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THE ROLE OF THE AGRICULTURAL ECONOMIST

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In the past 75 years agricultural economics as a professional field has evolved from a relatively small and fragmented group of concerns into a large professional activity, with highly developed theory, sophisticated research techniques, much data, and many outputs. Agricultural economists have developed, during the same time and as part of the same process, from a small number of pioneers, often shrewd and hard-headed men, but typically not well-trained by today's standards, into a large, well-populated, well-trained profession with many subfields. Agricultural economists today have permeated many aspects of modern American life--fact of which we boast, and one which some of our critics may deplore. How this came about, and what our role is or might be today, are the subjects of this paper.

The Bureau of Agricultural Economics of the USDA was formed in 1922 by merging the office of Farm Management, the Bureau of Crop and Livestock Estimates, and the Bureau of Markets (Taylor and Taylor; Benedict). This was more than a simple governmental re-organization; it was a reflection of the origins of agricultural economics as we know it today. Farm management in those days was largely applied agronomy and applied animal husbandry, with concern not only for the economics of the firm (micro-economics, we would call it today) but also for land economics, land tenure, agricultural finance, rural living, and a number of associated fields which have become separate and more specialized over the decades. Agricultural statistics began in the Patent Office in the 1840s, were made part of the new Department of Agriculture in 1862, and evolved over the years by producing statistics about agriculture which were better and more inclusive than anything else in the United States and indeed were envied and used by agriculturalists around the world. The statistical methods used may seem primitive today. Supervision of agricultural markets and promotion of cooperative agricultural marketing was the third major source of the evolving professional field of agricultural economics. All of this was rather detached from the field of general economics as then taught and practiced in the universities, outside of the agricultural colleges.

There was an enormous growth and development of agricultural economics in the decades between the two world wars. The BAE had a major part in this, at the federal government level. In 1925 the Purnell Act for the first time made federal funds available to all the land grant colleges for research in the social sciences as applied to agriculture. Overnight, the total field of employment expanded greatly--faster than the supply of trained and specialized agricultural economists could expand. Many an agronomist or animal husbandryman went to bed on June 30, 1925 as a member of the profession in which he had been trained, and woke on July 1 to find that he was now an agricultural economist. As with every other field of human activity, when there is a demand, supply increases to meet it, as rapidly as circumstances will permit. The interwar period were years of great development of agricultural economics in teaching, research and extension at agricultural college and at federal agency levels.

During these years there developed a comparatively large number of specialized fields within the general field of agricultural economics--specialized fields which are, by and large, still with us. There were also many professional developments during these years. For instance, the whole field of empirical demand studies arose out of agricultural economics in these years. Agricultural economists made notable contributions to statistical theory and practice. The BAE and the Land Grant Colleges developed the whole idea of agricultural outlook in these same years. The concepts and the practice of local, community, regional, and national planning as applied to agriculture and to rural life were largely the product of agricultural economics (defining the field very broadly). The logical and empirical basis for the several national agricultural programs, beginning with the Federal Farm Board in 1929, through the Agricultural Adjustment Administration, the Farm Credit Administration, the Ever-Normal Granary, and many others was provided by agricultural economists, who also had a major hand in carrying out these various programs.

Taken as a whole, the interwar years were a period of flowering and growth for agricultural economics. The competence and expertise of the field, the sophistication of its output, and the utilization of its work each increased by several fold during these years--as did the number of persons claiming to be agricultural economists. When World War II came, agricultural economists (at least, those who did not go off to war) played a major role in organizing agriculture for the war effort.

I think most of you are, or should be, aware of how widely the influence of agricultural economics has spread since the end of World War II. Men--and now increasingly women--in the field continued to work in the established fields--farm management, land economics, statistical analysis, agricultural outlook, agricultural finance, and many others. But the profession has also spread its activities into somewhat new fields, only some of which may be mentioned, more by way of illustration than by inclusive cataloging. Water resource development, for instance, had concerned agricultural economists before World War II but after the war the role of the profession greatly increased. The methods of demand analysis, of benefit calculation, of estimating incidence of costs and benefits, of planning for the future, and others were applied to water development and use as never before. This included flood protection and flood insurance, as well as management

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of flood plains; it included also water development, including hydro-electric power production and navigation. I do not mean to suggest that agricultural economics was the only profession involved in water programs in the past three decades; and much less do I wish to suggest that the analyses and concepts of agricultural economists were always effective in the water programs. But we, as a profession, did play a large role.

As a profession we have also played a major role in the development of recreation economics. Some of the simple economic concepts such as a demand curve, or rent for natural sites, or intensive and extensive margins of supply, which were old hat to agricultural economists, were new and sometimes abhorrent to park managers and planners. But today recreation demand studies have been made in a couple of dozen foreign countries, generally employing basic concepts and methodology developed by American agricultural economists.

Likewise, we have played a significant role in the development of environmental programs and in analysis of environmental problems. We, as most other professional and popular groups, had too long ignored or down-played the seriousness of environmental problems. But when we did awake we were effective in pointing out that environmental programs both had real costs and nearly always involved trade-offs of one desired outcome against another. Again, I would not wish to suggest that we have been the only professional group involved or that our performance has been perfect, but we have had a role.

In the great development and expansion of foreign aid programs, both those by the United States and those by international organizations, American agricultural economists have played major roles in the past 30 years. Many of us felt that the United States has been too slow to send its best professional workers abroad, but one must recognize the major achievements of T. W. Schultz, Vernon Ruttan, Arthur Mosher, and others who have lived or worked abroad, as well as of many others, most of whose contributions have been made from this country. And we surely cannot ignore our role in helping to educate thousands of young men and women from developing countries, who have come to us for undergraduate or graduate education in many fields, including agricultural economics. Indeed, I am often disturbed that we may not have properly filled the role that these foreigners have entrusted to us.

And, of course, in these postwar years agricultural economists have continued to play leading roles in the development of U.S. agricultural policy and programs. There is no need for me to describe this in more detail; you are as familiar with it as I am.

Agricultural economics is not the only professional field to have grown in size and to have become more sophisticated during these past several decades, of course. To take but one example: computer science was unknown and un-thought of before World War II, but today there are thousands of computer specialists, operating within a wide variety of educational, business and governmental structures. Many other examples could easily be added. The American culture, society, and technology have changed greatly, in numerous and complex ways, both embodying scientific developments and providing the impetus for them. There is no need to try to describe all these changes. But we can recognize that our profession has grown and developed, and we should draw the conclusion that change is not all in the past--that the future will bring large changes, even if we are unclear just what those changes may be.

STRENGTHS OF AGRICULTURAL ECONOMICS AS A DISCIPLINE

As we contemplate the history of our profession and as we speculate about our future, it seems desirable to evaluate as accurately as we can the strengths of our discipline, which have enabled it to grow and thrive. I shall resist any temptation to declare that we are somehow superior persons--not from any sense of modesty, but simply because I doubt that any profession attracts people abler on the average than are attracted to any other profession. Instead of attempting to explain our relative success by the character of our people, let us examine the characteristics of the profession itself.

Agricultural economics has had, on the whole, a most fruitful balance of good theory and of pragmatism, and of specialization and of generalization. Economic and statistical theory has been developed and extended, as the need for better ways of thinking and of analysis became apparent. The theory has been developed, in the main, in order to be applied to real problems. This in turn has provided the stimulus to still more theory, as older concepts seemed inadequate or even wrong in application to evident problems. For the profession as a whole, theorizing for itself alone has been insufficient; there had to be a purpose and a usefulness in the development of theory and in its application. But "facts" alone were equally inadequate; they had to be ordered and analyzed by some theory, by some system of generalization. As agriculture and rural life have grown more complex, the need for specialization within the general field of agricultural economics became evident. Many of the early pioneers in the profession were generalists, with interests and research ranging over a very wide scope. Today, specialization has proceeded comparatively a long way, yet even now the need for generalization and for generalists is widely hailed, if not equally widely practiced.

I would argue that agricultural economists as a group have better understood the institutions of agriculture and rural life, the politics of agricultural and natural resource policies and programs, and the sociology of people involved in agriculture than the professions specializing in these fields have understood the economics of agriculture. I would also argue that agricultural economists have better understood these problems and situations than have the general economists outside of agriculture. These are clearly subjective judgments with which not everyone will agree, but they reflect my careful consideration. I surely would not go so far as to say that every agricultural economist has a broader and better understanding than does every individual in these

other fields. There is an enormous range of personal abilities, personal interests, and professional guidelines within every field of knowledge dealing with agriculture and rural life. I simply say that at our best and rather typically, we as a profession have a broad and general understanding of the world in which we live and work that enables us to be productive within our individually chosen lines of specialization and work.

Agricultural economists as a group have had a good understanding of agriculture in its technical and operating aspects. Perhaps less than once was the case but still to a substantial degree, the men and women who choose agricultural economics as their professional field understand the basic science of agriculture and of rural life. They are likely to have had courses in soils, agronomy, crops, animal husbandry, entomology, nutrition, ecology, and other applied sciences, as well as in chemistry, physics, mathematics, botany, zoology, and the other basic physical and biological sciences. There are obviously great differences among agricultural economists in this respect, and I would surely agree that an agricultural economist can make sensible economic analyses about crop or livestock production without ever having had a course in any of these subjects. One can learn from many different sources, of which formal college classes are only one.

Agricultural economics as a field and most agricultural economists as individuals are problem-solving. That is, faced with some situation which is so unsatisfactory as generally to be recognized as a "problem," or faced with some situation not so recognized generally but which the agricultural economist intuitively or subjectively feels deviates significantly from a realizable optimum, agricultural economists as a whole direct their efforts to improvement of the situation or to solving the problem. I would not assert, of course, that all their efforts are wisely directed; suboptimization is not unknown in agricultural economics, and there surely are instances when, in the perspective of retrospection, efforts were counter-productive. The typical agricultural economist, like the typical pioneer of a bygone day, is a pragmatic problem solver--not a hand-wringer bemoaning the difficulties and the imponderables of life to the extent that nothing is done. This may be only another way of saying that agricultural economics is an applied profession, but I think there is more to it than that.

What have been our weaknesses--assuming that we are willing to admit that we have, at least at times and in some instances, been less than perfect? By and large, our greatest weaknesses and our greatest failures have come when we ignored or downplayed our strengths, as I have described these. When or if some of our fellow workers have tried to be pragmatists without knowledge of or concern about conceptual structure, they have either failed or have fallen short of what they might have done. Likewise, when or if some of our fellow workers have spun a web of theory not based on a realistic knowledge of the situations about which they theorized, and especially if they have then attempted to apply in practice the conclusions reached from such theorizing, they have failed to get their ideas accepted or, even worse, have produced counter-productive actions. Agricultural economics has had some "can opener" economists, it is true, but I argue that they have been the abberations, not the typical members of our profession. When or if some of our fellow workers have become excessively specialized in their interests and in the range of subject matter thay consider relevant to their analyses, they have often led themselves astray.

My contention is that agricultural economics has been most productive when it has properly blended conceptualization and pragmatism and when it has been properly specialized and generalized; and that it has failed most when these balances have been ignored or neglected. Of course, not everyone will define "properly" in exactly the same way, but I think this is the standard by which to measure our individual activities and our profession's structure and posture.

NATURAL RESOURCES

Natural resources are one of the main subjects of this conference. What do we mean by the term, "natural resources?" A definition of the term is basic to any discussion about it.

The classic statement defining natural resources is that of Zimmermann:

> Resources are highly dynamic functional concepts; they are not, they become, they evolve out of the triune interaction of nature, man, and culture, in which nature sets outer limits, but man and culture are largely responsible for the portion of physical totality that is made available for human use. The command over energy, especially inanimate energy, is the key to resource availability. And, finally, the world is not "a bundle of hay" but a living growing complex of matter and energy, a process rather than a thing. (Emphasis in original.)

Barnett and Morse reaffirmed this general approach and applied it empirically to natural resource availability in the United States. Recently, Julian Simon has said much the same thing. More than a decade ago I developed my own definition of natural resources in similar terms:

> "... a definition of natural resources ... includes four parts: (i) Any quality or characteristic of nature, (ii) which we know how to use, (iii) economically, and (iv) to a desired end." (Clawson, 1969)

According to this definition, the natural qualities of soils, climate, forests, minerals, and other natural features are essential but not sufficient. The knowledge and the technology must exist by means of which these natural substances can be transformed into products and services useful for humans. But this too is not enough; the transformation must be at economically acceptable costs. And sheer monetary values are not the final test; the output of the process must be one which the people concerned desire.

Some examples may help to illustrate and make more comprehensible my definition. The pe-

troleum and natural gas which has proven so valuable in recent decades existed beneath the surface of the land 200 and more years ago, yet the American Indian did not dream of their existence, nor would he have had any means of extracting these materials had he known of them, nor would he have had any use for them if they had been extracted. Or, to use another example, uranium existed in natural deposits for millions of years, yet it was a chemical curiosity until the first atomic reaction, after which it became a highly valuable strategic resource. Agricultural history is full of examples of soils unproductive until the role of trace elements was understood or until new sources of power made some soils tillable or until some other technological development made it possible to use productively land which previously had been unusable.

But existence of a natural characteristic and of a technology for its transformation are not enough; the process must also be economic, in terms of costs and returns. There is an enormous volume of oil in oil shale and the means for extracting it exist, but thus far (and for 40 years to my personal experience), the costs have been too high in relation to the values of the output for the natural characteristic to have become a real resource. Similarly, there exist literally oceans of seawater and methods of desalinizing it are well known, yet the costs of desalinization are prohibitive for the irrigation of staple crops. The costs should clearly include the environmental and external costs, as well as monetary costs incurred by the user of the process.

But even the combination of natural characteristics, appropriate technology, and favorable economic efficiency are not enough; the result must be one that is desired, that is culturally acceptable. I formerly used the production of cattle for beef as unacceptable to Hindus as my example of cultural acceptability—an unacceptability which overrode resource characteristics, technology, and economics. More recently, I have used the example of dogs for meat for human consumption in the United States as an example of cultural unacceptability. We have millions of dogs in this country, they consume much food, some of which could be food for humans, and their flesh would be nutritious for humans; they could be slaughtered while in their prime or before they become too old. Yet we refuse to consider the possibility of eating them. Other peoples, including native residents of parts of the United States, regularly ate dog meat in earlier times. One could readily find other examples of perfectly feasible sources of food, clothing, shelter, or other desired consumption goods that would not be culturally acceptable in this country, and of course other examples in other cultures. As law-abiding citizens, I expect all of us would refuse to advise a farmer to grow marijuana or some plants for harder drugs, even if this were technologically possible and economically profitable.

Under this approach to natural resources, the inputs of labor, capital, technology, and entrepreneurship are vital. Within very wide limits, natural resources can be made. As some of my mining industry friends say, a mine is made, not found. The same is true of a farm. All farms in the United States today include substantial past investments in the soil and on the land. Schultz has well described how the role of land in the agricultural productive process shrinks as the total economy grows, and how in the United States the role of the natural qualities of the land have diminished in importance compared with the investment of capital and labor in the land. While the area of the surface of the land is fixed (except for some minor fillings of swamp and water areas), yet land as a productive resource is not fixed in quantity. One has only to look at the current agricultural surpluses for ready evidence of the increased productive capacity of cropland.

There are at least two consequences of this definition of natural resources which should concern us here. In the first place, a tract of land--whether for crops, or for forests, or for recreation, or for commercial development--may be a natural resource for one person and not for another. We often say that poor people, whether rural or urban, lack natural resources. But there may be a circularity here. They may lack the capital, the know-how, the financial resources, and the managerial capacity to produce an acceptable financial return for themselves from a piece of land; yet it may not be the land which is deficient, but rather these other necessary inputs into the productive process. It is true that some pieces of the world's real estate are easier to use for productive purposes, under some set of technological and economic circumstances, than are other pieces of the world's real estate. But a great deal of the Earth's surface is used to provide at least tolerable living for its occupants, when perhaps no one would have chosen that area, had a wider range of choice been available. If we seek to help poor rural people, perhaps the best approach is to work with them in their personal transformation, not to concentrate on their land.

In the second place, under this concept of natural resources the limits to future growth and future output are very far in the future and very far above present levels. There is surely some limit--sheer space for people to live, even when we stack them up several tiers high, if nothing else. But it is foolhardy to expound that limits are close and inflexible. More people obviously mean less land area per person, whether one talks of a county, a country, or the globe. But that does not necessarily mean less natural resources per person. We are constantly expanding our natural resource base, in this country and globally. I do not wish to downplay the serious problems arising out of continued high birth rates, but I totally reject a static view of resource availability.

RURAL DEVELOPMENT

One of the themes of this conference is rural development. It seems to me that this term has different meanings to different people, and I should start my discussion of it by saying what it means to me. In my thinking, rural development is based on an assumption or upon analysis

which says that everything is not well in some rural area, and that improvements will not take place at an acceptable rate without outside specific help. The private market may help but cannot alone provide the improvements desired. The improvements include higher income, generally also include a more nearly equal distribution of income, but also include improvement in aspects of rural living not easily included in the usual income analyses. The objective is to improve the content of living, in the sociologist's meaning of that term. We want rural people to have an objectively measurable improvement in nutrition, housing, health, education, or other ways; but we want also for them to feel that they are better off.

Over the past generation or longer there have been a number of programs aimed at rural development. Much of the oldtime Extension work was designed to help rural people attain more income or better living than they could achieve by themselves. The extensive land use planning of the later 1930s was even more specifically directed toward rural development, as defined here. We all know about the "war on poverty" and its ambitious goals of improving rural as well as urban life. There have been various national commissions or national inquiries into rural as well as urban poverty. Today there is an extensive lot of programs called "rural development." You are all familiar with this general range of experience, perhaps more so than am I, and I do not intend to make a complete inventory or analysis of the many public efforts aimed at helping rural people attain a better life.

There may well be differences of opinion as to how successful different programs or all programs combined have been. I judge that some successes have been achieved but the very fact that such programs continue is evidence that all problems have not yet been solved. Perhaps they never will be. Poverty is a relative as well as an absolute concept; as the general level of income, consumption, and well-being rises, so does the level rise at which poverty begins. A level of living which is considered poverty in the United States today would not have been so considered two generations ago nor would it be so considered today in much of the world. When, or if, everyone in the United States is lifted above the present poverty line, we shall discover that the concept of acceptable income and living has also advanced and that a new poverty group has emerged. I do not assert that this argues against efforts to improve rural living, but I do say that such efforts are part of an ongoing process which has no discernible end.

When, if at all, does the agricultural economist fit into rural development, as thus defined? First of all, he or she can analyze situations, proposed programs, and actual programs in an effort to ascertain and depict facts as clearly as possible. It surely is not difficult to identify past programs and past analyses as lacking reality and accuracy. I would not go so far as to say that agricultural economists have any monopoly on accuracy and perceptiveness but often they are able to bring new and clearer perspectives to unclear situations.

Agricultural economists may have special abilities to propose new rural development programs, to innovate new approaches to the problems of rural poverty and rural inadequacy, and to compare one possible approach with others. Various programs have existed in different areas; how well have they worked, and why? Such comparisons should not be limited to this country, since many other countries, both higher and lower income ones, have also experimented with different approaches. Clearly, what worked elsewhere in a different economic and cultural climate may not work here; and equally, what failed elsewhere might not fail here. The problem of rural poverty is world wide, not confined to any country or to any level of national economic development; and the desire to do something about it is likewise not confined to any country or small group of countries.

Problems of rural poverty are seen differently by specialists from different professional fields. The agronomist or animal husbandryman may see the unproductive use of soils and other natural resources; the home economist sees the poor housing, poor nutrition, and inadequate facilities for healthy child-rearing; the medical specialist sees the poor health of poor people; the educator sees the poor schools; the sociologist sees the lack of rural institutions and the inability of rural people to make their needs felt in the political and economic market places; and so on, for other specialists. We agricultural economists are not entirely lacking in specialized approaches, of course, but I argue that, as a profession, we are rather better equipped to take a broad and synthesizing approach than is any other specialized profession. The fact often is that poor rural people and poor rural communities are poor in every aspect of their lives and that every specialist is accurate enough, as far as his or her specialty goes, but that no one specialty is sufficient.

Finally, and perhaps above all, the agricultural economist should take a very hardheaded approach toward rural development. One can be sympathetic with rural people and at the same time point to the flaws or the misconceptions of programs designed to aid rural people. In my scale of values, little was gained and much was lost by an inflated and poorly conceived "war on poverty" which failed to accomplish much and which went far to discredit all public programs aimed at rural development. The "Alliance for Progress" surely aroused hopes which were not, and could not have been, fulfilled, and again discredited all such efforts. It is difficult to be hardheaded without seeming to be, and perhaps actually being to some degree, unreceptive and even cynical. But is it really better to promise much and deliver little, than it is to be more cautious but to deliver what is promised? And surely the problems, long in the process of development and hence deeprooted, cannot be expected to go away easily or soon.

THE FUTURE OF AGRICULTURAL ECONOMICS

I will refrain from any elaborate effort at crystal-ball gazing for agricultural economics as

a profession. I simply say: it surely has a future, one which to a large extent is in your hands to make. The profession will grow and develop in the future, as it has grown and developed in the past. Just as few if any of us foresaw 50 years ago what would happen in these intervening decades, perhaps few if any of us can now foresee the probable future. Maybe it is just as well not to see what lies over the ridge ahead, but to leave the excitement and uncertainty of exploration and development for another day.

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