The 21st Century Land Grant Economist

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The land grant system is a value-added infrastructure, designed to extend the boundaries of traditional colleges and universities to bring science to bear on the pressing needs and problems of underserved citizens and communities. With supplemental resources to support mission-oriented research and outreach, the system has addressed a market failure in higher education. It has been a key asset in achieving for the United States a vibrant agricultural economy, a prominent position in world trade, significant rural development, healthy families and communities, and the increasingly sustainable natural resource base that are characteristic of "the great American Society." This paper explores some of the recent challenges facing the land grant system, provides a framework for examining these challenges, and stresses the need for a new cadre of "land grant economists" to provide leadership as land grants struggle to identify new visions, missions, programs, and innovations that would serve as the bedrock of a new system. Selected areas of emerging opportunities for land grant intervention are also identified.

Key Words: economists, land grant system, 21st century

I am very thankful to my colleagues, the members of the Northeastern Agricultural and Resource Economics Association (NAREA), for my selection as the second recipient of the Award for Outstanding Public Service Through Economics. Being put in the company of Bruce Gardner, the only other person to have received this award, is an honor of immense proportion, considering Bruce's stature in the profession. Bruce, in fact, has been a mentor of mine for a long time and a colleague I admire greatly. I cannot help but feel that his counsel over the years contributed to my career, and hence to this recognition.

This is not the first time I have been recognized professionally, but because this acknowledgment is coming from NAREA, it is a significant tribute, which I cherish greatly. NAREA has nurtured my career and given me the opportunity for solidarity with many of you, my colleagues in the profession. More importantly, NAREA has provided me with an invaluable outlet for my thoughts as a scholar through the *Agricultural and Resource Economics Review* (*ARER*) and its predecessor, the *Northeastern Journal of Agricultural and Resource Economics* (*NJARE*). My first refereed journal article as a graduate student was published in the *NJARE*, and I recall the great time I had as a member of NAREA, especially while serving on the Board of Directors.

It was not difficult to choose a topic for my acceptance speech at the NAREA award ceremony, as I think the greatest policy challenge facing the agricultural economics profession today is how to redefine and reposition the profession and the broader land grant system to be current and poised for the 21st century. I believe the leaders of thought in our profession must continue to hammer on the need for professional rebirth. I do—every opportunity I get. I commenced my thinking on this issue six years ago when then NAREA President, C. Bobby Gempesaw, asked me to give a keynote address at the NAREA meeting. This presentation eventually culminated in my 1997 article on the

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challenges facing the agricultural economics profession and the land grant system in general in the 21st century.

Here, I take my 1997 concerns further by revisiting the history of the land grant system, evaluating the rationale for its existence, identifying recent changes in its political and economic environments, highlighting some of the recent complaints about its effectiveness, identifying important issues that agricultural economists can help champion if they are to maintain their stature within the system, conceptualizing the framework within which the ideal land grant product of the future will be produced, and discussing the characteristics of the ideal land grant economist of the future. Of course, my views are predicated upon the strong assumption that the agricultural economics profession (and its sibling disciplines) has the will and capability to re-invent itself to maintain its relevance and the special status it has enjoyed hitherto in American higher education. My intent here is to be provocative, catalytic, and inspirational in promoting self-evaluation and evolution of our profession.

Origin, Legislative Intent, and Rationale for the Land Grant System

As one who is frequently accused of being too much of an institutional visionary to have any patience for the details of the past or present, it is awkward to be starting this discourse on a note of history. However, in this case, a clear understanding of the past, of the institutional model of the land grant system, and of the rationale for its existence must precede any rational thinking about the future. A prerequisite for being a successful land grant scholar is a clear understanding of its mission. I am often amazed by the number of professionals, especially our young colleagues, who do not know much about the origin, structure, and purpose of the land grant system.

The land grant system traces its origin to the Morrill Act of 1862. Up until the mid-1860s, the scope of higher education in the United States was relatively narrow, with academic opportunities typically limited to such traditional disciplines as philosophy, biology, medicine, law, languages, chemistry, religion, classics, and physics. With one stroke of the pen, President Lincoln signed into law perhaps the most important piece of educational policy legislation ever. This revolutionary Act opened up higher education and the public in the United States to a whole new set of opportunities for learning, personal growth, community development, technological innovation, industrial growth, improved job opportunities, and better quality of life. Along with subsequent land grant legislation, the Morrill Act transformed higher education and opened up its hitherto stone walls.

The 1862 Morrill Act provided grants of federal lands to states agreeing to establish a public institution for the teaching of agriculture/mechanical arts. The aim was "to teach such branches of learning as are related to agriculture and the mechanical arts ... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life" (1862 Morrill Act).

The Act was catalytic. Immediately following its passage, many universities achieved land grant status. This spurred the development of new disciplines consistent with what common people do. Fields and disciplines that are now mainstream in higher education owe their origins to the Morrill Act. Generations of engineers, agronomists, farm managers, agricultural economists, entomologists, food scientists, natural resource managers, nutritional scientists, biochemists, microbiologists, ecologists, and landscape architects owe their professions and successes to the land grant system. It has allowed common people to have access to education in areas that are meaningful to them and in which they could make a living closer to their homes and communities.

The Morrill Act was also catalytic in spurring sibling legislation. Its success and the potential for even greater impact were, no doubt, responsible for the Hatch Act of 1887. With land grant colleges having developed unique but relevant expertise in important areas of learning, the next logical step was to create incentives to pursue mission-oriented research and discovery that would bring solutions to the pressing issues of the day. The Hatch Act was also catalytic. Following its passage, many land grant colleges and universities quickly achieved experiment station status, directing expertise of their scholars toward applied and practical research-based solutions that helped to build the great American Society. As a result, the next few decades were marked by an unprecedented unleashing of the intellectual capital of higher education and focusing it on pressing societal issues, including the transformation of agriculture, its productive capacity, its impact on the rural economy, and the quality of life of the general public.

The Smith-Lever Act of 1914 brought to fruition the full scope and capacity of the land grant system.

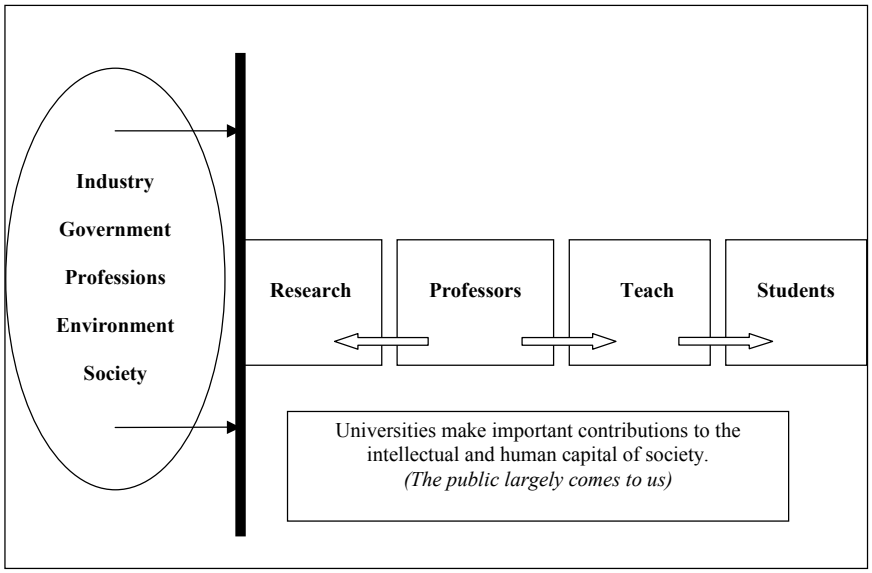

Figure 1. How universities typically work

The Act provided for the creation of state Cooperative Extension Services as the delivery system for land grant solutions. Congress envisioned a much more engaged higher education system which would take solutions from the laboratories of universities and colleges to the fields, homes, and businesses of the masses of the American public, the majority of whom were farmers at the time. Included in the extension partnership were local government entities (counties), state governments, and the federal government, with each contributing budgetwise to this system of delivery. The deeper research-based intervention facilitated by extension service has been key to the success of the land grant system.

The history delineated above highlights the unique responsibilities of the land grant system and the way it operates. The system serves the public via a tripartite system of teaching, research, and extension (Ballenger, 1996; Ballenger and Kouadio, 1995; Schroeder, 1993). The integration of all three is critical to success, as the solutions to be delivered through the system are most potent when they are science based. Teaching, research, and outreach capacity already existed in higher education before the Morrill, Hatch, and Smith-Lever acts, but the land grant design helped to evolve an integrative body of science intended to ensure a systematic approach to solving a special class of problems. Integration across disciplines is also critical to success, especially in these modern times when society's problems are becoming more complex and are requiring interdisciplinary solutions.

The Land Grant Concept and Philosophy

Based on the above history, I define the land grant system as follows:

> Land grant institutions receive direct federal, state, and local appropriations to extend the boundaries of higher education beyond the traditional boundaries of colleges and universities. They are expected to provide (1) education in critical and emerging areas of need; (2) mission-oriented, science-based solutions to targeted problems of society; and (3) quality services to stakeholders from underserved communities.

In order to appreciate how the system works, it is important to understand first how the traditional university system works. Figure 1 presents a standard model of how universities work. Under this scenario, the boundary of academia is relatively rigid. In simple terms, "professors teach students" and "professors do research." The world comes to academia, as depicted by the two arrows on the stakeholder side of the diagram, and the academic production process is largely supply driven. Outreach, technology transfer, and deliberate mission-oriented research are not at the forefront of the traditional non-land-grant university enterprise. It is important to note that under this supply-driven approach, significant contributions have been made by academia to the public. Grants from national and other funding agencies are important management tools for reshaping the service effectiveness and focus of traditional scholars.

The land grant system, however, works differently, or is at least expected to (see figure 2). Coop-

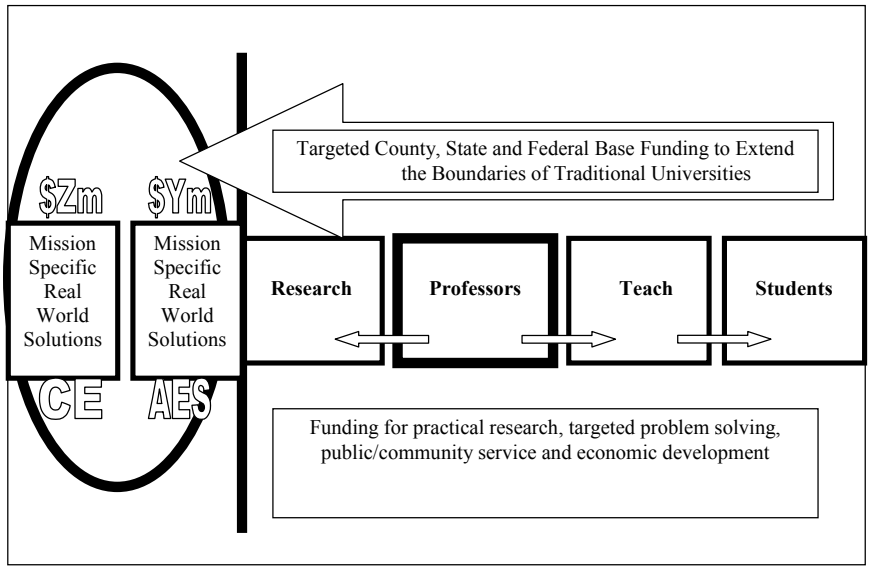

Figure 2. The land grant system

erative Extension and the Experiment Station are deliberate add-ons to academia to ensure that delivery is a primary activity and not an afterthought. Land grant universities receive direct federal and state appropriations to pursue targeted research, while Cooperative Extension receives direct federal, state, and county appropriations for the same purpose and to extend knowledge ($Ym and $Zm in figure 2). Hence, it must be the case that land grant colleges are provided unique resources to allow them to take on unique additional responsibilities. Must the problems addressed be unique in order to justify this unique arrangement? *You bet!*

Given the effectiveness of the standard university model, it must be the case that much more is expected of the land grant system for the additional resources put in. Real problems of society do not come in neat disciplinary packages. Neither are they simple. Hence, the mandate of solutions via the land grant system is tantamount to the mandate of collaboration, systemwide prioritization, integration, stakeholder engagement, efficiency, mission orientation, and service. In order for the system to work effectively, and to maintain the special status it has had, land grant scholars need to be different. They need to be engaged with stakeholders directly or indirectly; to utilize interdisciplinary and programmatic approaches in order to ensure real solutions; and to listen, anticipate problems, and conceptualize solutions. They also need to help spur new areas of learning and new disciplines. Finally, they need to engage in frequent construction of new capacity to address future problems (see figure 3).

Rationale for Public Investments in the Land Grant System and Expectations of Products

I would like to take this line of inquiry further. What is different and so important about the clientele of the land grant system that warrants the provision of additional resources and publicly funded interventions? If the market system for standard teaching, research, and outreach works effectively, why allocate supplemental resources to the system? The following answers are plausible, and if valid, help lay a framework for viewing the system's effectiveness and how we need to be organized for the future:

- Land grant base funds are provided with a purpose in mind. Research and outreach are subsidized because they are expected to be value-added (mission argument).
- Without this additional subsidy and the mandate, the free-market academic funding system will not allocate adequate resources to the delivery of mission-oriented research and outreach (intervention argument).
- Land grants are funded to provide solutions to those who could not otherwise afford to fully fund and produce their own research and self-education programs (underserved community argument).

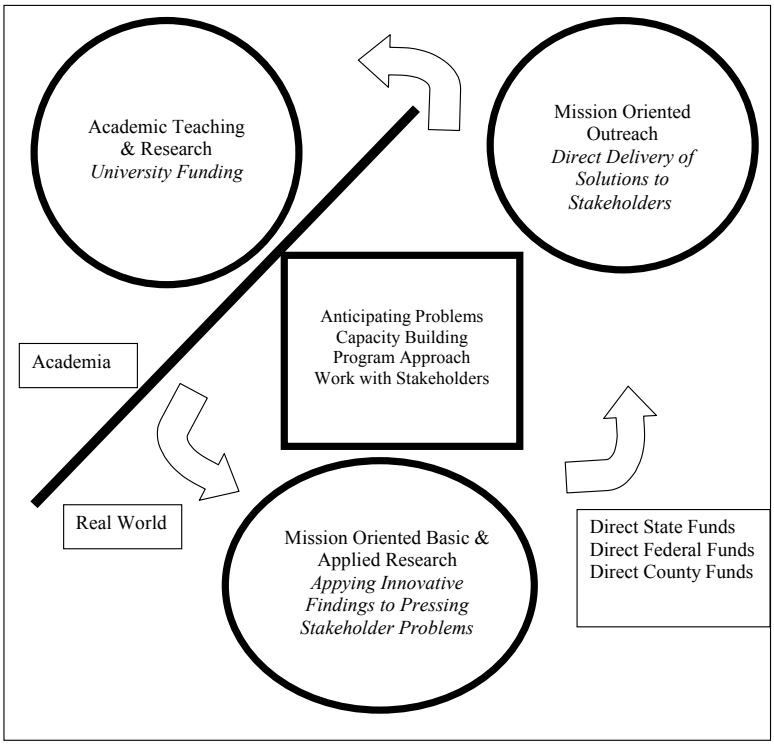

Figure 3. The land grant philosophy

- Supplemental funds for land grant research suggest that the system is mandated to address serious problems requiring long-term capacity building and research-based solutions (priority argument).

Based on the four tenets above, the essence of the land grant system is mission-oriented, science-based interventions in the lives of people from underserved communities, particularly in areas of high priority. If the above are indeed the basic tenets of the land grant system, then much is unique about its clientele and much is clearly expected of the system. Obviously, land grant clients enjoy special status not bestowed on others in the United States. Extension clientele seldom pay tuition or fees for the services they receive. Research and outreach products of the system can therefore be viewed as public goods essential, but products which would not be delivered without intervention, due to market failure.

Because the allocation decisions regarding land grant base funds are internal to the university, they can be considered qualitatively more valuable than competitive grant funds in which the funding agencies are key players in the definition of the research agenda.[1] It gets even better. Unlike grant funds, land grant universities can actually pay faculty out of base funds and can, in fact, grant tenure based on expectations of long-term funding. Given this very unique position of the land grant system, it would be foolhardy to lose these unique benefits. With this special status of the land grant, there obviously are high expectations of delivery.[2]

Land grant institutions have unique responsibilities to perform, but they also have unique additional resources with which to do so. They must therefore be accountable and must show tangible results to stakeholders, congress, and the legislatures in their respective states. The system must respond faster than the rest of higher education. A land grant college cannot afford to be just another college of the university. Because of the unique funding sources they enjoy, they must be strong academic units of their host universities, *and then some.* Unlike others, land grant colleges are required to deal with a whole

[1] In the hierarchy of funding in higher education, discretionary funds are often seen as high status funds because they involve a greater degree of trust on the part of the funding agency, and therefore greater respect for the ability of the recipient to make good decisions.

[2] It is important to recall that AES and CE base funds are politically sensitive and that no long-term guarantees exist.

world off-campus, comprised of communities, industries, clientele, and stakeholders with vested interests. This is an asset. In order to justify their unique positions, they must remain the "charismatic" part of higher education. Other colleges and administrators in higher education must not see land grant colleges just as *different*, but as *special and better.*

Selected Accomplishments of the Land Grant System and the Role of the Agricultural Economics Profession

Following the overview of the history, mission, purpose, uniqueness, and expectations of the land grant system, a brief discussion of its accomplishments and those of the agricultural economics profession is in order. Land grant colleges (LGCs) have indeed contributed to the growth and success of agriculture (Adelaja, 1997; Liska, 1988; Young, 1985; Cardon, 1985) and to the well-being of the American public. Economists have consistently shown significant returns to the investments in LGCs (National Research Council, 1995; Huffman and Evenson, 1993; Rose-Ackerman and Evenson, 1985). In addition to introducing a whole new generation of disciplines and areas of study, LGCs have helped the United States achieve the huge audacious goals of food affordability, rural development, prominence in world trade, and farm viability. Land grant universities were largely responsible for positioning U.S. agriculture into the number one place it now occupies in the world.

As a result of land grant intervention, in just a few decades U.S. residents went from spending 60% of consumer disposable income on food to spending under 10%. The United States has perhaps the best system of rural support in the world today, with Cooperative Extension likely being the most visible part of this infrastructure. Land grant research and outreach also played a key role in the remarkable repositioning of the United States for world leadership in trade. Excess agricultural production, which was brought about by productivity-enhancing research and outreach, also helped facilitate world peace. Technologies developed by land grant colleges have also aided the nation's resource conservation and environmental quality accomplishments. A productive and healthy society and a well-adjusted youth population with promise of effective leadership roles in the future are part of the legacy of the land grant system. The system was not known historically to be stagnant, and indeed has added new dimensions, components, disciplines, and partners. Its evolution resulted from a constant search for identity, purpose, and mission.

Agricultural economists have played leading roles within the land grant system and have been instrumental in the transformation of LGCs. The profession has successfully educated students for research and management positions in the private and public sectors. The agricultural policy, institutional, and market innovations at the state, county, and national levels over the past 10 decades are attributable to land grant economists. For example, agricultural economists have contributed to public policy in economic development, agricultural production, land use, farmland retention, commodity marketing, international development, international trade, science and technology, resource conservation, commodity regulation, commodity pricing, and competitiveness (Adelaja, 1997). Agricultural economists have also been key players in the repositioning of the U.S. food industry.

The field itself was not one of the original land grant disciplines, but emerged later out of the field of agronomy, through the pathway of farm management. Areas such as consumer behavior, product marketing, land use, food industry development, food industrial organization, agricultural trade, community development, resource management, and environmental economics have emerged as important complements to the traditional areas of agricultural economics which focused more on production-related issues. The profession must continue to be porous, must promote new ideas and cross-fertilization, and must in fact champion changes. Where would this nation be today if scientists at the turn of the century scoffed at the development of this new discipline the way we now resist new potentially competing fields?

The Current Political and Economic Environment of the Land Grant System

Things were simple in the mid- to late 1800s, when most Americans were farmers. The clientele today is more diverse in needs and expectations, making priority setting more challenging. Today, many more people and communities demand, or would like to benefit from, the land grant bounty and what it promises. On one hand, there exist numerous potential partners who can be brought in to help replenish what seems to be an eroding political clout of agriculture while expanding the impact on society. Of course, it would cost much to add new

product to the arsenal, especially for a system so laden with institutional rigidities such as tenure.

On the other hand, farmers and other traditional clientele fear the possible dilution effect that broadening the stakeholder base could have on programs which have been so critical to the success of agriculture. In states, particularly in the Northeast, where the agenda has been aggressively broadened to other underserved communities, farmers have argued that there is a disconnect in the system and that the levels of performance of experiment stations and Cooperative Extension are dwindling. The demands for greater accountability have intensified. Many are requesting a return to greater focus on public service, problem solving, and stakeholder involvement in the definition of research, teaching, and outreach agenda, and accuse the land grant system of having evolved an "ivory-tower mentality" which captures the agenda (Adelaja, 1997). Stakeholders perceive diminishing accountability, relevance, vision, and clarity of purpose. The system is obviously facing a limited resource and mission-selection challenge.

Exacerbating the problem is the funding environment for land grant colleges. At the federal level, the declining economic importance of agriculture and the growing interest in relegating agriculture to free-market forces have resulted in declining formula funding for the land grant system. As base resources dwindle, greater emphasis is being placed on competitive grants within universities and at the USDA. The fact that grant opportunities, through the National Institutes of Health, the National Science Foundation, the Department of Defense, and many other federal funding agencies, have outpaced the opportunities through the USDA further buttresses my question about the perceived value and benefit of what the land grant system does. It is difficult to maintain a mission focus when one is struggling to survive. In a world where the land grant clientele is not the only game in town, the base budget is also a major market signal to faculty regarding where to put their efforts.

The pressure is also mounting from county and state partners, who are calling for more control over the research and outreach agendas. The downward trend in federal and state funding is particularly stressful to counties because it limits their abilities to fill critical county Extension positions.

Responses of the Land Grant System and Possible Roles for the Agricultural Economist

While the land grant system and the agricultural economics profession entered the last few decades of the 20th century with a history of huge accomplishments and tremendous clarity of purpose, today there is a fair degree of confusion in the system about where to go next. New issues are emerging, the solutions to which warrant the very type of organization that originally characterized the system. However, a systemwide, deliberate strategy for addressing emerging issues seems missing. While recent attempts to articulate the land grant mission have stressed the use of the terms "learning," "discovery," and "engagement" to replace "teaching," "research," and "service" as the mantra—perhaps in recognition of the fact that there is a need for a rethinking of the institutional purpose and culture of the land grant system—institutional change has been slow to come, largely because of our structure and our organization.

We are observing some deliberate attempts to address the issues at hand. However, we are also observing a rapid growth in adherence to the principles of academic freedom and tenure and the use of these as reasons why individuals are not able to engage in research and outreach activities of visible benefit to stakeholders. A recent experience with a colleague of mine particularly bothered me. When approached by USDA staff to share with them data he constructed as part of his research so they might use it in important policy analysis, the colleague initially refused, citing the fact that this would jeopardize his exclusive control of the data and therefore his ability to publish from the data. My intervention helped save the day, but I was amazed by this young scholar's myopic view of land grant scholarship. In my mind, this is a case of a land grant scholar failing to understand the mission and purpose of the system and his obligations as a paid land grant scholar. One of the issues needing to be resolved is what tenure means within the land grant system. If land grant scholars are provided more and expected to do more, one can theorize that the degree of entitlement needs to be less.

I will cite another example. The problems of today are increasingly complex and warrant multidisciplinary and collaborative inquiry. While base resources for the system are declining, the need for multidisciplinary, team-oriented programs, cross-departmental strategic hires, and the recruitment of eclectic faculty has never been greater. The allocators of resources are increasingly favoring such programs and hires. Unfortunately, many of our colleagues in the land grant system and in agricultural economics departments are yet to see the benefit of such hires, as more and more departments

and their chairs scoff at these hires and consider them to be assaults on the integrity of their departments. The issue of cross-disciplinary hires is simple to understand, in my opinion, and one would expect that the agricultural economist would be one of the first to grasp its importance.

No other professional is better equipped to understand the interplay between entitlements, efficiency, and organizational changes necessitated by changing market conditions than the economist. However, our leadership is yet to be visible in fostering and coining solutions to these challenges. I contend that the land grant philosophy may have taken a back seat in many departments, and many of our host institutions themselves seem not to understand what it means. If this trend continues, there probably would be an excess supply of people who do what we are capable of doing in the future.

I cite yet another example. The recent debate about whether 12-month appointments can be justified for land grant scholars when the norm in the rest of the academy is a nine-month appointment has centered around issues such as rights and privileges of faculty, the disruptive effect associated with such policy changes, and the incompetence of administrators in not fighting for the faculty. Whether or not the public receives, for these supplemental compensations to faculty, a value-added benefit over what our non-land grant colleagues provide their stakeholders has been a relatively silent issue in this whole process. Much of the budgets of land grant colleges are tied up in salaries. With repeated budget cuts and the resulting loss of operating funds and non-faculty staff positions, it seems appropriate to examine how faculty salary obligations can help relieve the pressure on our system. Provosts, deans, and others outside the traditional colleges of agriculture question whether summer salaries not drawn from grants are indicators of inefficiency in the system. How competitive are LGCs in gaining university resources if indeed there are perceptions of inefficient resource allocation? It seems appropriate that the land grant economist is well poised to help the system sort through these difficult issues. *Are we?*

A shift in funding from base funds to competitive grants may well signal the fact that questions are being raised about the system's ability to allocate resources efficiently and effectively to research agenda reflecting the land grant mission. These changes signal the need to be creative and evolve a new partnership model for the land grants. Although the Kellogg Foundation, the National Research Council, AAEA, and C-FARE have encouraged dialogue about these issues, there is little evidence of an internal systemwide soul-searching in our profession.

I hate to think we have lost our luster. I equally hate to think we have outlived our usefulness. Perhaps a few provocative questions are in order at this juncture:

- What are the causes of the inertia in the land grant system?
- Have we lost sight of the purpose of our existence?
- Has the big audacious goal of the land grant system been achieved (maybe we have solved "the problem" for which we were created)?
- Are there new problems to solve (and if so, what are some of these new problems and are we well designed to address them)?
- What rationale is needed to justify, retain, and grow the land grant system?
- Is the system an effective use of public resources or is it outdated?

It is important for the profession and the broader land grant system to take these questions seriously, as therein lies the pathway to the future of the land grant system. I look favorably upon the value of what the land grant system accomplishes and can further accomplish. However, I am concerned that, as a profession and as a very visible part of the higher education system, our story is not being told well and we are not being strategic enough in shaping our own future.

An Economic and Market-Oriented Framework for Examining the Land Grant Dilemma

An economist would argue that the budget of the land grant system is the price society is willing to pay for its products, and that declining budgets signal the need for rethinking how land grants do business. In this vein, the following questions are relevant:

- What is the product of the land grant system, and how unique, relevant, and competitive is it given the political and economic climate for public resource allocation today? Who is our competition? Have we lost the monopoly power associated with our historical uniqueness?

- What is the quality of the product, and is it commensurate with budgetary demands of our system (the pricing of the product)?
- If the product and its quality are sound, but there is a perceived or value gap, is this the outcome of ineffective promotion, marketing, and public relations?
- How efficient is the land grant system? Are there efficiencies to be gained through consolidation, collaboration, and the elimination of silos? How does one begin to realign resources, structures, and organizational constructs to revitalize the system's positioning in congressional and higher education marketplaces?
- Can these efficiencies be achieved in an environment of independence, academic freedom, and a deep sense of entitlement associated with tenure?
- In the absence of adequate adjustments, can we settle for further dwindling land grant support?

In an environment where there are calls for new cutting-edge, vision-driven curricula, new student-centered programs, vision-driven research programs, new ways of reaching the clientele, new markets for what the land grant system produces, multidisciplinary collaboration, and greater priority setting, agricultural economists are poised to take the lead in sorting out what would be valuable and what would not be of value. In fact, this is my plea. Given the unique skill set of agricultural economists, they can lead the effort to reposition the land grant system. Expertise in the profession in consumer behavior, demand and price analysis, market analysis, portfolio analysis, institutional analysis, market structure and industrial organization, competitive behavior, and political economy are quite applicable to the task at hand. The recent name changes in "Agricultural Economics" departments are not sufficient response to the challenges. Neither are the minor adaptations being made to our curricula from year to year. I urge the leadership of the agricultural economics profession and the land grant system in general to take on these questions as a priority for our profession in coming decades.

The Future

The American society now faces a multitude of challenges, many of which the land grant concept is well designed to address. These issues must be addressed, or we face the danger of losing public support altogether as our society finds alternative approaches to dealing with these problems. The evidence thus far leads me to conclude that land grant base funding will continue to decline unless major institutional innovations emerge. Which new innovations are needed and where will they come from? Will they emerge from faculty? Will they come from our administrators and deans in an environment where few things are embraced unless they have faculty buy-in? Do we need a whole new cadre of deans, deans who are more autocratic? From what system will these deans emerge? Will these innovations be mandated by the federal government, by the state governments, or by our county partners? Assuming the problem is that of marketing (and it partly is), how knowledgeable is our system about institutional marketing innovations? Are we savvy enough to employ the right people to help market us? Assuming the problem is related to our structure and efficiency (and it partly is), how do we go about addressing these issues? How rigid and inflexible are our structures and decision-making processes? These are quite important questions.

We have to expect more pressures on the land grant system, and more institutional changes will come. If we are to survive, we must pave the way for greater efficiency through more frequent priority setting, elimination of redundancies, and integration of functions across units and across the areas of teaching, research, and extension. Currently there are too many interdepartmental silos. Even within the profession of agricultural economics, there are several disciplinary area silos, the walls of which must come down. The sciences and disciplines destined to survive in the future are those that are informed by a diversity of perspectives and expertise and that embrace cross-fertilization. How much of this is happening within the agricultural economics profession right now? Where does agricultural economics rank compared with other disciplines?

We need more forward-looking minds dedicated to creating the more forward-looking land grant system. The future is going to bring more interdisciplinary centers and institutes. New departments will eventually emerge from current departments and centers. The changes are critical to the transformation and survival of higher education, especially the land grant colleges and the agricultural economics field in particular. We will be forced to accept more strategic, programmatic, and cross-disciplinary hires. University-wide faculty hires will continue to be

made, and departments will learn how to compete to attract these hires into their units. In fact, we will be grateful in the future for these opportunities.

The days when agricultural economists can expect new positions and hires only because they have been defined as important by faculty are gone, *long gone.* We will see more cross-university partnerships. We will see a re-definition of what land grant scholarship means, the requirement of more stringent standards governing land grant scholars, and an evolution of the overall reward system within higher education. We will see more competition for corporate and foundation dollars, and will see more of these flow through land grant colleges. Rather than scorn these dollars as indicative of corporate control of the agenda, we will embrace them. We ourselves will have to deal with charging fees for our services. How prepared is our system to make these changes? How ready is the agricultural economist to lead these changes? These collaborative enterprises and approaches will happen, and agricultural economists who are opposed to them are just going to have to live with them.

Emerging Issues Suited for Land Grant Economists

I made the point above that the agricultural economist has the unique combination of skills to lead the land grant system in addressing the cultural and institutional changes ahead. Our profession's leadership is needed in moving the rest of the system forward. Beyond the institutional and cultural changes needed, agricultural economists can also play a better role as frontiersmen and frontierswomen in deciding where our system needs to make programmatic investments. Below, I provide a cursory list of some of these emerging issues, with the caveat that I recognize this list represents only a small portion of the issues of the future:

- *The linkages between food, nutrition, and health, particularly with respect to cancer, obesity, metabolic disorders, diabetes, aging, and vision.* Economists are needed to promote an understanding of the consequences and the costs and benefits of alternative approaches, and in the development of rational programs and policies. Food of the future will blur the line between drugs and traditional agriculture commodities.
- *The linkages between food safety, human health, and the economic performance of the food system.* Given the income elasticity of demand for health, interest in health will continue to rise as Americans become more prosperous.
- *Ex ante evaluation of new areas of land grant research investments and emerging technologies.* Significant amounts of resources had been directed in biotechnology and genomic research before agricultural economists even realized that the potential impact on industry and on resource allocation within the land grant system would be impacted. Economists can contribute to the understanding of the long-term feasibility and returns from new investment.
- *Technology transfer* (*transfer of technology from the university*). Given the mission of land grant colleges, agricultural economists are needed to help develop models of technology transfer that will ensure strong technological diffusion while keeping university concerns about property and revenue stream protection minimal.
- *Bio-prospecting, bio-remediation, and implications of marine and other environments for solutions to current health and resource issues.*
- *Economics of conservation and the environment.* Agricultural economists are needed to develop and test new tools, incentives, and regulations. Given the large number of economists involved in our profession, which innovations can be pointed to as having emerged out of our designs?
- *The economics of wildlife damage and management.* Documentation is needed of the damage done by wildlife to plants, humans, and property; analysis is needed of the perception of the general public about such things.
- *Minorities.* How effectively do our programs reach out to ethnic minorities and other underserved populations? What are the needs of minorities, and which policies are most effective in addressing their needs?
- *Urban revitalization.* What has gone wrong with urban areas? Which policy tools are most effective in the quest for urban revitalization and brownfields redevelopment? Many urban residents are plagued by extreme poverty and live in environments that are badly decayed. Does this fall within the purview of the land grant mandate?

I could go on and on, but would like to use the example of *land use* to drive home my point, since that issue will occupy my attention and engage my intellect for the foreseeable future.

Land use and its closely related problems—such as sprawl, environmental quality, resource conservation, growth management, viability of urban agriculture and other land-based industries, fiscal health of municipalities, quality of life, brownfield redevelopment, public health, transportation and congestion, livable communities, and quality of life—is very close to the top of the agenda of public concern, particularly at the state level. For example, the Northeast region contains 22% of the national population, but only 6.7% of the land base. The high density and intensity of land use makes this region very unique. Past research has already documented that the bulk of the problem is induced by suburbanization or population dispersion from urban areas. Effects of such population dynamics on land use, land values, and the plight of land-based industries are only amplified because of the unique characteristics of the Northeast.

If these trends continue, the integrity of our communities and states will be compromised in the future. Quality of life, the health of land-based industries, the natural resource base, our ecological resources, and fiscal health of our states are at stake. Local and state agencies are implementing very expensive strategies and policies such as density transfer, purchase of development rights, and down-zoning to deal with this issue. In light of the costs associated with these strategies and the concerns about their effectiveness, there is a great need for information, much of which must come from the research community. In the Northeast, I cannot identify a more important issue for agricultural economists to work on than land use.

What has been the role of the land grant community in understanding land use issues? How does the field of agricultural economics compare with fields such as planning in terms of leading discourse on the solutions to these problems? As a profession, how high is it on our radar screen? Is hiring in this area one of our highest priorities? How strong is our land use program compared with our genomics program? Which is a more legitimate land grant problem? The solutions in land use require integrative, multidisciplinary, comprehensive, problem-solving analysis, and teamwork, a far cry from the component research that dominates our functioning today. We need to be in dialog with colleagues in public health, planning, transportation, mining-engineering, and water resources to be able to assume a leadership role in solving the land use problem. There are still some of us who are questioning why so much attention is being paid to land use.

A Framework for Evaluating the Land Grant Product and Economist of the Future

Given the history and rationale for the land grant system, and the discussion above about the current environment and criticisms of the system, I present the following test as a mechanism for deciding what is important and relevant in the future:

> The land grant product of the future is public goods research, outreach, and education that: (1) society cannot get elsewhere; (2) is in the best interest of society to be delivered free of charge, or perhaps subsidized; (3) within the normal scope of the academic enterprise and normal processes of academic institutions, would otherwise not be delivered; (4) benefits not only farmers, but also other underserved communities and businesses; (5) is science and knowledge based; and (6) has clearly defined outreach and delivery mechanisms.

If the system passes this test, it will be known for its unique products and accomplishments throughout the entire national landscape and will command commensurate resources.

I also present the following characteristics of the successful future land grant economist:

- A leader;
- Multidisciplinary in approach and open to university collaboration;
- A cross-functional and eclectic scholar who asks questions;
- A leader of interdisciplinary discourse and interdepartmental dialog;
- A problem solver;
- An academic entrepreneur;
- Adept at straddling both the applied and theoretical worlds;
- Trained in tools and disciplines such as GIS, technology transfer management, planning, the biological sciences, etc.

Such an economist is needed to ensure that our profession fulfills its leadership role within the land grant system.

Conclusion

The vital signs for the land grant system are scary. The paradigm shift I suggested in my 1997 *ARER* article has yet to happen. Although I am somewhat encouraged by the fact that some of us are still talking about the survival of the system and the role of the agricultural economist, change has been slow, even for a relatively conservative profession. The

supply-push perspective I argued against in 1997 still dominates the profession. We still largely take the approach that "this is who we are, this is what we do, this is how we do it best, and therefore, here are our customers." I still embrace the views of Warren Johnston (1985, p. 1260), except for his assertion that "the December issue of the mid-1990s will chronicle our ability to respond." We are far from celebrating success.

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