

Thoughts on 2030

I. The only virtue of choosing such a far horizon for strategic planning is to force us to look beyond current problems and admit that we cannot imagine today how different the world will look by 2030. If we think back to how the university has changed since 1984—when we just adopted the first PCs on campus, before there was any internet, when campus activists were busy protesting the U.S.-sponsored wars in Central America, when no one had yet heard of AIDS or global warming—it is clear that the future for which we must prepare is highly uncertain.

While there is a certain temptation to think of the key challenges for the future as developing new technologies—for carbon sequestration, fighting cancer and extending human life, cleaning up our oceans, and creating new products—many of the gravest and enduring problems of the emerging global society are not scientific-technological, but social. War and violence are the most obvious of these, but poverty, crime, and corruption come close behind. And, if we believe that human nature in fact changes quite slowly, then issues of (individual and collective) love and honor, power and greed, good and evil, horror and beauty will also be critical issues in the university of the future. At a minimum, we will need many diverse kinds of knowledge in 2030, not just new and better technology.

II. There seems to be a common assumption that rates of technological change and globalization are accelerating, but so far we have not said much about the transformations in research and higher education already underway. Let me suggest five trends that seem likely to continue in the next two-three decades (and invite debate on any of these):

A. Compared to the Boulder campus of 1950 or the campus I encountered when I arrived in the late 1970s, faculty research is ever more specialized, even within the conventional disciplines. The cutting edges of those disciplines may or may not be intelligible to other members of the discipline. One need only serve on the Committee on Research and Creative Work to appreciate how difficult it is for CU researchers—in the sciences or humanities—to communicate to other faculty what it is that they really do. Generalists and integrators are rare creatures. I suspect that I am not atypical in rarely talking to my Political Science colleagues about my research; my closest research colleagues are an international community connected by modern information technology. In contrast to Dan Baker's wonderful image of the Google cafeteria, most of my colleagues have long since stopped going to lunch together. Most faculty eat on the run, sitting in front of their computers.

B. In contrast to the traditional notion of a faculty member spending his/her career at one or two universities, the incoming generation expects to be mobile, even if that mobility may in fact be slowed by family considerations, age, or attachment to place. Last year, the Political Science department debated a policy on faculty retentions. While older faculty split over whether the limit should be one or two retention raises over a given time period, the consensus of the junior faculty was that there should be no limits. The trend toward the marketization of academic employment seems likely to continue, which does not augur well for a historically under-funded institution.

C. When I first arrived on the Boulder campus, we assumed that education occurred in the

classroom and that research occurred in the library, laboratories, and faculty offices. As Willem Van Vliet noted at last week's meeting, we now understand that lots of education happens outside of the classroom and that lots of knowledge production occurs outside of the lab and the faculty office. Nevertheless, the idea of a "University Without Walls" remains mostly an aspiration. It is frankly difficult to get people from the non-academic world—especially people without PhD's-- into our classes; it is difficult to get our classes out into the world beyond Boulder.

D. To the regret of humanists as well as scientists, there is already a perceptible demand for greater accountability for our research dollars. From our perspective, the rapid growth of externally funded research at CU over the last thirty years is a boon and living proof of our research excellence. From the fiscal perspective, those same numbers mean that someone is paying a lot more to fund our work. While we point to the increasing numbers of peer-reviewed articles (and occasional inventions) our faculty produce, Congress and state legislators increasingly want to know how our research and creative work contributes to something other than the drive to be "a top ten or top twenty department." Particularly in the social sciences and humanities, justifying that 40% of our work and pay devoted to research to the citizens of Colorado is not simply a public relations problem. One of the challenges of the future will be how to meet external demands for "relevance" without losing our capacity for self-directed research with no immediate practical application.

E. Finally, while many members of the public and more than a few legislators see higher education as "bloated", with "fat" that can be cut, so that we can do more with less, I think that individually and collectively, the Boulder campus has reached the end of that road. Most non-research active faculty have been retired and replaced by younger, productive faculty. With the exception of nights and weekends, space is stretched to the limit; deferred maintenance at UCB now exceeds \$100 million dollars; and even minor growth is going to require expensive upgrades in physical infrastructure and systems. At the individual level, faculty could teach more students; they could write more articles and seek more grants; they could do more service for the community outside the campus. But they can no longer do more of any of these things without doing less of something else.

III. In thinking about how we plan for a fundamentally uncertain and contingent future, fortunately we are only one of many universities and other organizations trying to think ahead, rather than simply repeat what we have done in the past. Universities are not business corporations, but neither are we so unique that we should ignore the lessons learned from the efforts of other types of organizations to achieve excellence in a rapidly changing and resource-constrained environment. I'm sure that everyone has his/her list of what those lessons are and I think we should compile them and debate their relevance to the future of CU. For what it's worth, here's my list:

A. **Be adaptable and flexible.** Given the inherent uncertainties about the future, trying to pick long-term winners and losers in the research enterprise will inevitably be doomed by our inability to imagine how different the future will be. (Think about the corporations that were dominant in 1984. Microsoft was something we knew only as MS-DOS. Google was not yet even imagined.)

B. Identify core competencies that can be brought to bear on new problems/products. For example, in our research institutes CU-Boulder has developed highly effective models of interdisciplinary scientific work. At least in my experience, we have not yet figured out how to extend those models to include the social sciences or normative issues in order to address issues like sustainable energy or climate change. Nor have we done very much to integrate those interdisciplinary models into the teaching side of the enterprise. Likewise, we have competencies in both conventional and unconventional teaching (e.g. science education and engineering education), which we have not figured out how to employ effectively outside of the classroom. A woefully high percentage of our teaching still consists of one professor in front of the same group of students for a fixed number of hours per semester.

C. Diversify your investments. While it is clear that we cannot be excellent at everything at UCB, in my experience there is no consensus on what to eliminate or what not to fund. If we think of faculty hires and buildings as long-term investments, then logically we need a diversified investment portfolio, with some combination of stable, proven investments and other riskier but potentially more profitable investments. No reasonable investment counselor would recommend putting all of our investments for 2030 in Google and Microsoft.

D. Experiment and evaluate. Investments in research excellence are similar to corporate investments in that they are uncertain bets about the ability of current and future members of groups of people working together to produce something that future generations will value. From the perspective of 2007, it looks like the question is how to choose who has the best chance to be the Google of 2030. From the perspective of 2030, the question looks more like how to design processes of innovation, experimentation, and evaluation that will produce outcomes like Google, rather than [name your favorite Boulder restaurant that is no longer in business].

IV. So, what are the obstacles to doing all those things to become the model research university of the future?

1. The standard answer is resources: more space, more faculty, more graduate student funding, better salaries, more startup funds, and [add your favorite items here]. The truth is that CU-Boulder has been chronically under-funded for years, even through periods of rapid economic growth in the state. Colorado is now the 7th wealthiest state in the U.S. in per capita income, but its funding for higher education is among the worst in the nation. While it is useful to plan for what we could become with higher levels of funding, we also need to plan for a steady state resource scenario. On the resource side, even in the best case scenario, more state funding or more private giving will be no panacea. Multiple revenue streams will be required to offset the inevitable instability in any single one of those streams. Smart planning will in fact provide for lean years as well as fat years, declining or steady resources, as well as enhanced revenues.

2. As many participants in last week's session said quite eloquently, the organizational structure of the campus is perhaps as big a hindrance as the lack of resources. Team-teaching, integration of research and technology, teaching/learning across campuses, going off campus, shifting resources from A to B, and [add your favorite examples here] are just the beginnings of a long list of things that people would like to do, with or without more resources. In fact, all of these things are frustratingly hard to do, because of entrenched rules about credit hours, teaching loads,

ICR splits, tenure/promotion standards, annual/career merit procedures, faculty rosters, etc. The boundaries between departments, divisions, colleges, and schools are as real, if not more impermeable than the boundaries between nations. Illegal immigration happens in academia too, but most often gets punished, particularly when the immigrants cross boundaries between units with budgetary and/or tenure/evaluation frontiers.

3. Gilbert White, arguably CU's most distinguished social scientist, was once asked by another university to review for them the available models for organizing a new environmental program. He reported back that he could find very little basis for arguing that one organizational structure worked better than any other. Rather, he said, what successful environmental programs had in common was a core of 5-8 faculty members really dedicated to working together to make the enterprise succeed, and administrators who understood that their role was to make sure that they didn't get in the way. In my experience, over the longer term--i.e. longer than any individual UCB administrator--the administrative culture at UCB is more prone to get in the way, rather than the reverse, except perhaps when the proposal promises to bring in major external funding.

4. Contrary to White's emphasis on faculty collaboration and what Dan saw as the physical and social structuring of Google to facilitate interaction, my sense--at least on the part of campus that I know--is that scholarship remains a largely individual enterprise, or more realistically an enterprise conducted by individual faculty members with their graduate students and colleagues around the world. I think our best institutes and centers like the Center for the American West have figured out how to overcome that ingrained academic individualism. Part of me, particularly the humanist in me, wants to be sure that we preserve spaces for individuals, even eccentrics and outcasts, in the university of future. But my fear is that too often academic individualism becomes an excuse for not talking to anyone outside our particular areas of expertise. Most of the departments I encountered in three years of program review still operated as if an excellent department was nothing more than a collection of individuals with excellent publication/grant records.

5. In part because CU has historically been underfunded, a very high proportion of its real resources, especially its space and people resources, are tied up in existing programs and existing units. As Graham Oddie argued last week, some of these are core disciplines without which we cannot truly be a university--philosophy, history, political science, chemistry, math, physics, and [name your department] just to mention a few. Nevertheless, when the campus has to make a major effort to create 5 new faculty positions for a new A&S initiative in globalization, something is wrong. The standard academic answer is that we need more resources to do more. Both corporations and other organizations know that the real answer is that the flexibility to deploy new resources to new purposes only comes from deploying those resources away from some existing purpose. (See the attached article by a distinguished U.S. military analyst, particularly his analysis of strategic planning by the Royal Navy in the late 1800s.) All of us fear that the next new administrator will arrive with his/her top-down scheme for where to invest/innovate or, even worse, his/her schemes for what to cut to finance his/her pet project. To my knowledge, none of us have figured out how to devise bottom-up methods for terminating existing programs, within our units or across units, so that we have some margin for new investments. We will never be fast or flexible enough to keep up with the future if our idea of change continues to be not replacing the professor who devoted his/her research and teaching

career to X with someone else who does X or maybe X+1. Terminating existing old and relatively unproductive investments in lower priority needs will require more flexibility in career patterns, rostering, and workloads. Greater mobility in faculty careers might facilitate reallocation through turnover. But we are likely to have to give up the current notion that the person we hire this spring could/should spend the next 35 years researching Hegel, the Latin American military, or a certain class of polymers.

Conclusion: Changing the Metaphor for 2030

Perhaps because I was on sabbatical last fall, I was somewhat taken aback by the image of “Flagship 2030”. To me a ship, even a flagship, suggests a fixed group of sailors, officers and crew, in a physically enclosed space navigating in an unforgiving, if not hostile environment. If CU-Boulder is to be a center of excellence in 2030—in that sense a flagship—I think we will have to be quite unlike a ship at sea.

First, we must have a much more fluid sense of who the participants are in the enterprise, not just tenure-track faculty and undergraduate and graduate students, but also students who tune in from other campuses and other institutions, students and faculty who go out to field sites on the other side of the city and others going to the other side of the globe. We also have to be much better in bringing into our research as partners and collaborators the peoples and places that we study as well as the policymakers to whom we hope to speak in addressing societal problems.

Secondly, we have to figure out new ways of using space, including--sadly--giving up on the standard faculty office. Like the Google cafeteria, university space needs to be configured to facilitate interaction and innovation, not the segregation of separate disciplines into separate buildings. Corporations and communities will likely need space within the university’s boundaries. The university will need space in corporate laboratories, access to proprietary technologies, and places for researchers and students to live and work outside the campus.

Thirdly, in contrast to the fixed walls of the ship, on both the teaching and research side, the university needs to be conceptualized and operated as a fluid set of alliances. In sustainable energy research, the State is already funding a “collaboratory” of units from CU, CSU, and the School of Mines, where that collaboration also includes a range of private corporations. In Art and Art History, the research/teaching alliance might be with Denver and front range museums. In Education and Engineering, CU already has research alliances with public schools and technology firms, respectively. In the climate sciences, alliances with federal labs, including exchange and cross-listing of personnel, already exist. Yet, my suspicion is that a large number, if not a majority, of the UCB faculty interact professionally with their academic colleagues in other institutions around the world, but rarely interact professionally outside of academia or outside of their disciplinary specialization. Without imagining that one size will ever fit all in an environment as diverse as a research university, nevertheless the challenge remains: how can we facilitate research collaborations not just across academic boundaries, but also between us and the world outside.

Finally, we have to build on our success—not just in the sciences, but across a range of disciplines—in integrating our graduate students into our research to do the same with

undergraduates. In part because of sheer numbers, but also because of inertia and administrative obstacles, most undergraduate education at CU still consists a professor standing in front of a classroom delivering content to students via lecture and discussion, despite the fact that we all know that half the substantive content is lost within 3 days of the final exam (to be generous) and that a large part of what we say will become irrelevant or outdated within a decade or less. It might be a useful exercise to think back to 1984 and to ask ourselves what should we have been teaching our undergraduates to prepare them for life in 2007 and beyond. My list starts with critical thinking (about values as well as facts), problem-solving, effective communication, the ability to learn new technologies, to understand our past, to understand others, and to understand the physical and natural world we live in. At least at the undergraduate level, our subject areas like Latin American politics or Elizabethan poetry are just media for teaching those skills. For 2030, the fundamental skills seem pretty much the same with one exception. In an age of continuing knowledge specialization, students and faculty will be faced with even greater tasks of integration across specialities, in dealing with issues like energy or climate change, conception and abortion, living and dying, which involve not just one discipline or sub-discipline, but require us to grapple with science, uncertainty, human behavior, natural systems, values and beliefs, all in the same question. If the assumptions above regarding the growing demand for “useable knowledge” are correct, we will not have the luxury of researching only our specialized technical piece of these issues. In our future research on sustainable energy choices, for example, we will have to integrate the climate science, the chemistry, the engineering, the economics, the human behavior, the business, the ethics, and the policy, rather than assuming that it is someone else’s job to figure out where our piece of the puzzle fits in. If we have to enhance the integrative character of our research, then integrating research and teaching become one avenue for teaching those integrative skills to the next generations of students to come.

What I still don’t see clearly is how to get from here to there, how we get from the university structures we have to the more flexible, adaptable, and resilient structures we need for 2030. Suggestions and comments welcome.

Sam Fitch
1/30/07