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Panel #3: General Education and the Research University

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I'm going to tell you a little bit about GenEd obviously, public research universities, and the original UC. [University of Cambridge] And what the original UC and what it is and what that means you'll discover in a minute. I'm a material scientist by training, and the scientist in me, there are two things we have to take care of.

One is a response to [UC Merced] Chancellor [Steve] Kang's model today with the, with the balls and the empty, at least in space, inside that, that cubical structure. One simple solution is of course to have other balls that fit into the spaces left by the bigger balls. And so in this spirit of flexibility, you know, some diversity. And you have larger programs, smaller programs, new ideas, older ideas representing different sizes all packing together and that's one way to get efficient use of space.

The other thing I have to take care of as a scientist is we're talking about General Education, we're talking about topics we all sort of have our own response to what we think we all mean by these things, but nobody's tried to define General Education. Perhaps it's not definable, but I'd at

least like to give you a sense of where I'm coming from when I'm thinking General Education. And this is just an extract from the UC Merced general catalog, the most recent one and addressing the students, "provides you with the practical skills and diverse knowledge base that you will need to become an informed citizen and a good problem solver after graduation." [UC Merced General Catalog (2009-2011)] So it's life skills, really, communication skills, the ability to think clearly, to respond appropriately, to be able to contribute fully to society.

And we're going to have presentations from, from UC Merced so I don't mean to dwell on how we do things here But I would just like, up front, for everyone to realize that we do have guiding principles within which to shape our General Education. There are eight of them; we all know them off by heart because we were visited by WASC [Western Association of Schools and Colleges] recently. [*laughter*]

And we, we're very lucky, because helping us craft the language that went into these was Karen Merritt, after whom our writing program was named, and Karen is a medieval historian, really knew how to write. And she had a long baseline from which to construct her ideas and her words about General Education.

We have them. That's all I really want to draw your attention to at this point.

But the original UC, that I'd like to say a little bit about. Celebrating 800 years this year, so it knows how to survive. So somewhere that has, you can't argue. It has got excellence in research. It also has excellence in teaching. It is one of the world's top institutions. It has top faculty. How do they go about their daily work to achieve that and maintain something that has been, you know, ultimately sustainable for 800 years?

It's interesting. You know, you get things in the mail saying, "Please give generously, continuing 800 years of tradition." [*laughter*] Things like that.

But it demonstrates that they were adaptable. They had to be over that period of time, because the world has changed and changed and changed again during eight centuries. They also had to be politically astute. And, you know, it's no accident that some of the best politicians came from Oxford and Cambridge; I've got Cambridge up here but Oxford which is slightly older even still. But there were great connections between the universities and the, the machinery of state. You know, that's something, we of course, can't lose sight of in, in the modern age.

But look at what, look at what these places survived. Greedy kings and courtiers. A plague, several times. A reformation, you know, that was kind of a big thing and all the, all the fancy buildings you see there, you know, most of these chapels were Catholic chapels once upon a time only, you know, nobody broke them into pieces or anything. They survived these sort of transitions.. They survived a civil war. Multiple budget crises. A renaissance. An industrial revolution. And numerous curricular changes. [*laughter*] Numerous! You know, to, for disciplines that, of course, were invented long after the university was established. So it can be done!

You know, that's the encouraging news. You know. So some ideas that work. Just looking at Oxford and Cambridge as perhaps, you know one way, of course we're not going to become them; we don't want to be them. The world's got plenty of Oxfords and Cambridges; we have one of each. But we can learn the best things from them. It's interesting to see that they're learning good things from us because Cambridge has just had a massive campaign to attract funds. A billion pounds. They're 80% of the way there.

But that's an American-style idea. You know, that you have somebody to go into actually development, that sort of thing. And they never began to worry about it until the modern economy struck. They're taking lessons from us, so you know, so we should perhaps take some lessons from them as well.

So a little bit of background, because there are some great misconceptions floating around about these places. Both Oxford and Cambridge are public universities. They are not private. They might have been once, but they always, they always relied on the Crown for support. You know, what form of government there was. So they are, and now entirely, they are public institutions. And what the universities provide are the lecturers, and the labs, and the examinations and the degrees. But each is effectively a federation of colleges, approximately 30 colleges in each of those towns.

And the colleges handle the admissions, the mandatory tutorial classes--you spend about one hour per four hours in lecture, you spend one hour with a faculty member, maybe one or two other students in deep discussion of a topic and that's the same in the humanities as it is in the sciences. They're called "supervisions" in Cambridge and "tutorials" in Oxford.

And the colleges provide really the co-curriculum as well, so the residential social welfare facilities and support. The cost to the taxpayer, not to the home student. It gets expensive if you're from overseas, but the home student gets all this covered by the government. It's about, in current dollars, about four thousand dollars a student. Extra to send the student to Oxford or Cambridge because of that collegiate structure. Compared, then, to the cost of other English universities. But on the win side of the financial equation, the dropout rate is tiny. And these people go on and serve the country in very measurable and very, very, very sort of

significant ways. And so people who have done the math--there was a tremendous argument in the late 1990s when I happened to be on the faculty at Oxford, and there was all kinds of gloom and doom because surprisingly it was a conservative government at the time who was trying to question about how the, or started asking the questions about how the money was going and then later came and continued those questions.

Is it worth spending all this extra money to send someone to Oxford and Cambridge? Because of the good connections it caught, you know, the good political connections. Somebody actually managed to do enough math at the right moment to show that the balance is actually favoring paying that extra money and having much less attrition in terms of students leaving.

And that's the background. So let's look at some differences relative to the University of California and see to what extent, you know, we might be able to use these as inspiration and hey, you know and can we learn something from it?

They don't actually have separate GenEd classes. When I was a student at Cambridge, I never went to anything that labeled itself as GenEd. As a scientist, I went to math classes, chemistry classes, physics classes, crystallography classes, you know, there was no writing class. I never took a writing class in college. But, my goodness, the people who taught me taught me how to write. And they insisted on that so, you know, perhaps when we sometimes say we're going to teach somebody something and then we fail to reinforce it, then maybe we could be a little bit more efficient about how we structure the curriculum and reinforce it.

So every time I turned in an assignment, it had to be written properly and structured well and argued carefully. And that reflected itself in the university

grades. So I wasn't just being judged on my science when I was taking an exam, I was being judged on my ability to express myself clearly, to communicate, to produce a coherent argument. It wasn't just solve this equation. It was, you know, discuss the relevance to some other situation which took you on to the next level.

Mandatory on campus--there's no real campus there since the colleges are the basis of residence. But mandatory on-campus residence for students. So all the students live in. And that produces a dynamic where we were actually encouraged to work together and do our homework together. And if necessary, copy off each other as long we acknowledged it.

You know, this, this sort of internal economy developed. I was hopeless at math in my freshman year. I mean, I was hopeless at it. Somebody sat down, a student, explained the math because I can think in 3-D better than he can, and so I able to explain the crystallography. You know, it was a trade-off. And so we both got better at what we did, and so there's a small group of people that I'm still in contact with. They're dotted all over the world. But these are the people who helped teach me the things that I know and operate from.

They, the fact that we have the common table for faculty in colleges. So faculty belong to a department; that's where the research and academics belong to a college which is where the interdisciplinarity happens. So one of the scariest interviews I ever had was for the college part of my Oxford job. I was asked questions like, well, you know, "Dr. Viney, what do you think about the role of analogy in the correct teaching of undergraduates?"

I was actually asked by a mathematician. And there were English dons, English faculty in the room. So, so there's this opportunity to exchange ideas

because you talk to each other in a semi-social situation as faculty.

Consistent reinforcement to the GenEd-like skills. As I said, when you have an assignment, these things are always being looked at in the background whenever you write an essay.

Substantial research experience and I won't go into too much time, there is no time, I've got the signal here; to define what research means, but this is not just science. It's not just engineering. Research, okay, across the disciplines, whichever subject you're in, substantial experience in the final year serves as a context for GenEd-like skills. So research and GenEd are kind of melded together in a way that I think somebody earlier this morning suggested might be a way to proceed.

There's a decoupling of the instructor and the examiner functions, so the person who gives the lectures isn't the person who inflicts their own weird way of setting exam questions and expecting a particular style of answers. The exams are conducted by a small panel of faculty and what that small panel does is that they set questions in a style where all the questions require writing and communication and critical thinking and application of knowledge, which makes the teaching quality assessment so much easier to, to peruse as well afterwards.

So decoupling those functions works very, very well. And of course the faculty like this. They have their college in which they are one kind of person and they have their department in which they're another kind of person. Perhaps we can't afford colleges with walls and fancy buildings and chapels and bell towers here, but perhaps we can, in some virtual ways, start grouping people so they interact in particular ways.

And then just a financial point. The college is investing in their mutual success. So here at UC Merced, you know, if we're seen to be perhaps taking a little bit of the budget pie from some other campus, you know, there might be some question; letters appear in newspapers and people start arguing, you know, and that sort of thing. But for at least a few hundred years, the colleges in Oxford and the colleges in Cambridge, the rich colleges have been taxed to support the poor colleges.

And yes, you know, it wasn't entirely altruism. It was sort of a decree from the government saying, you shall do this or you know, worse things could happen. But the, this idea that the individual pieces doing well is good for the whole organization, that really caught on. And now, Oxford is tweaking its system a little bit and their latest version of this is--let's say a college wants to put up a new building, new dorms because of the students. They always have more students right on the site not scattered around in houses around the town.

Well, so they go to one of the rich colleges and they say, give us a loan 'cause you've got money. Instead of investing this on the stock market because you know where that's going, well, invest it in us. And we will spend the money wisely and of course you've got a guaranteed return. You know where to find us. You know, we're all in the same boat and we're all trying to build the same thing together. So, anyway, just a few thoughts, from a different perspective, from a different set of centuries but with messages that resound for us today I believe. Thank you. [*applause*]