All Things in Moderation—Please!

Chris Sorensen
University Distinguished Professor, Physics
Kansas State University

To find financial support beyond the traditional public sources of state legislatures and tuition, public universities have increasingly looked to alternative sources in the private sector, most notably industrial and philanthropic. The primary driver of this privatization of our public universities is money, the flux of commerce. However, other benefits can be perceived, including academe's engagement of a broader community, matching the roles of the university more directly to the needs of society, and a general enhancement of opportunity that often comes with any new venture. These are all positive factors that bode well for this new tack. But with any new venture, some caution is warranted and hence an assessment of what consequences might ensue is in order. I will attempt to foresee some of the more obvious consequences and describe their ramifications; essentially in this text I will ask, "What could go wrong?"

In the late 18th century, electrical phenomena were little more than parlor games for the well to do. A few scientists, including Benjamin Franklin, saw electricity as a serious and mysterious natural phenomenon worthy of experimentation. No practical application could be seen and the primary reason for its study was a simple curiosity and desire to understand Nature. These humble researches led deeper and deeper throughout the 19th century, until by the beginning of the 20th century, electricity (and all it entails—an understanding of light, electronics, radio and TV) was poised to become the single most important technological factor of our civilization.

The rise of electricity is an example of fundamental, curiosity-based research that eventually led to great practical application. The history of science and technology is replete with marvelous examples: Indeed the phrase "science and technology" implies this fertile synergy. Also, practical application is not the only consequence of curiosity-based research. Consider the work of Galileo, Brahe, Kepler, and finally Newton to understand motion, gravity, and the eventual explanation of the orbits of the planets. This work not only found great application, but it changed the way we see ourselves. We are no

longer at the center of the universe, but on a small, insignificant, but wonderful, planet near a common ordinary star, one of billions.

These observations led me to ask a series of questions: At a university controlled by private funds, what research will be pursued? Will the practical needs of business and industry, that could be supplying a major fraction of support, shift the balance between fundamental and applied research and too heavily favor the latter? At a university controlled by private funds, how will we measure success?

Already, I believe, too much emphasis is placed on monetary measures. When the university measures its research success, the first, and often only, yardstick is calibrated in dollars. When we evaluate young faculty for tenure, we ask how much grant support has been won. Certainly grants indicate peer acknowledgement that one's research is worth investment. But very often grand ideas remain long in the incubator and find slow recognition by the mainstream. As always, broadly based parameters, wisely considered, are the best ways to measure success, not the single "bottom line" measures often used in private business.

Another characteristic of business and industrial needs is problem solving for today. Rarely does the private sector have the luxury to wait on a good thing because if they aren't making money today, they will be gone tomorrow. Hence their support most often, and rightfully, is for today, not tomorrow. Yet society needs to plan for tomorrow too and here the fundamental, curiosity-based research makes its impact. The public university has a duty to contribute to society's well being for both today and the future.

At a university controlled by private funds, who owns the research results? Will our students be able to defend publicly their theses? Will researchers be allowed to publish and thereby disseminate their results? When they travel to meetings, will they be able to discuss in a free and open dialogue their work with other researchers? Or will this dialogue between scholars be suppressed for the private needs of the donor?

How will the research directions be decided at a university controlled by private funds? Heavy funding in a particular area can entice scholars to that area, perhaps without regard to other areas that while important, are not well funded. This trend is already present at the NSF, which has in the past several years been calling for research in programmatic areas that it considers significant. No doubt the directions NSF chooses are based on judicious use of panel suggestions, but such an approach causes the entire scientific academy to chase the same goal and hence diversity is stymied. Heavy pursuit of the industrial moneys that most often support applied research today will give scholars less time for long-term fundamental studies that lay the foundation of tomorrow.

I also look the proverbial gift horse in the mouth and warn against philanthropic donations. As an example, the Kansas State University physics department has no astronomers currently on staff nor plans to hire. Suppose a donor were to come to us

with significant money to start an endowed chair in astronomy. What sounds great has possible ramifications. If the endowment is not large enough, the department might try to leverage the endowment money to gain extra university money to create the position for an astronomer. But the university has a long memory and very likely when the department in the following year or so tries to hire in another area, one consistent with their long term plan, they won't be able to because the university has already given the resources for the astronomy position. Another scenario could be that the endowment is large enough and no commitment is drawn from the university. But now we have an astronomer and soon he or she will grow lonely and want the department to hire another one or two or many. These positions come at the expense of hires in other areas that had been the original plan. We find that the department now has an astronomy group when in fact it had had other plans.

Most research supported by the private sector will involve engineering and the applied sciences, including medicine. The arts, humanities, and social sciences will receive much less private support, causing what I call the "door knob effect." When one looks into a shiny brass convex door knob, one sees one's face out of proportion, with accentuated nose and eyes and diminished chin, ears, and forehead. So too will the imbalance in funding distort the university's face, resulting in accentuated applied sciences but other areas relatively diminished, especially the arts and humanities.

At a university controlled by private money will our relationship with students change? Will we take a business model and treat our students like clients? Doctors and lawyers have clients, but it seems to me that teachers have students and that is a different relationship. Students are trained. Students require mentoring and guidance. Stick a toothpick in a student; it will come out wet. Put her or him back in the oven; they are not done yet.

Finally, at a university controlled by private money what will the mindset of the professors be? Will they be visionary scholars or intellectual guns for hire? Will they be driven by a passion to understand and create or by the bottom line? I think that most of us in the academy are here for the former reasons rather than the latter. And indeed where else but the academy can people with such motives find a livelihood? As for scientists, I can quote Holton and Brush[1] who wrote:

> "To this day many scientists would probably reject the ever-present lure of increased standards of living in uncreative positions, and instead follow their chosen work without restrictions, although with relatively few material rewards."

So what are we to do? Deny the benefits of increased funding from private sources, both business related and philanthropic? No! We should take full advantage of them. But universities must remain independent and autonomous institutions, so we must use these resources in a manner that does not compromise the fundamental mission. And what is that fundamental

mission? It is to establish an environment where scholars can create new knowledge and from their perspective as scholars teach others to be successful citizens in our civilization.

1. G. Holton and S. G. Brush, *Physics, the Human Adventure: From Copernicus to Einstein and Beyond,* Rutgers University Press, New Brunswick, NJ, 2001.