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"Greatest Contributions to Our Profession by Agricultural and Resource Economists"

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This assignment was a difficult one; there are so many worthy contributions. Since there are three of us on the panel, I decided to focus on contributions to natural resource and environmental economics. Since the assignment was to think about the last 50 years, which implies back to 1958, and since I became a graduate student in 1968, I should be able to do much from memory.

Many people assert that most of the contributions in natural resources and environmental economics occurred after Earth Day 1970. This assertion is valid, but of course, long before Earth Day 1970, there were the pivotal contributions from land economics. However, most of those contributions trace to before 1958. Also, the fundamental contributions of Ciracy-Wantrup on conservation, the concept of the safe minimum standard, discounting, and the use of questionnaires to ascertain values people placed on nature and environmental quality were published in 1952, still too early for my assignment. Post 1958, I think of the enormous contribution made by Kenneth Boulding (an adopted agricultural economist)--who in 1966 published *The Economics of the Coming Spaceship Earth*. Boulding was clairvoyant when he explored the differences between economies with limits within closed systems (spaceship economies) and those within open systems and endless frontiers (cowboy economics). Boulding's contributions were refined by Georgeseu-Roegen, as well as by economist Herman Daly;

they explicated the applicability of the law of thermodynamics within closed economies. His work was fundamental to our current interest in sustainability economics, sharpening the difference between the framing of issues as a resource scarcity problem and that of a natural system functioning problem.

These and related contributions opened applied economists' eyes to the inclusion of natural and environmental systems within their analysis and made possible a whole new field of environmental economics that has grown ever since. Accompanying this interest was the growth in tools such as input-output models which enabled applied economists to explore the "what if" questions by tracing through the interconnections of sectors and between sectors and natural systems.

Oregon State University

Many of the earlier natural resource and environmental scholarship came from Oregon State University where I did my masters and PhD. I joined OSU with little appreciation for its place in time or its contributions. I had no idea that Oregon State was the premier place to attend if one was interested in resource and environmental economics.

At the time, I thought I was being taught conventional wisdom in resource and environmental economics, but in reality much was being invented, refined, to eventually become conventional wisdom. Indeed much of the scholarship was so emergent, that I do not remember any textbooks guiding our professors or the graduate students in this area.

Let me provide some examples. Prior to my arrival at OSU, a salmon and steelhead study was conducted. I believe these studies were the first empirical estimation of non-market demand function for an outdoor recreation experience (Brown, Singh, and Castle 1965; Brown, Singh and Castle 1964). There was also a related and particularly

pivotal research was that of the Yaquina Bay study. The Bay, an estuary, touches both Toledo and Newport, Oregon. Georgia Pacific, an integrated forest products firm, was planning on locating a pulp and paper plant in Toldeo on the east side of the Bay. At issue was how much/whether to treat the effluent so that water quality could be protected. Not only were many natural values at risk, but also recreational and economic ones--since the bay had considerable outdoor recreation values. As you might expect, the proposal created quite a controversy.

Prior to the Yaquina Bay study, Marion Clawson of Resources for the Future had located the 1947 Hotelling memo on valuing parks by using the time and money people spent to recreate in them. Using econometric methods, these expenditures could be used to generate a theoretical defensible demand function for outdoor recreation. The Hotelling memo provided alternative ways of thinking about what were the values gained and lost if Georgia Pacific were to put effluent in the Bay (as opposed to pumping it out into the open ocean). Abandoning the conventional economics of the day, which would have neglected the non-market values, and drawing on the work of Ciracy Wantrup as well as Marion Clawson, Bill Brown, Ajmer Singh, and Emery Castle, using a mail survey, conducted a benefit cost analysis of the proposed waste removal plan. Their research demonstrated that the non-market values were large.

The OSU faculty had remained engaged in the Georgia Pacific proposal and the attendant public controversy and debate. The fundamental commitment to engagement at OSU, taught to graduate students, was underlain with a belief that those affected by decisions should have an opportunity to participate in making them. Thus, study results

were made available to the participants, and the findings made it possible for the local participants to bargain with Georgia Pacific.

The Yaquina Bay study highlighted the importance of giving careful consideration of the impacts of financially motivated decisions on natural features and values. It also provided a rationale that that all benefits and costs should be included in comprehensive analyses. It demonstrated that not only are there limits to markets, but also to the importance of "getting ones hands dirty" by engaging with civil society and the affected parties. These are major contributions to our applied field.

Since that time, resource and environmental applied economists have responded to the challenge of more complete benefit cost analysis with new methodologies and have generated volumes of articles and many non-market valuation techniques. Unfortunately, in my opinion, there has been a retreat from the contributions of engagement and getting involved with civil society in messy policy debates. (I will discuss this concern in my Fellows talk tomorrow.)

Thus, I find myself of two minds when I note these contributions. The incorporation of natural resource use and environmental quality into applied economics' paradigm and scholarship was a monumental contribution. But, in my opinion, the profession's massive investments in non-market valuation since then seems excessive, particularly since they seem to have come at the expense of distancing ourselves from actual policy relevance. As fellow OSU student, Daniel Bromley points out: positive net benefits are neither necessary nor sufficient for a social improvement. And in any case, policy makers are not usually interested in "efficiency" nor pareto-optimality. Thus, it is unfortunate that we have spent so much effort refining these techniques and so little

time understanding how decisions are made and how we can use our discipline to inform policy-making.

While I applaud the applied economics' contributions that have put nature into our analysis, I shall not put non-market valuation techniques on my list of greatest contributions. Still, the attention to the unintended consequences of environmental and resource issues from production and consumption is important. The current work in bioeconomic scholarship, for example, can trace its roots back to this original scholarship as can the new field of ecological economics.

But, I was asked to discuss the greatest contributions. After some reflection, I decided the greatest are those that come from recognizing the importance of property rights institutions (private, state, common, and open access) in influencing natural resource and environmental use. These are exceptionally powerful concepts that allow very important scholarship in law and economics. It is property rights concepts that explain what is and what is not an unintended (and unattended to) consequence of production and consumption processes. It is property rights concepts that explain what is a benefit to whom and what is a cost to whom. Attenuated and/or poorly enforced property rights account for the lack of incentives for consideration of natural resource and environmental values. Property rights concepts are crucial in policy design and implementation. Applied economists using a wide variety of methodologies have contributed substantially to this area.

References

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