

Leadership & Management of Academic Research in the 21st Century

Gerald E. Loeb, M.D., Professor of Biomedical Engineering, USC

DRAFT FOR DISCUSSION Sept. 21, 2005

ABSTRACT: Grant agencies are increasingly spending their “big science” dollars through academic center and program grants and institutes rather than on individual, investigator initiated projects. The faculty “rainmakers” who bring in and manage such grants thereby have power and responsibilities that often exceed those of their nominal academic bosses (department heads and deans). Deans are under pressure to identify and recruit potential rainmakers, potentially at the risk of the educational mission of the organizations they lead. The rainmaker’s faculty colleagues are under pressure to collaborate as co-investigators, potentially at the risk of their own career tracks. There are compelling reasons for society to fund big science in this way, so the university needs to accommodate this new way of doing business gracefully and to motivate and train its faculty and administrators to perform enthusiastically and effectively in these various new roles.

Parallel Structures

The exponential growth of externally funded research in academia has reached the point where it is forcing a reorganization of the traditional educational institutions that have tried to absorb this activity. Key new components such as massive center grants and endowed research institutes have been added to academia without displacing the old structure of independent investigators and faculty departments—yet. As funding inevitably level off, the transition will become more obvious and potentially divisive. Universities need to recognize these changes and their motivation and to develop their personnel to perform successfully and enthusiastically in new roles.

The New Way

The driving force behind this explosive growth has been society’s realization that academic research can and must be translated into economic wealth and social well-being. But if it is important enough to spend this much money, then it is at least as important to spend it effectively. The traditional mechanisms of investigator-initiated research reviewed one piece at a time by ad hoc committees of peers is simply too haphazard to manage the large, coordinated attacks coming to be known as “grand challenges”. Grant review committees used to be composed of the great minds and visionary leaders of each field, but the explosion of grant applications has made that impractical. They are increasingly composed of modest researchers with provincial and often self-protective instincts. Letting government bureaucrats direct research is even less likely to identify great ideas that are both innovative and feasible. So increasingly, large amounts of money are being given to leading researchers in academia on the basis of their track records of productivity and with the power to allocate the funds dynamically among large numbers of co-investigators, fellows and research tactics.

The New Careers

Turning individual faculty into hierarchical, self-directed, goal-oriented teams is anathema to the egalitarian and “curiosity driven” traditions of academic research. It requires a few faculty to become “stars” with money and power that is derived and controlled outside the parallel pedagogical hierarchy of department heads and deans. It requires those deans and department heads to identify and recruit the most promising of those stars from a vast constellation of rising young faculty and potentially (but not necessarily) hot new fields. It requires large numbers of existing faculty to contribute their vital skills to team efforts without jeopardizing their careers.

Visionary Leaders

If universities are going to preserve the pedagogical hierarchy as a system for recruiting and appointing faculty (as seems likely), then how can they best perform this task in the new university? The “best” provosts, deans and department heads are already trying to think strategically about new hires who will be stars in the new system, but this can lead to conflicts with departmental faculty who are rightfully concerned with the *raison d’etre* of the university in the first place—teaching. Those same faculty (and the department heads and deans often drawn from their ranks) are not necessarily broad enough in their knowledge base or personal contacts to identify the big opportunities and choose wisely. The administrative skills most likely to lead to advancement have no necessary correlation with the skills of visionary leaders. Furthermore, it is difficult to think strategically while preoccupied with the details of keeping the pedagogical enterprise running smoothly.

Academia might do well to look at the leadership practices of great companies. Great CEOs usually don’t just rise through the ranks by chance. The best companies identify executive talent early and structure assignments and opportunities to develop it for the future. Each successive promotion comes with specialized training and regular performance reviews. It would be unthinkable to promote someone from a lab manager to vice-president of research and development without executive training. In academia, department heads, deans and institute directors need only to endure mandatory training on the use of a procurement card and avoiding sexual harassment. It would be unthinkable to waste the time of a senior executive in industry with administrative details and secretarial chores that could be performed by support staff; academic positions often come with no supporting personal staff beyond bureaucratic functionaries.

In the new ways of academia, deans and department heads must be trained and empowered to think broadly and network widely in search of themes and recruiting opportunities that build on the strengths and strategic directions of their home institutions. These activities are fundamentally different from the narrow expertise and focused effort for which these leaders were originally appointed as faculty. Simply promoting faculty on the basis of their success in those narrow roles is a prime example of what came to be known in the 1970s as “The Peter Principle.” It is probably essential to select academic leaders from those who have demonstrated personal competence and credibility in the primary missions of the university, but they must be selected on the basis of very different and mostly latent talents that then need substantial nurturing.

Brilliant Rainmakers

Increasingly, the most successful faculty researchers aspire not to department headships and deanships but to “star” status as directors of centers and institutes that they essentially create for themselves by entrepreneurial grantsmanship. Academia is now completely addicted to this source of funding for trainees, faculty salary support and overhead expenses, so the rainmakers can negotiate for freedom and perquisites unavailable to their nominal superiors in the pedagogical hierarchy.

The rainmaker can afford to be narrow and deep in scientific expertise, but he or she must have certain “people” skills to inspire collaborators to contribute. Some of this is likely to come from nature, but much can be done by nurture. Again, industry is ahead of academia in providing its rising stars with formal training in techniques for recruiting and managing teams, drafting budgets and schedules, and handling various crises. This is ironic, because most universities have whole schools of business that teach these very subjects to students headed for industry.

The university’s tradition of democracy and individual initiative makes it vulnerable to poseurs and politics. Many faculty believe themselves to be brilliant and deserving of the opportunity to be stars; not all are. Their research is often sufficiently arcane that the university’s leadership lacks expertise to judge it independently. Large center and group grants usually require strong commitments from the university leadership and often have rules limiting the number of

applications from a single institution. Thus, the leadership must pick which would-be stars to back with little useful information. Ironically, the rank and file coinvestigators who will need to contribute to the proposal usually are in the best position to know which stars they should hitch their wagons to and which to avoid, but they are rarely asked. If teamwork in large centers and grants is really to be the new way of doing business in academia, there must be a much more transparent system for nominating rainmakers than is now in operation.

Proficient and Enthusiastic Co-Investigators

Rainmakers spend much of their time writing grants and speaking at scientific meetings, so someone else actually has to do the research. As the sophistication of the science and the scope of the research increases, responsibility necessarily has shifted from graduate students to post-doctoral fellows to junior and not-so-junior faculty. The reputation and skills of these co-investigators are essential to the viability of the big center grant proposal, but by choice or chance they are not the Principal Investigator who will get much of the credit. Somehow they must be rewarded for their efforts in the short run and protected in their careers if they do not progress to rainmakers (most will not, many by choice). While it is understandable that university leaders want to recruit and train as many rainmakers as possible, making the rest of the faculty feel like losers will lead to disaster. Disgruntled and paranoid faculty are unlikely to be enthusiastic co-investigators. They are not going to provide attractive role models to induce the best and brightest of their students to go into academic research.

At the very least, the appointment-promotions-tenure process needs to consider activities for which the candidate is not the P.I. The budgets of center and group grants can and must be subdivided into their constituent projects so that co-P.I.s are credited for the activity that they perform and manage. Contributions to multi-authored papers need to be assessed meaningfully, not based on first/last author assumptions. Particular attention must be paid to motivating Co-P.I.s such as clinicians, who are often necessary participants on large biomedical projects but increasingly disenfranchised from leading such projects and discouraged by the revenue-based reward systems of clinical departments.

Integration with Education

Education is the academic mission that is most vulnerable to an excessive focus on rainmakers. Much has been written about this but little has been done. As an increasing percentage of our faculty owe their primary allegiance to non-departmental entities, this conflict will only intensify. Many of these research-focused faculty would probably be happy to contribute lectures in their fields, but the accounting and attribution of team-teaching efforts is currently just as inadequate and unfair as the accounting of research grants. The educational mission is one of the few opportunities to bridge the growing chasm between the faculty who teach and the faculty who do research. The university must aggressively pursue opportunities to eliminate obstacles and encourage multidisciplinary and team teaching.

Investment

Universities have two main streams of revenue: tuition and research grants. They must apportion their investment of resources to maximize each without jeopardizing the other. We are now in a phase where investing in the research infrastructure of centers and institutes is yielding large and immediate returns. Research reputation and grant income have much shorter time constants than teaching reputation and tuition income. If we reward deans and provosts for their visionary leadership in recruiting rainmakers, we shouldn't be surprised if they divert resources from the educational mission to do so. Specific mechanisms need to be put in place to assure an equitable distribution of investment. To keep these commitments from being honored in the breach, it will be critical to convince all those stars and leaders that the long-term health of their home institution and its core academic departments is actually as important as their short-term interests.