Notes on MOOCs and the Future of Higher Education

MOOCs (massively open online courses) represent promise and threat for the future of higher education. Promise insofar as they will allow access to some form of higher education content and learning for many people who would otherwise not have this opportunity. Threat insofar as they re-distribute the clientele for higher education in ways that may subvert many institutions' current business models.

I am concerned about the university's response to both MOOCs and more generally the opportunities and challenges of incorporating new communication and information technologies in more fundamental ways into how our students learn. In particular, I think that MOOCs do not yet represent either the real promise or the ultimate threat to the status quo in higher education. What they do on a potentially massive scale often merely represents the worst in today's higher education, while what we need to be planning for is how the university will operate and finance itself when all we have left to offer is the best of what higher education can do.

By the worst I mean large-scale lecture courses which focus on 'content delivery' and are at most suitable for providing one component of learning in some subject areas. The best we can do, however, happens in small seminar discussions, which support the highest of higher education's intellectual goals.

In our current business model the former subsidize the costs of the latter. They also subsidize, at least in terms of demands on faculty time, the university's research mission.

How many students, in total enrollment, could the university support in terms of course offerings, with the current number of employed faculty, if the only courses offered were limited in enrollment to 15 to 20 per instructor? Certainly far fewer than at present, with a corresponding reduction in tuition income and other enrollment-dependent financial support. Suppose that in place of large lecture courses, students accessed MOOCs sourced from other universities or institutions, with no revenue capture here?

The dilemma I am posing is in part a caricature, but I believe the basic issues remain when we paint a more realistic picture.

There are some aspects of all higher learning which depend on students' becoming acquainted with information, including procedural knowledge, that for the most part they are capable of interpreting and using without special intervention by faculty. Their capacities in this respect are expanded if we consider the ways in which more experienced students may network in online communities with novice learners in a subject area, as already happens in many domains of learning. This is the proper domain of MOOCs or their direct descendants.

There are however other aspects of higher education that require significant intervention by faculty with advanced understanding of subjects and some moderately good teaching skills. Some presently valued faculty skills will become the province of MOOC specialists, such as general curriculum planning and engaging presentation of course content. Most faculty will not need to engage with these aspects of higher education (and may be relieved to know it!).

But widespread faculty expertise will still be required to help students learn how to acquire the special forms of analysis, argumentation, critical thinking, and judgment regarding the significance of topics, a feel for important future directions in the field, etc. These are matters that cannot in general be effectively conveyed at present other than by interaction in face-to-face tutorials and small group seminars.

They can, however, also be supported in important ways by non-traditional learning experiences, such as practicum courses, field experiences, design work, service learning, internships, apprenticeships, research participation, etc. These modalities also require some specialized skills on the part of faculty, but by and large fit the model that they need to be supervised by faculty at a relatively low student-to-faculty ratio, as with traditional seminar learning.

The threat of new information and communication technologies is to a model of higher education in which high student-to-faculty-ratio modes of teaching and learning subsidize low-ratio ones as well as time for faculty research. Planning for possible institutional futures as this threat materializes is an urgent task for higher education management and policy. It is not an area where I have much to offer by way of new ideas.

The promise of new technologies, however, lies not in the MOOCs themselves (apart from widening access to basic-level higher education), but rather in ways that these technologies can be used to support the higher goals of higher education: those which do require thoughtful faculty participation and interaction with a relatively small number of students. These technologies can in principle assist in this and even improve quality. It is also possible that they could, marginally, allow for somewhat higher student-faculty ratios, at times and under some conditions. (Not enough, however, to resolve the threat problem.)

I believe that there are accordingly two primary agendas for the university's response to the arrival of these new technologies: (1) Policy discussions about how to meet the coming challenges to the university's business model, and (2) Research for the design and development of new teaching- and learning-support technologies – different from the model of current MOOCs – which can function to support and enhance the higher goals of higher education.

What might such "Hi-Ware" look like? One model or approach may not fit all the functions we would like to see. In common with some MOOCs, asynchronous online group discussions, among a manageable number of people (perhaps larger than is workable in a traditional face-to-face seminar), would be one likely component. Another would simulate the face-to-face environment, but allow

inclusion of off-campus participants, e.g. a group video-chat system (similar perhaps to Google+ Hangouts). It seems clear that supporting both real-time video interaction and also asynchronous, but informal text-based interaction is desirable.

New media often begin by trying to replicate existing scenarios. One could imagine, for example, a Virtual Seminar in a virtual-world (similar to what already exists in Linden Lab's *SecondLife*), that would also allow remote participants and perhaps demonstrations of activities, experiments, simulations, etc. But a more game-like environment (like *World of Warcraft* or other MMORPGs), with an open, explorable world and the possibility of pairs or small groups going off to work together and then re-convening to share results, and which could itself be customized with simulations relevant to the topic (e.g. a historical period, an ecosystem or geological terrain) would be even more flexible and supportive of higher learning.

HiWare should be able to support not just learning, but doing. Where today doing often means writing, in the future we can expect to add experience for students with creating multimedia (video, simulation environments, scientific visualizations based on data and/or theoretical models) and using them as tools. Increasingly, both the natural and social sciences focus on understanding complex systems, for which a variety of underlying modeling tools (differential equations, agent-based models, cellular automata) need richer and more intuitive visual and interactive interfaces in order for people to understand the phenomena being represented and effectively use the tools. The line between immersive simulations and game-like virtual worlds will blur and disappear, I believe. Likewise the distinction between training in the use of next-generation tools and doing original research with them will fade.

The central concerns of the humanities often seem furthest from these visions of the future of higher learning, but I believe that as the separation of the humanities from the social sciences becomes less relevant in fields such as cultural studies and area studies, and as other cross-over fields such as design research draw more heavily from both these traditions (as well as engineering and the natural sciences), that we may also see greater synthesis between creative work in the arts and literature and research-based analytical understanding of the meaning and significance of the works created, in their cultural and historical contexts.

The ultimate excitement of the project of building new tools for the higher goals of higher education is to see them support the future evolution of our intellectual traditions. Seeing old categories replaced by new ones, the natural sciences become less isolated on campus and become in larger part integral to visions of better human futures informed by the humanistic and social scientific understandings. Seeing experiential and analytical approaches to understanding human meaning and feeling, activity and creation becoming more mutually supportive. While we may all still need to be specialists in what we bring to shared projects, it will be our affiliations with those projects as much as our specialist training that defines us as scholars and that provides inspiring models

for our students. Visions like these of the future of the liberal arts university need to be embodied in and supported by the uses we make of new information and communication technologies.

At present there are two working groups at UCSD thinking about policy implications and technology innovation in this area. By a year from now, I would hope that there will be a continuing institutional structure and a commitment of appropriate resources to provide leadership, coordination of effort, and a framework for research and development of the tools and policies we need.

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