THE STATE OF RESEARCH ENDEAVORS:
VIEW FROM THE CAMPUS-WIDE LEADERSHIP LEVEL

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The following is a brief summary of some of the points that were discussed at the Merrill Conference.

Merging and Combining Existing Departments into Larger Units

This is a direction that seems to make sense in order to create a critical mass of talent for both teaching and research. A trial effort at KU Medical Center will be initiated this fall by providing a combined curriculum from five basic science Ph.D. programs. This faculty-initiated effort has resulted in a modular curriculum that all new students will be required to take during their first year. The emphasis will be on molecular biology and genetics. In order to bring about any merging of programs requires a "buy-in" by the faculty. This program was unique in that a group of faculty met, organized, and with support from the departmental chairs and administration spent a year in working out the nuts and bolts of the program.

Enhance Research Through the Formation of Private Research Foundations

We accept the basic premise that unless we maintain a strong position with federal and national funding agencies, we will not be successful with the private sector. However, it is possible to build on that foundation by bringing in both private foundations and the commercial business sector, resulting in a stronger research funding base.

In an effort to address this issue, some five years ago KU Medical Center organized a non-profit foundation specifically designated to address research in the private sector. It was organized into three divisions: Grants Management, Clinical Trials and Technology Transfer. The purpose was two-fold, first to develop a Research and Development fund for the faculty along with a means to expedite expenditure of grant funds without going through the state. It was agreed that support for this foundation would not be dependent upon state resources. To date, this has been accomplished and over $300,000 is being returned to the faculty each year through request-for-proposals. It is of interest that the return on these funds has been over 10:1, and the funding agencies have, for the most part, been from the federal side. This strengthens our position and makes us more competitive in the private sector.

Out of over $40 million total extramural research funds at the KU Medical Center, more than $11 million in private grants and contracts are currently managed by the Research Institute. The Technology Transfer Division is growing through the issuing of patents, licensing agreements, and setting up of new companies. As a part of this effort, a small research building has been leased from the KU Endowment Association as a business incubator building. It is currently leased by a company founded and run by one of our faculty members.

Based on our brief experience with research foundations, we believe that each institution needs to be increasingly involved with the private sector as a means to broaden our base and supplement our extramural research pool of funds.

David Shulenburger, Ph.D., Provost
University of Kansas

Being on a panel at the end of this gathering provides me the opportunity to make two observations about universities and to consider how our conversations to date butt up against these observations.

First, universities are idealistic by their very nature. But, during this conference, we have been nothing but pragmatic.

Second, the university is the most conservative of all institutions. Its task is to preserve knowledge as it creates knowledge and, for that reason, its ways are hard to change. Again, our conversations have been about change; thus, the tension that characterizes some of our conversations is to be expected.

We are talking about changing institutions in very pragmatic ways. James Moeser made the following observation: The bigger the task we give ourselves, the higher the probability of failure. Giving ourselves the task of pragmatically changing our institutions is creating a high probability of failure. We want to reflect on two words within these observations, *give ourselves*. Our institutions can continue as they are without addressing the problems that have had our constant attention for the last day and a half. They have coasting power. We are talking about giving ourselves a very large task. A task that need not be taken on. Failure to take it on, of course, will lead to other institutions assuming the challenges or the challenges remaining unassumed. We can choose to coast, but be assured that our route will be downhill.

It is my firm conviction that society will be better off if we do give ourselves these challenges and attempt to alter our institutions.

The need to make changes within the institutions largely arises from three sets of pressures. First, there is the diversion of federal and state resources away from our institutions to other societal needs. We are familiar with losing budget shares to prisons and welfare, and the recent loss of budget shares to the taxpayers as taxes are reduced. Our institutions are, by their nature, investment vehicles for government. It is a great irony. When President Clinton came to office, his goal was to shift the federal budget away from consumption sorts of expenditures toward investment expenditures. When he leaves office, the budget which he and congress have put in place in an effort to eliminate the deficit will be one in which the consumption component is hardly reduced at all, and the investment component dramatically reduced. I do not believe that this failure to invest suits society’s ends, but we have not, through our elected representatives, been able to get government at any level to back away from consumption in favor of investment.

The second force is rapidly changing technology -- especially in the computing and communications area. The irony, of course, is that the rapidly changing technology is a product of basic discoveries made at universities. Changing technology forces change if we are to keep up with society. But, as I will mention later, the changing technology, particularly in the overlap of the computing and communications area, is going to force a change in the nature of one of our major “products” -- instruction.

The third major force we feel is that of competition. Other research universities, of course, are competing for the same dollars for which our research universities compete. The private sector is an increasingly fierce competitor for our dollars. Competition from this sector is not only for research funding, but increasingly for instructional funding. I am struck by our conversations of yesterday regarding the nature of doctoral education and how that has forced additional competition upon us. Only one out of twenty doctoral students ends up at a research university. The other nineteen who work in academe are at institutions dedicated more to instruction than to research. But those doctoral students were trained to do research -- and trained well. That training often results in their converting institutions where they have found employment into versions of research institutions. Former teacher colleges and regional institutions now look more and more like us and compete with us at federal agencies for scarce research funding. In an age in which science requires ever increasing concentrations of dollars in order to be effective, this dispersion of dollars across more and more institutions is dysfunctional.

I suspect we need to revisit how doctoral education is carried out and to train more appropriately the nineteen out of twenty for the task which they are to do. I am not sure how to vary doctoral education, but I do want to point out the irony of our current production method.

University of Kansas Response

In a world with these stresses, institutional agility comes at a premium. We have been about making the University of Kansas more agile in the last several years. Let me give you some of the way in which we have done so.

First, we have just established a private research foundation into which all externally-funded research will be placed. This foundation will give us the flexibility to be entrepreneurial in an environment free of the bureaucratically-based rules which previously governed the expenditure and conduct of research. We will be able to invest and to be clear about the objective nature of that investment in this new vehicle.

Second, we have created a mechanism for managing conflict of interest. This power is absolutely critical in these days in which the form of research endeavor is changing. One cannot discuss technology transfer for very long without dealing with faculty members’ proprietary interests in some of the fruits of their efforts. Conflict of interest rears its head immediately without such a mechanism. It is hopeless to expect the institution to be a natural responder.

Third, flexible work loads for faculty beyond the assistant professor level are now the rule at the institution. We live with the relatively inflexible institution of tenure. While as research institutions, we wish to hire individuals who excel at teaching and research, and through the tenuring process keep only those who do that, the 25-30 years of a career that follow the tenure decision are often years in which one’s abilities change. Through our concept of flexible loads, we endeavor to have those faculty members who are extraordinary in teaching -- and not quite so good at research -- teach a lot more, while freeing up those faculty members who are extraordinary in research, but perhaps not quite as gifted at teaching, to spend more of their time on research. By encouraging individuals to put their effort where their talents are greatest, I think we are likely to both increase the quantity and quality of teaching and research.

Fourth, in a similar vein, this past year the faculty of the university, at the urging of the Regents, established another criterion for dismissal of a tenured faculty member -- that being failure to perform academic duties. In this age in which agility is required, it is not possible for institutions to tolerate the presence of those who don't contribute to our missions in some substantial way. This is particularly true since the abolition of mandatory retirement. Many safeguards are built into our policy statement, such that no faculty member can be dismissed without a full opportunity to improve (we quadrupled our resources available for faculty development when this policy went into place). The message is nonetheless clear. It is critically important that each faculty member be productive. In fact, I suspect that we will see an increase in productivity as a result of this new standard for dismissal, not an increase in the number of faculty members dismissed.

Fifth, we have also increased our emphasis on the quality of instruction. This seems a peculiar item to place in a listing of actions taken to improve a university's research productivity, so let me explain. What the public expects of research universities, among other things, is that we provide high quality undergraduate instruction to their sons and daughters. In return for providing this level of instruction, our Regents and legislators essentially have given us a franchise which also permits us to do research. Failure to perform high quality instruction violates the terms of the franchise and will result in our losing the opportunity to perform the research which we are well prepared to do. Thus, the connection!

Rhetoric is ever important. Given that we are research institutions, we have had to defend to the public why they should send their sons and daughters to us rather than to institutions whose emphasis is solely on instruction. Our answer appropriately has been that we provide the <u>best</u> instruction from those who are really up-to-date in their fields -- by faculty members who are in fact generating the knowledge by performing the research.

Larry Clark observed that he will not be dean of an institution that creates within itself a junior college to provide instruction. I fully agree with this notion, as I think we all do. To do so -- to hire those who aren't involved in the creation of research to teach students -- is to perform a bait-and-switch operation that does not ennoble us. The best and brightest should come to our institutions to learn. We should give them as their instructors faculty members who are creating research and we should endeavor to involve those undergraduates in that research so they leave our institutions with sound educations and a full appreciation for the research process.

Sixth and finally, we have been working on the problem of having resources captured within very small organizational boxes. When one has some seventy departments -- as we do -- it is inevitable that borders will keep resources in some departments that don't fully utilize them, while denying them to places where they could be far better utilized. Our effort has been to reduce the number of organizational boxes, and we have had some modest success at this. I should note that the success we have had has come at significant costs. I do appreciate this conference's focus on organization. It is something that must be changed if we are to be agile enough to face the challenges of the future and thrive. I suspect we have had difficulty with changing organizational boxes partially because we haven't had a strong vision as to how those resources would be better utilized in other organizational formats. The notion put forth here of centers as a repository for resources might well be that better vision.

Our second reason for difficulty in changing organizational boxes is faculty governance. Please don't get me wrong. I am a proponent of faculty governance and have been a practitioner of it myself. I do observe though that faculty governance on our campus and other campuses has not drawn in a representational manner from all faculty. In particular, faculty members who have very heavy research programs and accomplishments are under-represented. This makes it difficult to put into place some of the ideas that are expressed here about how the university ought to be organized. I would urge research faculty to take the time to be involved in university governance or else the interests expressed here aren't likely to be fully represented.

Four Concerns that Must be Dealt With

1. In arguing for resources for the university, we repeatedly have played the economic development card. I believe that our institutions have a role in economic development. Indeed, I suspect the Great Plains region would be far less prosperous than it is were it not for our presence. We can do even more in the future to make a difference.

   Our rhetoric is heard both externally and internally. However, some of the internal constituents don't particularly appreciate the economic development rhetoric because it is difficult for them to understand how it applies to them. Those individuals from the humanities, and some of the social sciences, and indeed some scientists who do the most basic research, have difficulty in creating an immediate connection between what they do and economic development. Brian Foster warned us to be careful not to dishonor that which we do in the process of attempting to do research. I fear that these internal audiences have felt that we have dishonored them as we played this economic development card.

   This feeling is baseless. I think we all believe that the only way we can make progress is for the whole individual to be developed. Liberal arts-based education prepares individuals for the world better than a narrow technical education. Thus, in making the economic development argument for additional resources, we need to stress repeatedly that we are working on the whole person, and the whole society, and that our colleagues in the humanities, social sciences, and basic research areas are essential to a sound economic development impact from the institution.

2. The virtual university. Peter Drucker, in a recent issues of <u>Forbes</u> magazine, said that the university as we know it -- as a residential-based experience -- would not exist in forty years. His basis was his conviction that electronic-delivery of what we do would make campuses superfluous. He particularly had in mind the delivery of instruction to the desk top -- the Internet. The Western Governors' Association has vigorously pursued the development of the virtual university. Phoenix University is thriving using this

mechanism for delivery and many private corporations are delivering massive amounts of education to their own employees by this inexpensive medium.

How does this virtual university fit in a catalog of items which threaten the research enterprise? The answer to that is simple. The instruction most likely to be captured by the virtual university is mass instruction. And mass instruction occurs primarily at the freshman and sophomore level. By its very nature, creation of a course for the web requires immense up-front preparation. Once that preparation has been put in, though, it can be delivered to large numbers of students quite inexpensively. A recent conference I attended in North Carolina had a presenter claiming that web-based instruction, could be delivered to large numbers of students profitably for $40 per course.

If we lose freshman and sophomore instruction in a significant fraction to the virtual university -- whether to private or public vendors is irrelevant -- then we lose a major subsidy for upper-division and graduate instruction and for the research that we do. Critical underpinning of our economic structure will be gone.

I am not arguing that we should mount an offensive to keep the virtual university from succeeding. To do so would be folly. It is showing success now because it serves individuals better than they are currently served by us. Those individuals who are geographically distant are served well by desktop instruction, as are those individuals whose busy work lives make it impossible for them to get to our classes at the time they are offered. Virtual instruction is for them. In addition, I am confident that virtual instruction can be a far better medium for those with learning disabilities. You can manipulate the virtual instruction to compensate for disabilities far better than you can in the classroom environment. Thus, we must continue to deepen our involvement in virtual instruction.

At the same time, we have to increase the value that we offer on campus if we are to continue to have face-to-face instruction occurring there and if individuals are going to be persuaded to pay more for that face-to-face instruction than virtual instruction costs. When I discussed the peculiar nature of instruction in a research university, I gave the hint of how we do this. We must have research faculty members in front of the classrooms. We must have undergraduates involved with faculty in research. We must create a learning environment on campuses that is absolutely seductive such that the best and the brightest will want to come to us.

3. The scholarly communications problem. In the last several years, our ability to afford the knowledge which our faculty generate has deteriorated sharply. Private publishers have bought from professional associations the journals that they publish and have raised the prices of those journals to absolutely unconscionable levels. As an example, Elsevier recently acquired the <u>Lexus-Nexus</u> system from Meade. They have just informed us that over the next several year, they will raise the cost of <u>Lexus-Nexus</u> from the current $170 per port to $3,700 per port. This is extreme, but the inflation of library costs for all sources of information is such that we can’t cope. Every university is cutting back on the number of journals and books that it is buying.

Access to the knowledge we create is obviously critical to the research effort. We can't know where to go in the future if we don't know what succeeded in the past. This access difficulty occurs because we have given to faculty members 100% ownership of the knowledge which they create and choose to publish in journals or in books. Publishers realize this, and have demanded that faculty members turn over to them this 100% ownership right if they are to publish the knowledge that they create. Faculty members are in quite a bind. Promotion and tenure rules insist that the research be published in distinguished outlets, so faculty members have no choice except to sign over 100% rights to the literature. This gives the journal publishers a monopoly that they are now exploiting.

We must find some way to retain a residual right for use of this knowledge created by our faculty within the academy. It is simply wrong for us to bear the burden of the costs of the knowledge and then to pay for that knowledge a second time when we wish to access it. There are at least two possible solutions. One is for professional associations to reclaim the rights to their journals. Many are doing so and are publishing those journals in electronic forms at rates that aren't astronomical. The American Research Library Association is actively involved in promoting the generation of electronically-produced journals in an effort to combat this inflation.

Another possibility is for universities to somehow join together and to create an intellectual property management organization that would hold in common for all of academe the right to the knowledge we generate. Ultimately, faculty members might then assign the right to a journal to publish an article, but retain for all of academe the right to use that knowledge on a royalty-free basis. The road to creating such a property rights management organization is going to be difficult because the private publishers have huge property rights invested in the current situation. They will resist it, but ultimately the current system is going to crumble by greed if we don't create such a common property management system for our intellectual property.

4. Graduate study. We must face the question of quantity versus quality. One of the participants in this conference was very candid. The participant said that the brightest undergraduates at his school were more capable than the average individual in the graduate programs. What is unique about this statement is its candor. I suspect that all of us could say that about a significant number of graduate programs at our institutions.

Again, I want to emphasize the power of our rhetoric. We have played the economic development card and, having played that card, we will be measured the way other entities are measured. One criterion will be efficiency. If we are producing graduate students in excess of the numbers who can be placed in their fields, then we fail this efficiency criterion and we will be increasingly put upon by external forces to correct the situation.

We have justified our graduate student numbers by unproductive criteria in the past. Some have been justified by the need to have graduate students to staff labs. Some have been justified by the need to have a critical mass of graduate students so that each faculty member could have graduate students with whom to work. Promotion and tenure systems sometimes demanded such an environment. Still other numbers of graduate students were justified by the need to have graduate teaching assistants to teach undergraduates. At the University of Kansas, we now have a graduate teaching assistants union, born in part of this latter motivation. Having cheap labor to teach undergraduate courses is not a good justification for bringing individuals into these very expensive programs.

I suggest that we will have to treat quite seriously the question of market demand as we determine the size of graduate programs in the future. Doing so ought to give us the opportunity to use the needs of society as a criterion for selection. We will need to select the best and brightest, including those who must be represented in academe if we are to serve society. I am particularly mindful that we are undergoing an enormous demographic change that must play a role in the selection of graduate students. Ultimately, whatever criteria we use to select students, we must be mindful of market demand.

I have only addressed four challenges facing us. There are many, many more, but these are the ones that were on my mind today and haven't been discussed by others.