers in this area entitled *On Land Use, Wilderness Designation, and Resource Regulation in the American West*. Copies of the mentioned paper can be obtained by contacting the Economics Department at Utah State University, as above, and asking for Economic Research Institute Study Paper #95-21.

federal management of public lands (Davis, 1997), there is conflict over the extent of wilderness designation and habitat preservation (Allin, 1997), there is conflict over the desirability of saving endangered species (Mortensen, 1994), and there is conflict over the need for multiple use management of public forest lands (Blumm, 1994). Although this fractious environment has stirred the passions of many of the participants in western environmental economic affairs, the same environment has provided a number of interesting research questions for natural resource and environmental economists.

Three of the most important resource issues in the American west concern (i) land use over time, in the face of potential irreversibilities and new information acquisition by land managers, (ii) mechanisms for appropriately addressing questions of wilderness designation and habitat preservation, and (iii) the design of appropriate resource management institutions.

The purpose of this paper is to discuss these three issues and to suggest some ways in which the questions raised by these issues might be studied. Wilderness management problems in the Wasatch mountain range (White, 1994; Pope and Jones, 1990), habitat preservation issues in the Pacific Northwest (Johnston and Krupin, 1991), and the “sagebrush rebellion” (Cawley, 1993) remind us that a thorough understanding of the questions raised by these three issues is vital to the optimal, and presumably less fractious, use and management of natural resources in the American west.

2. Three Resource Issues in the American West

New analysis of the first issue is needed to shed light on what Marion Clawson (1983, p. 2) has called the ‘major policy issues in federal land management’. Specific questions that deserve further research attention include the extent and the nature of development on federal lands, the terms on which federal land should be made available to the states and to other interested parties, and the implications of alternate inter-temporal land use policies.

In particular, when studying land use over time and under uncertainty, it is important to recognize that certain kinds of land uses may be irreversible. To see this, consider a decision problem faced by a land management agency such as the United States Bureau of Land Management (BLM). Amongst the set of decision problems faced by BLM is the one concerning the determination of whether a particular unit of land should be developed for mining, or preserved. If we think of mining as an irreversible kind of land use then it follows that there is an asymmetry associated with the decision to develop land. A decision to develop now means that the decision to develop later has been forsaken. As contrasted to this, a decision to preserve now has a flexibility premium associated with it because the BLM can always develop the land later.

The second issue concerns wilderness designation and habitat preservation. In the past, this issue has generally been viewed in stark black and white terms. On the one hand there are those who have “used wilderness as the unifying

theme for a new conservation agenda...” (Cawley, 1993, p. 43), on the other hand there are those who have viewed wilderness as an “all-purpose tool for stopping economic activity.” (Tucker, 1982, p. 131). As a result, a considerable amount of research is needed to study this issue comprehensively. In this context, game theoretic approaches to wilderness issues are particularly relevant. A key goal of these approaches should be to characterize and study the properties of equilibrium strategies that are pursued by the relevant parties, under alternate assumptions, about the information that is available to these parties.

The third issue involves the design of optimal resource management institutions. As Clawson (1983, p. 3) has noted, in the west: “the relationship ... between the federal, state, and local governments in the management of [natural resources] ... has been a matter of continuing interest.” Consequently, research in this area is needed to better our understanding of the complexities of decision making between the various governmental entities, particularly the efficacy of parallel versus hierarchical organizational structures. In this context, it should be noted that the parallel versus hierarchical distinction is useful not only from the perspective of regulatory agencies, but from the point of view of interest groups as well. As Cawley (1993, p. 22) has noted, hierarchical governing structures have been used by western stock growers to promote their interests.

The methods and techniques of game and stochastic control theory can be used to formally model and thereby rigorously

study these three issues. However, the application of these methods and techniques to study the issues raised here is still in its infancy. Consequently, research that uses these methods will accomplish at least two objectives and thereby contribute substantially to the natural resource and environmental economics literature.

First, the results of this research can be used to better understand the complex use and management issues relating to public lands, wilderness designation and habitat preservation, as well as enabling us to better understand the impact of alternate regulatory regimes. Second, the general methods and the research results can be used to improve our understanding of natural resource use and management issues in developing countries. Because sustainable development policies are in large part a function of sustainable natural resource use policies—see Batabyal (1995), Lele (1991), and Pezzey (1989)—it is important to apply and, when necessary, modify insights gleaned from a systematic study of resource use and management in the United States.

Having said this, I should note that the research methods whose use I have advocated do have their limitations. *Inter alia*, this is due to the difficulties associated with the modeling of several sources of uncertainty. Moreover, analysis of the issues raised is made more complex by the following two facts:

- the objectives of the various players are often not known by all the players; and
- the presence of multiple regulatory

agencies.

For instance, the US Interior Department alone has five agencies with substantial mining responsibilities. These include the BLM, the Bureau of Mines, the Minerals Management Service, the Office of Surface Mining and Reclamation, and the U.S. Geological Service. Given this state of affairs, it is difficult for any one modeling technique to successfully account for all the tradeoffs that arise in the interactions between multiple regulatory and regulated parties.

3. Conclusions

The issues that I have discussed in this paper are central to the optimal use and management of natural resources in the American west. Given the increased national concern about sustainable use of the west's natural resources and the legislative battles over the appropriate use of such resources, it is now more important than ever before to understand and manage the American west's natural resources effectively. Such action will ensure that an important part of the national economy continues to remain healthy now and in the foreseeable future.

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* *The views expressed here are personal to the author and do not necessarily reflect those of the other staff, faculty or students of this or any other institution.*

Book Review:

Peter Bauer. (2000) From Subsistence to Exchange and other essays, with an Introduction by Amartya Sen. Published by Princeton University Press. PP 168. ISBN 0-691-00667-9.

This book of Peter Bauer's is a collection of a dozen essays, some of which have appeared previously in inaccessible venues whilst others are expanded versions of lectures that have not been previously published. They are preceded by an Introduction by Amartya Sen which pays generous tribute to Lord Bauer's immense contribution to development economics and to the breadth of Bauer's forays into other fields.

Bauer has devoted a lifetime taking apart universally accepted ideas that just happened to be wrong. For example, that a country's wealth is determined by its natural resources, manifestly it is not. Or that poor countries are not able to save – the so called 'vicious circle of poverty', which Bauer shows to be a complete myth. Or that growing populations perpetuate poverty; or that education is an essential precondition of development; or that the way forward is by comprehensive central planning and detailed state control as in India under successive Five Year Plans.

Above all Bauer has done more than anyone to explode the myth that there can be no development without foreign aid, and that there is a simple formula for calculating the amount of aid 'required' to attain a given rate of economic growth.

His way of challenging these wholly mistaken, but widely held ideas, and the way he does so again in this fascinating volume is by the simple, but unfashionable, device of cogent reasoning and by pointing to the evidence. One only has to think of Hong-Kong and its development to recognise

how it refutes every one of the ideas listed above. As Bauer points out, its development began when its population almost doubled in a year after the influx of refugees from mainland China. Hong-Kong had no natural or other resources of any kind and its extreme poverty left no margin for savings. Its Colonial government abstained from intervention in the economy and had no intention to engage in economic planning. Above all there was not a penny of foreign aid. Hong-Kong's spectacular economic growth was totally at variance with the commonly held beliefs about the essential preconditions of development, and tended to be written off by the politically correct as a 'special case', until one East Asian country after another started to copy Hong-Kong's economic policies with equally dramatic results.

Today the once dominant ideas on what promotes development lie buried – though not as deeply as one might wish. Much of the credit for that burial should go to Peter Bauer who spent decades trying to persuade people to see reason. But even today when everyone accepts the futility of most forms of economic planning and when it has become widely recognised that what really matters is the adoption of sensible economic policies, Bauer is still frequently dismissed, often by people who have never taken the trouble to read his books or articles.

The brief volume under review provides ready access to the whole spectrum of Bauer's work. It covers not only his thinking on development. For example, it contains a trenchant critique of the commonly held view that Britain's class system has held back her economic

growth. Another essay examines our obsession with equality.

Bauer is often accused of being 'unscientific' by which is meant that his writings eschew the currently fashionable algebraic expositions and that he does not use econometrics. These techniques have a legitimate and important place in economic discourse. But an insistence on their use can have a restricting effect on the study of economic development, because much of it simply does not lend itself to quantitative analysis, but is no less important for that. Where statistics are appropriate Bauer uses them, and with great care, as witness his earlier studies of the growth of West African and Malayan exports. But the exploration of the crucial role of traders in opening up markets, or of ethnic minorities, like the Chinese in Malaysia, in fostering development that has greatly raised the living standards of the majority, requires other aptitudes which Lord Bauer has always displayed in abundance, and does so once again in the book under review.

Walter Elkan

Forthcoming Conferences:

August 27-30, 2001: Fifty-seventh congress of the International Institute of Public Finance to be held in Linz, Austria. Theme: Political Economy of Public Finance. Contact: Stanley Winer of Carleton University in Canada who may be reached through his e-mail: stan_winer@carleton.ca His fax is 1-613-520 2551.

September 5-7, 2001: Thirty-first annual conference of the Regional Science Association International: British and Irish Section to be held at Durham Castle, UK. Theme: Transport infrastructure and economic development; telecommunications; regional migration and housing markets, etc. Contact: Annette Roberts at Cardiff University – robert-sa1@cf.ac.uk and through the web-site: www.weru.org.uk/dur2001.htm

September 13-15, 2001: Fifth annual conference of the International Society for New Institutional Economics (ISNIE) will be held at the University of California at Berkeley. Theme: All areas of institutional economics as well as their application to the fields of political science, anthropology and law. Contact through web-site at www.isnie.org

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- The social science information gateway's web-site is at www.sosig.ac.uk
- The Internet Economist, a resource for students, lecturers and professionals alike, may be reached via www.economics.ltsn.ac.uk/interneteconomist/index.htm
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