

Addressing Change in Land-Grant University Programs

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Introduction

One of the significant aspects in the early history of the land-grant university was that it was conceptualized as the “people’s university.” This was imbedded in the tripartite mission by going beyond teaching and research to include public service or outreach. Land-grant universities also were supported primarily by state and federal funds so that people’s access to degree and outreach programs were not limited by high tuition or fees, and a major focus of much of the research was envisioned to address priority issues relevant to society’s needs. In these tough financial times when our people, communities, governments and businesses are facing a variety of very serious issues, there is a need to reexamine the concept of the people’s university in the context of contemporary issues. The land-grant university and its ability to help address societal needs through its teaching, research and outreach missions could play a critical role at this time. It seems that many of the criticisms of public higher education in the U.S. can be boiled down to real or perceived issues that involve accountability. Some of these criticisms are linked to contemporary issues where the public believes the land-grant university has a role to play that is not being adequately addressed.

With this brief background, I will address three topics in this paper. First, I will use examples drawn from my state and the University of Minnesota that serve to illustrate the kind of changes impacting many land-grant universities. Secondly, I will give some examples of initiatives within the University of Minnesota that are in response to the need to help address societal needs, in particular in the area of environmental resources. Finally, I will share some ideas on how we can more adequately address some of these challenges and opportunities as we are involved in helping to shape changes in the world around us.

External Factors

It goes without saying that these are extraordinarily difficult times in terms of local, state and federal budgets. It is not that this hasn’t happened before, but perhaps what is unusual about the current situation is the severity of the problem in so many states and levels of government at the same time. Such a condition leads to an increased demand for accountability in spending public funds. This is to be expected and will be a driving force in closely examining how all publicly funded units, including higher education, can do things better.

Tight fiscal times lead to increasing competition for the public funds that are available. In the U.S., higher education generally had a relatively high priority for funding for a number of decades. That support weakened in the 1980s, and in many states, it is now being seriously challenged. The needs that society expects to be addressed in K-12 education, health care and human services are a relatively higher priority at present than for higher education. The enormity of these issues makes it difficult to imagine when higher education in many states will be able to regain its position as a higher priority in the agenda.

For example, the University of Minnesota has just concluded its most severe budget retrenchment and reallocations in three or four decades. However, in addition to specific program cuts, it is just as important to note that only about 26 percent of the budget for the University of Minnesota now comes from the state of Minnesota. The other 74 percent comes from tuition, gifts, grants, contracts, fees and endowments. In other words, as we have evolved as a major land-grant university, our state resources have become highly leveraged to other funding sources. Only one-third of our employees are paid by state dollars, and two-thirds are paid from these other sources. Furthermore, the average tuition for an undergraduate in 1992-93 will be about \$3,000, and an increasing number of our outreach programs have a fee associated with them. All this is quite different from our early and (in some cases) even more recent history, but it is not unusual for many land-grant universities today. Thus the *people’s university* has evolved not only in programs but in how they are funded. This is an important fact to recognize in the context of how land-grant universities can respond to societal needs, how the culture of such universities has changed, and the consideration of changes that could improve land-grant university programs.

Examples of Program Changes

The decade of the 1990s already has been characterized by many labels, but in the end I suspect that it will be summarized as a “decade of change.” This label captures advances or changes that relate to areas such as biotechnology, information, the environment, and global competitiveness. In some ways, universities are driving forces in these changes, but in other ways changes such as these are shaping our universities. Thus, we need to ask the question, “When is it appropriate for us to help shape change vs. just accepting that change will shape our programs and institutions?” I believe this question is important in addressing the issue of

accountability to our students and other constituencies. It was considerations such as these that led to the following examples of program changes within the University of Minnesota.

In the mid 1980s, the faculty and administration of our College of Agriculture embarked on a major curriculum project known as "Project Sunrise." This project received major funding from the Kellogg Foundation, took place over about four years, and succeeded in bringing about meaningful changes in this college's undergraduate curriculum. The impetus for this project came from alumni, employers, faculty and administrators, and this led to a shared vision about how we could do things better. As a result, "Project Sunrise" became a banner for curriculum change that:

- ◆ Eliminated 17 departmental or disciplinary majors and created 10 interdisciplinary undergraduate majors, including one in natural resources and environmental studies.

- ◆ Initiated more emphasis on communication skills in the form of writing across the curriculum.

- ◆ Enhanced the significance of individual and group problem solving exercises that frequently use the computer as a tool.

- ◆ Raised an awareness among many faculty to the importance of addressing ethical issues in their courses.

- ◆ Interested numerous faculty in trying new teaching methods such as the use of decision cases where the student is confronted with a real world problem.

This project brought about some significant changes in what we teach and how it is taught. These changes have been very well received by students, faculty and employers.

The second example also occurred in the mid 1980s. It was decided that the image of cooperative extension programs, as related to both their content and the way they are delivered, had to be changed. After input from many individuals and groups, a series of changes were initiated. Examples include:

- ◆ Name was changed from Agricultural Extension Service to Minnesota Extension Service (MES).

- ◆ The 87 counties were grouped into 18 clusters. Each county agent was asked to identify an area of specialization for the cluster and devote 25 percent time to this specialization.

- ◆ Issues programming was initiated for areas like water quality that cut across departments and disciplines. This allowed for a more systematic approach to addressing problems in such areas of need.

- ◆ Budget constraints required that a significant number of positions be eliminated at the state and county level.

- ◆ The MES obtained services from faculty in other units that have expertise that can contribute to problem solving and, as such, expanded its role in facilitating some outreach programs for the University of Minnesota in both rural and urban areas.

These significant changes have begun to create a culture where change is part of the norm. In addition, support for MES within the University of Minnesota and the legislature is stronger than it was prior to the changes. A major reason is that many individuals and groups see MES as responding in creative ways to address fiscal constraints and still striving to improve program delivery. In summary, MES has improved its accountability. In addition, some of these changes have served to illustrate to county commissioners that counties can work together in ways that previously were not envisioned.

For a third example, I will discuss research centers and some concepts that I have found helpful in conceptualizing interdisciplinary programs in research and outreach areas. Science in the United States has developed a solid foundation based upon disciplinary inquiry that continues to advance the frontiers of knowledge in many disciplines. However it has become almost painfully evident that knowledge from a single discipline is frequently not sufficient to address increasingly complex societal issues. Examples are numerous and include issues related to environmental quality, water resources, public policy, competitiveness, the family, and areas of science such as molecular biology, neuroscience and composite materials. Since U.S. universities are organized programmatically around disciplines and departments, the question is: how can we encourage interdisciplinary work, where appropriate, when our faculty, many journals and granting agencies are so strongly oriented to disciplinary programs? In many areas, it is expected that faculty at land-grant universities will conduct research that contributes in a rather direct way to problem solving. Research funded through the Minnesota Agricultural Experiment Station is one example of such mission-oriented research. This, in turn, serves as the basis for outreach educational programs through the Minnesota Extension Service. Thus, if problem solving is becoming more dependent upon interdisciplinary approaches, how do we accomplish this?

One of the ways that we have addressed this issue is through centers or initiatives that consist of interdisciplinary teams. Figure 1 illustrates some of these concepts in the form of a two-dimensional chart where the columns represent disciplines or departments and the rows represent examples of issues or problems that are addressed in an interdisciplinary manner. We have formed interdisciplinary centers or groups of faculty around such issues as water quality (our

Center for Agricultural Impacts on Water Quality); children, youth and families; alternative crops and animal products; and plan molecular genetics, to name a few. Faculty appointments and issues related to tenure and salary adjustments are maintained in departments, but some of their effort is devoted to center activities in research or outreach. Each center has a faculty member as a director, and department heads and deans provide input into the activities conducted by the center. We have learned that it is difficult to create viable centers or initiatives of this type unless some resources are put into the center or initiative. However, faculty in a good center will frequently attract resources for their activities that are not available to them individually. These interdisciplinary centers and initiatives have become a critical part of our research and outreach programs. There have been numerous successes, and therefore they are at least a part of our answer to more formally bringing disciplinary knowledge into an interdisciplinary problem solving system.

Much more could be stated about the organization and operation of such centers, but I want to focus on some of the more subtle issues that relate to an interdisciplinary team. Figure 2 uses the concepts of a microbial growth curve to illustrate these points. Much like a microorganism, many academic programs go through the typical phases of lag, growth, stationary and death. A critical difference between disciplinary and interdisciplinary projects relates to the length of the lag phase and how it is handled by those who are involved. For example, in a typical disciplinary project, a few people are involved who understand the discipline and the language; they design the project or experiment, obtain

the resources to do the work, conduct the work and publish it. However, an interdisciplinary team must learn something about each other's language and concepts, and establish a level of trust and cooperation before they can begin to lay out a plan for doing the work. This takes patience and time, and results in an extended lag phase. To some, this will be viewed as a waste of time because there is no visible output. The reason some potential teams never come out of lag phase is that they are unwilling to make the investment in time and effort to come together as a functional interdisciplinary team. This is true of research, teaching, outreach and many other team projects. In team sports, the members have to practice to become an effective team. The same is true of program activities!

However, when an interdisciplinary program team makes an appropriate investment in the lag phase, they frequently are well-positioned to have a very productive period of output. In addition, it is not unusual for such groups to achieve a longer period of output than for a disciplinary project. One reason for this is that interdisciplinary teams frequently bring external people or groups along with them in the process of their project. This gives further meaning, enthusiasm and support for the group's accomplishments.

For a faculty member concerned with promotion and tenure, a long lag phase in output is a serious problem, whether it is a disciplinary or interdisciplinary project or not. For some worthy projects, this is unfortunate because it may preclude the involvement of some faculty, but it represents current reality in most of our systems.

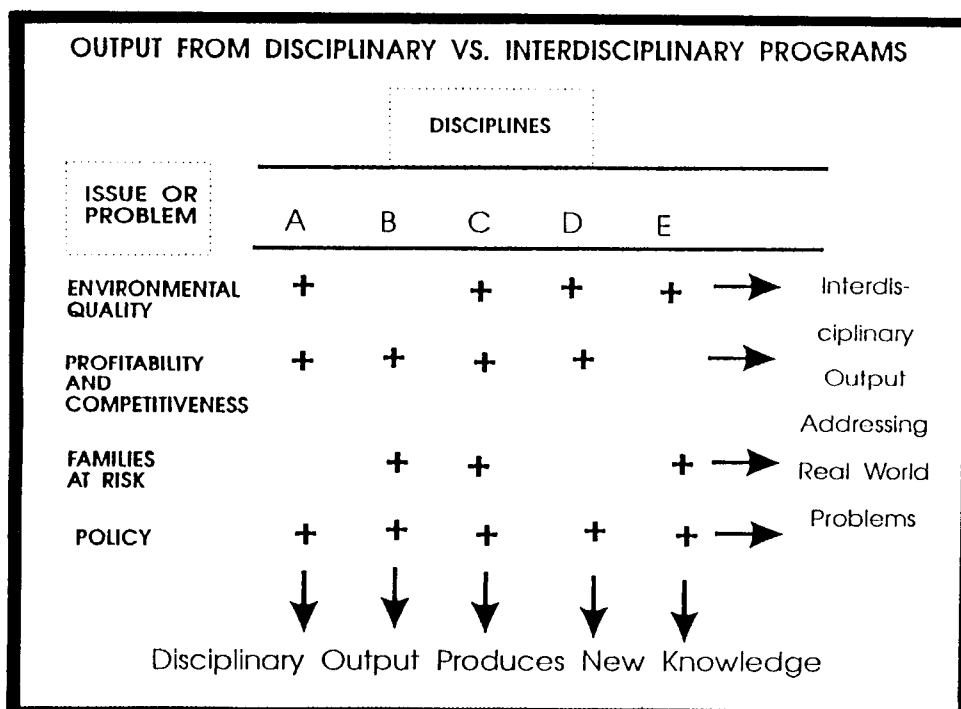


Figure 1. Comparison of outputs from disciplinary and interdisciplinary programs

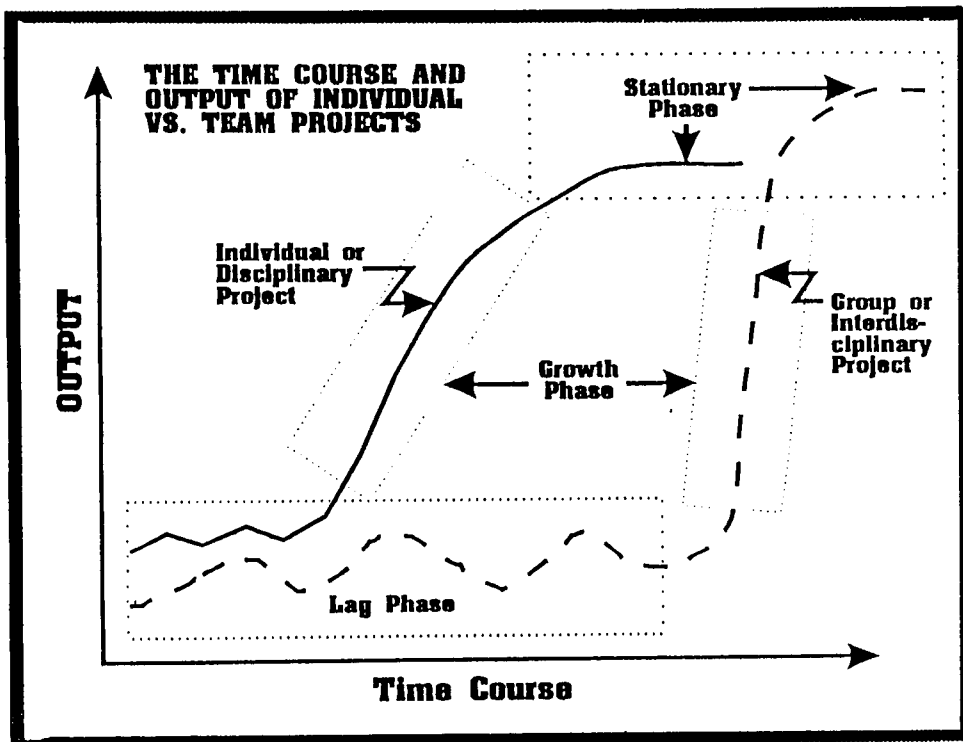


Figure 2. Time course of output for disciplinary and interdisciplinary projects

These examples in teaching, outreach and research plus the discussion of issues related to disciplinary and interdisciplinary projects represents some specific ways of adapting programs to better achieve part of the land-grant mission. I do not believe that this mission can be adequately addressed until we reassess the balance between purely disciplinary programs and those that have more of a mission or problem-solving orientation. Disciplinary programs by themselves cannot in my view, address the expectations for today's land-grant or people's university.

Addressing Some New Challenge and Opportunities

In conclusion, I would like to share some ideas that seem pertinent to how we can strengthen land-grant university programs in addressing their mission in our society today. These are as follows:

1) As institutions we have a need and opportunity to coordinate and cooperate in our programs within states and across state borders better than we have ever done before. The opportunity is provided by interactive telecommunications technology, and austere fiscal conditions provide the need for us to do it.

2) The comprehensive land-grant university has an opportunity through its variety of professional schools and colleges to make a real difference in general education for undergraduates. Our graduates should not only receive a sound liberal education, but they also should gain some understanding of complex societal issues such as health care, food, agriculture and hunger, the environment, science

policy, and global issues such as competitiveness. If our students have not been exposed to the basics for understanding such issues and controversies, we have done them a disservice as citizens. This can be achieved only if professional college faculty become regularly involved in teaching components of the general and liberal education curriculum that must be addressed in a more systematic manner.

3) Institutions need to reevaluate their policies on technology transfer as related to such issues as outreach programs, patents and consulting. As the world has changed, we need to be sure that our policies do not impose penalties upon ourselves for capturing opportunities that otherwise could be missed.

4) Most tenure, workload descriptions and evaluation systems are in need of review. In this age of accountability, the minority of faculty who are inadequately productive should not be allowed to hide behind tenure. Likewise, there is a need in most institutions to more adequately define workload, evaluation and reward systems in the context of teaching, advising, research and outreach responsibilities.

5) Many journals and granting agencies need to reassess their policies in relation to the evaluation of interdisciplinary papers or proposals. In the absence of such change, some unnecessary roadblocks will inhibit highly appropriate kinds of projects that are relevant to societal needs.

6) Our teaching programs need to assess the appropriate role of disciplinary and interdisciplinary courses as

well as individual and group learning opportunities. At this time, our system is heavily oriented toward individual accomplishment and the acquisition of disciplinary knowledge, when much of what is needed in business, government and society is teamwork in addressing system or interdisciplinary issues. At my institution, this has contributed to an increased interest in interdisciplinary graduate majors such as neuroscience and minors in areas such as water resources and building science.

Summary

This paper presents an overview of some expectations and changes that have taken place in many land-grant universities that are contrasted with the original concept of these institutions as the people's university. Examples are drawn from Minnesota to illustrate some impacts of internal and external factors that have changed teaching, research and outreach programs. Examples of specific issues or changes that need to be considered in improving the accountability and effectiveness of today's land-grant university mission are given.

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