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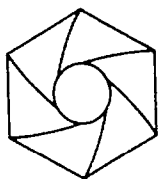
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## ABSTRACT

This report argues that many higher education institutions in metropolitan areas, in order to fulfill their mission of enhancing the utilization of research knowledge, must develop appropriate internal and external bridging mechanisms between scholarship and utilization. It further argues for the development of appropriate adaptations in the preparation, evaluation, and rewards of their faculty. Discussed are the implications inherent in an institutional mission focused on the utilization of knowledge and the principal steps to be taken by an institution wishing to pursue such a goal. The report stresses the importance of internal bridging involving faculty preparation and qualifications as well as paying attention to faculty motivation and commitment in contributing to the institution's mission. Also stressed is the importance of a strong institutional commitment for identifying external bridging needs and supplying appropriate responses, such as in the area of continuing education in a changing job environment and in the admissions process in order to attract more nontraditional students who may be in need of more up-to-date education. The report concludes with the observation that making the utilization of knowledge central to an institution's mission will allow it to move more centrally (and more usefully) into society rather than remain on the periphery. Contains five references. (GLR)

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**Working Paper #8**

**The Mission of Metropolitan Universities  
in the Utilization of Knowledge: A Policy Analysis**

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April 1991

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THE MISSION OF COMPREHENSIVE UNIVERSITIES  
IN THE UTILIZATION OF KNOWLEDGE:  
A POLICY ANALYSIS

by

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Based on a Keynote Speech delivered at the Conference on Mission,  
Bridgewater State College, March 18-19, 1991

## ABSTRACT

In the ecology of knowledge in modern society, efforts to enhance the utilization of knowledge are every bit as essential and as challenging as activities toward the creation of knowledge. An emphasis on the utilization of knowledge provides the defining mission of comprehensive or metropolitan universities. It demands a broadened conception of scholarship, and a high degree of interaction. In order to fulfill their mission, these institutions must develop appropriate internal and external bridging mechanisms, and make appropriate adaptations in the preparation, evaluation, and rewards of their faculty.

Several hundred institutions in this country share a number of characteristics. They are comprehensive in that they provide instruction in a number of professional areas in addition to the arts and sciences, and they are universities in that they offer graduate instruction in many fields. Most of them are post-war creations or transformations of normal schools, and almost all are situated in or near cities, which is why I call them metropolitan universities. And the majority of these institutions has one more common aspect: they are groping to define their mission in terms of what they are rather than what they are not, namely traditional research universities. These remarks address themselves to this definition.

As a starting point for my discussion of the mission of these comprehensive or metropolitan universities, I want to look at what might be called the ecology of knowledge, the complex and many-faceted system of institutions and processes by which knowledge is created, interpreted, distributed, absorbed, and utilized in society. Let me begin with a simplistic metaphor. Imagine a region with great resources of oil or of coal, which at the same time also has great need for these sources of energy throughout its territory, in its many factories and other enterprises, in its government offices and its other public agencies and community organizations, and in many other components of its economic and social fabric. Such a region

would, one can assume, have ways of mining the coal or drilling for the oil. There would be appropriate large installations to dig and sort and clean and crush the coal, and great heaps where the coal could be stored - or whatever one does with coal at the site of origin. And there would be oil wells and rigs and storage tanks and probably refineries and all the other paraphernalia usually associated with oil fields.

But of course it wouldn't stop there. Obviously it is not enough to get the coal or the oil out of the ground, processed, and then stored in some facility. The fuel has got to get to the ultimate consumer. And so the region would surely have, as well, a distribution network, wholesale and retail dissemination, and all kinds of services which would help individual or organizational users to find out what is available, what their energy needs are and with what method and mix of products those needs could best be met, and so forth. And probably there would exist as well a variety of feedback mechanisms by which the producers would find out what was needed at the local level, and what the problems are, and what was working and what was not. All of this elaborate infrastructure would ensure the optimal utilization of the energy source.

Obviously, just digging the coal, or drilling the oil, or for that matter just manufacturing a certain product, or growing certain foods -- all these are just first steps. And our economy

would long ago have come to a grinding halt had we, like every other industrialized nation, not ensured the utilization of the raw material or manufactured product by developing elaborate mechanisms to provide the ultimate consumer with access to what she or he wanted. That seems so obvious as hardly to warrant mention. Yet we have, on the whole, failed to do this with what is emerging in this post-industrial age, in this knowledge-society, as the most important commodity of all: knowledge itself. Of course knowledge is a rather more subtle entity than a lump of coal or a barrel of oil, and to call it a "commodity" might seem overly reductionist. Yet I believe that, as a first step in clarifying the mission of comprehensive universities, the oversimplified metaphor of knowledge as a commodity is useful because it indicates unmet needs in such a clear fashion.

We have a superb system of creating new knowledge. The quality and the quantity of our basic research, in universities and in other research facilities, is second to none and we have not only in absolute terms but also per capita more Nobel laureates than any other country. We are digging the mine and drilling the reservoir of knowledge with enormous effectiveness. And we store this knowledge in tens of thousands of scholarly journals and thousands of books. But what do we do to get that knowledge to those who need it out there, in appropriately aggregated, integrated, interpreted, and adaptable form? Much too little. Our distribution and retailing system for knowledge is

inadequate. We are simply not paying enough attention to ensuring that up-to-date knowledge is available and utilized wherever it is needed.

Of course we have not failed completely. We have an educational system, primary, secondary, and tertiary, which indeed constitutes a distribution system for that precious commodity and helps individuals to acquire and use knowledge. The system, as we all know, is in many ways deeply flawed, particularly at the secondary level, but it also has many remarkable features, not the least of which is the high participation rate of our young people in post-secondary education. However, even if all of our schools and colleges were superb and if all their graduates had all the skills and insights which they, in principle, had an opportunity to acquire, the distribution of knowledge would not be adequate. Post-secondary institutions, and in particular our comprehensive universities, cannot limit their primary emphasis to initial education for young people. Two further dimensions of the knowledge dissemination are of vital importance, and it is the engagement in these dimensions which most clearly characterizes the mission of comprehensive universities.

In the first place, the rate of change not only of technological know-how but also of ideas and paradigms in many social sciences and humanities is so great that knowledge, once



acquired, rapidly becomes obsolete. One hears all kinds of facile oversimplifications, such as the statement that the half life of technological knowledge is now three years. I don't know how one measures these things, but I do know that we all had better keep learning or many of our ideas and understanding will become hopelessly out-of-date and useless. To some extent that has always been true, but there is a new dimension now: not only does change occur more rapidly, but it is also more fundamental. In many fields, the basic theories and paradigms are continuously evolving; methodologies and ways of looking at situations are changing. As was stated in a report issued by the Department of Electrical Engineering and Computer Science at MIT (Bruce et al., 1982) on the need for what they called "Lifelong Cooperative Education,"

"[E]ngineers are faced with the problem of learning, during their professional lives, what new generations of engineering students are currently learning at school....[This includes not only] new specialized applied knowledge and technology...As new ideas become understood, assimilated, and organized into new basic knowledge - and these new fundamentals become part of the regular pre-professional curriculum - the very language and style of engineering changes."

It is difficult and time-consuming to learn these new fundamentals on one's own. For most practitioners, in engineering and in other occupations, evolving insights and changing theories

are best absorbed by some form of structured learning, preferably in the company of peers.

That task constitutes an additional dimension which needs to be added to that of initial education in the "knowledge distribution system." Modern society requires an effective system of continuing education, especially continuing professional education - and although a great deal of that exists, it is on the whole fragmented, unsystematic, and reactive, and the role of higher education very limited. Comprehensive universities have a unique role in developing more coherent, more extensive modes of instruction - but we must do so in new ways and new formats so as to make this instruction both related to and compatible with the occupational demands on the participants.

But there is a further dimension, closely related to but distinguishable from the one just described. Call it technology transfer, call it cooperative extension, call it technical assistance and professional outreach: these are all labels for a wide variety of ways to enhance the capability of business and industry, of government, of community groups, of individuals and of the public at large, to put new knowledge to use. And as we look more closely at this dimension of the ecology of knowledge in modern society, it is time to abandon our basic metaphor of a "distribution system." Nowhere is the image of the interactive university more appropriate than in its involvement in bringing

about the utilization of knowledge. Knowledge is not a passive commodity to be packaged and distributed and bought and applied. Knowledge is shaped and increased in the very process of dissemination and application. Indeed knowledge is transformed as well as newly created by its utilization because that very act in turn generates new questions and creates new insights which feed back into the process of research and discovery. The relationship between basic research and its ultimate application is multifaceted and reciprocal. It requires aggregation, synthesis, and interpretation of new data, adaptation to each unique situation in the real world, feedback with regard to relevance and impact, and ongoing evolution. The entire process is a highly dynamic one, and it is enormously challenging intellectually - perhaps, dare I say it, as much or more than much basic research.

In short, to recapitulate my basic assertion, a modern society must place great emphasis not only on the ongoing creation of knowledge through basic research, but also on the complex task of ensuring the utilization of that knowledge in a highly interactive mode. That task has three overlapping dimensions:

- initial education which prepares individuals to utilize what they learn in their future occupation, as citizens, and as private individuals;
- continuing education in all of its forms, especially that which is intended to maintain the knowledge of individuals in the face of rapid change;

--- modern modes of extension through technical assistance, technology transfer, policy analysis, etc.

For comprehensive universities, the demarcation between all three these tasks is diminishing. The first two are merging as initial education is becoming increasingly intermittent, part - time, and drawn out. The second and third also overlap, because of course the very act of providing technical assistance and the like is a form of continuing education. And all three should have a common focus on the interactive individual who not only has acquired knowledge, but knows how to utilize it. In its formal instruction and in its extension and technical assistance, the interactive university must be guided by Alfred North Whitehead's definition of education:

"education is the acquisition of the art of the utilization of knowledge."

I believe that these three dimensions of ensuring the optimal utilization of knowledge define the mission of the comprehensive universities in this country. And so I repeat my proposition that, just as the defining mission of research universities is to contribute to the creation of knowledge, that of the comprehensive institutions, or, as I would put it, of metropolitan universities, is to enhance the utilization of knowledge.

Many of these institutions are already deeply involved in enhancing the utilization of knowledge by functioning in a highly interactive mode. But I believe that we need to become more explicit about the centrality of that role in the articulation of our mission. We must take an ecological view of knowledge so as to understand the complex and reciprocal relationships between discovery, dissemination, and application, and to recognize that the ongoing creation of new knowledge brings about societal benefits only if we pay equal attention to its effective utilization. By taking that view we make clear, to ourselves and to others, that both creation and enhancing utilization are of equal importance; neither makes sense without the other; and each has its own criteria and measures of quality.

Enhancing the utilization of knowledge is, of necessity, an interactive process, and should, therefore, focus primarily on the needs of the region in which each institution is located. In terms of the three dimensions of the task, this means that comprehensive universities must

- be responsive to the initial and continuing instructional needs of its regional population in all of its diversity;
- focus their professional schools on the preparation and continuing education of effective and well educated practitioners working in the region; and
- be a major intellectual resource for its region beyond

the provision of structured instruction by means of a range of outreach activities such as technical assistance, policy analysis, technology transfer, public information, and the like.

Two points of clarification need to be made: In the first place, no two institutions are alike. The mission allows different mixes of its three dimensions depending on the particular circumstances of each institution. Secondly, just as research universities are, of necessity, also involved in instruction as well as in outreach, so also can one expect that many metropolitan, comprehensive institutions carry on a substantial amount of basic research. The difference between the two categories is not absolute, but one of relative emphasis and priority.

What then are implications of a mission focused on the utilization of knowledge ? What are the principal steps to be taken by an institution wishing to pursue this goal ? I will list three in order of increasing difficulty:

(1) Establishing bridging mechanisms to the outside:

Universities and colleges with a strong focus on the utilization of knowledge need to have institutional structures which provide appropriate channels of communication and interaction with external constituencies. Most comprehensive universities have an

Office of Continuing Education, which is one such mechanism serving to identify external needs, to mobilize appropriate institutional resources, inform and attract potential clients, and provide logistical support. A very similar function is needed if an institution is to be an effective source of expertise and consultation for the public and private enterprises of a region. For these functions one must also assess needs, reach out to make contacts, provide a convenient and visible place for outsiders to approach the institution, and make available a variety of supporting functions. Some of these functions are carried out at many engineering schools, including the one at the University of Massachusetts at Amherst, by an Applied Technology Center which acts not only as a catalyst and bridge but which is itself the locus of much applied research and technical assistance. Universities in several European countries have what are usually called Contact Offices which regularly publish inventories of the areas in which the faculty has expertise and of the equipment and instrumentation which is available, and which also provide the "hotline" for an outsider needing professional assistance.

And, last but not least, increasingly our institutions must modify their most traditional bridging mechanism: the admissions office, so as to reach out not only to the traditional applicant pool in high school, but to relate as well to a great diversity of older individuals not reached in the old-fashioned way.

(2) Establishing bridging mechanism within the institution:

Knowledge can rarely be utilized in neat, disciplinary packages. The situations to which it to be applied are often complex and cut across a range of academic fields. Hence colleges and universities dedicated to the utilization of knowledge must institutionalize procedures, policies, and, in some cases, structures to facilitate multi-disciplinary cooperation in all three dimensions of their task. Many institutions have established problem-oriented centers or institutes. At Umass/Boston we have the New England Resource Center for Higher Education of which I am a part, the John McCormack Institute of Public Affairs, the Urban Harbors Institute, and several other such units which actually serve both as a bridge among internal units as well as a bridge to the outside.

Internal bridges are, also, increasingly needed to broaden the content of initial as well as continuing professional education beyond the confines of a single discipline. Competent practitioners are more than narrow technical specialists - they must understand the social, political, and economic context of their practice and be sensitive to its legal and ethical implications. In both the initial as well as in the continuing education of the effective practitioner, it is no longer sufficient to add a number of unrelated, general education courses to an otherwise narrowly specialized program. We must recognize that the very concept of professional competence has



changed and requires an integration of technical and contextual subjects.

Internal bridging mechanisms are more difficult to implement successfully than external ones, because of the discipline-based, vertical segmentation of our colleges and universities which creates major barriers to the funding and the utilization of faculty , staff and other resources in any activity which cuts across the disciplinary boundaries. But there exist enough successful examples to show that it can be done with the appropriate administrative leadership.

(3) Enabling Faculty to contribute to the mission, and rewarding them for doing so: The most important, and at the same time the most difficult of the steps which need to be taken to pursue the mission of comprehensive universities involve their faculty. After all, the basic activities of an academic institution are carried out by its faculty, and the institution's success and quality stands or falls with the commitment and ability of the faculty. That is true for instruction which helps young students to prepare to be effective practitioners, for continuing education for experienced adults which builds on their experience and helps them to utilize the latest developments, and for all forms of non-instructional outreach, extension and transfer.

For all of these it is necessary or, at the very least, highly desirable that faculty members themselves understand how the subject matter they teach and in which they have expertise can indeed be utilized in actual "real world" situations. Ideally I would like to see a requirement that all faculty members in our institutions have a period of applied work in their discipline or a cognate field before they take on their position, and that they repeat such activity periodically as a condition of continued employment. In any case, I would urge collective action by comprehensive universities with regard to the preparation of future faculty. Substantial pressure is needed on research universities as well as the doctorate-granting comprehensive institutions to review and modify the current professional preparation of future faculty.

But of course it is not enough to focus only on adequate faculty preparation and qualifications: faculty motivation and commitment are also essential, and that, in turn, raises the question of institutional incentives and rewards for contributing to the utilization of knowledge. Obviously we need to find better ways of rewarding innovative and successful teaching; we must do so as well with regard to faculty involvement in extension and outreach. There are two keys to this. One is to recognize, as mentioned earlier in this paper, that the process of moving from the results of basic research to the utilization of knowledge is one which is intellectually very challenging. It is as much an

exercise of scholarship as is basic research. Indeed, I am prepared to make the case that the synthesis and interpretation essential to make knowledge usable comes closer to the Humboldt ideal of "Wissenschaft" than do many of the laboratory measurements and field surveys which make up so much of basic research. In short, rewarding this transformation of knowledge is to reward something difficult as well as worth doing. Insisting on an expanded definition of scholarship as appropriate to metropolitan institution is to increase demands on intellectual quality, not to water them down.

As one among many who have argued for basic revisions in the system of faculty incentives and rewards for many years (cf., e.g., Lynton, 1983; Lynton and Elman, 1987, Chap. 10,) I am very pleased that the issue is gaining increasing attention, particularly through the recent report of Ernest Boyer on Scholarship Reconsidered (Boyer, 1990.) Yet change is slow, in part because as yet we have not paid sufficient attention to ways of evaluating the quality of the expanded forms of scholarship. Essential to evaluation is adequate documentation (Elman and Smock, 1985.) We have difficulty documenting a faculty member's achievement in teaching; we usually do not even bother to document her or his achievements in the transformational process of enhancing the utilization of knowledge because we lump it all under service. No one takes that seriously, hence no one bothers to do much more than to list appropriate activities without

adequate detail. If broader forms and manifestations of scholarship are to be suitably evaluated and rewarded, and each institution must insist on proper documentation.

Such documentation should include not only the outcome of the professional activity, such as a report, but also a description of how and why the work was undertaken, the methods which were used, the context in which it was carried out, the modes of interaction with the potential users of the work, and, if possible, some assessment of eventual utilization and impact. The documentation should be sufficient so as to provide answers to a number of generic evaluative questions enumerated by Sandra Elman and myself as "broadly applicable to all professional activity, from contract research to public information:

1. How complex, difficult, or intricate is the problem or situation to which the work addresses itself? How much skill was needed to relate theory with practice and to transfer knowledge from an abstract setting into a concrete context?
2. Does the work use state-of-the-art knowledge and methodology, the most recent data bases, and other up-to-date components?
3. To what extent are the approaches and techniques utilized original and innovative, to what extent are they perfunctory and repetitive? Do they break new ground, and are they

applicable in other contexts ? By the same token, has the applied work influenced the faculty member's traditional teaching and research pursuits ?

4. Does the work represent a comprehensive and thorough analysis of the problem(s) under inquiry ? Did it take into account all relevant factors in formulating conclusions and recommendations ? Did the analysis identify issues, policy alternatives, and related critical problems of which the client may have been unaware ?

5. Is the work objective in presenting alternative approaches and the relative advantages and disadvantages of each ?"

(Lynton and Elman, op.cit., pp. 158-159)

The challenge for comprehensive universities is great; the potential rewards even more substantial. Making the utilization of knowledge central to their mission will, in turn, allow these institutions to move from the periphery of American higher education to a position of comparable centrality, because society, long before the universities themselves, has come to recognize the crucial importance of this task. Much progress has already been made by many institutions; much more is needed.

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