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Statement on Massive Open Online Courses (MOOCs)

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Scientific and Legal Theory Formation in an Era of Machine Learning: Remembering Background Rules, Coherence, and Cogency in Induction

Felmon Davis and D. E. Wittkower

Statement on Massive Open Online Courses (MOOCs)

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forget the older traditions that sought to portray structure. It is easy to ignore structural work on scientific and legal theory-formation even with much recent progress: many philosophers of law still do not know of our argument-based models of the case in AI and law; many philosophers of science do not know Kyburg's final framework on measurement errors and the web of belief. Applied success is not always anti-intellectual, because frequently the former obscures the latter with no special antipathy. But the loss of theoretical understanding, deliberate or not, targeted or not, is something we must resist.

NOTES

1. See Ernest Nagel, *The Structure of Science: Problems in the Logic of Scientific Explanation*.
2. See Frederick F. Schauer, *Playing By the Rules: A Philosophical Examination of Rule-Based Decision-Making in Law and in Life*.
3. Herbert A. Simon, "Does Scientific Discovery Have a Logic?"; Douglas B. Lenat, "On Automated Scientific Theory Formation: A Case Study Using the AM Program"; and John H. Gennari, Pat Langley, and Doug Fisher, "Models of Incremental Concept Formation."
4. Gerald DeJong and Raymond Mooney, "Explanation-Based Learning: An Alternative View."
5. Gadi Pinkas, "Propositional Non-monotonic Reasoning and Inconsistency in Symmetric Neural Networks"; Pinkas, "Symmetric Neural Networks and Propositional Logic Satisfiability"; Pinkas, "Reasoning, Nonmonotonicity, and Learning in Connectionist Networks That Capture Propositional Knowledge."
6. Henry E. Kyburg, Jr., *Science and Reason*.
7. Ronald P. Loui, "Rationales and Argument Moves"; Loui, "A Modest Proposal for Annotating the Dialectical State of a Dispute."
8. Douglas B. Lenat, "CYC: A Large-Scale Investment in Knowledge Infrastructure."
9. Gennari, Langley, and Fisher, "Models of Incremental Concept Formation"; Lenat, "CYC: A Large-Scale Investment in Knowledge Infrastructure."

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Statement on Massive Open Online Courses (MOOCs)

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The following statement was prepared by Felmon Davis and D. E. Wittkower in consultation with the American Philosophical Association's committee on philosophy and computers.

Since 2012, Massive Open Online Courses, or MOOCs, have generated much discussion as a innovative response to several pressures bearing in on traditional "brick and mortar" pedagogy, including the promise of reaching a wider public, revolutionizing the means of pedagogy, offering more "value" at lower costs, and providing more current information and access to research than traditional education. MOOCs are typically open to the public, can in principle reach thousands of individuals all over the world, and may employ various technologies that encourage participation such as blogging or online chats. There is usually no cost of enrollment except for a fee for students interested in gaining a certificate, if such is offered. Some philosophers have offered MOOCs, among them prominent figures such as Michael Sandel, Walter Sinnott-Armstrong, Tom Beauchamp, and Peter Singer. There is no way around the question whether this particular form of "delivery" of "content" is an apt medium for the essential distinctive features of philosophical activity: If the medium is the message, what message does a MOOC in philosophy convey?

A brief report cannot do justice to the complexities of this issue; instead, we want to set markers for some of the important places where MOOCs offer promise to philosophers and where they set pitfalls. Our hope is to initiate a discussion of "best practices" for philosophical pedagogy using MOOCs.

This effort only has a point if the phenomenon of MOOCs is not ephemeral. The MOOC phenomenon has been touted as "The Most Important Education Technology in 200 Years" [MIT Technology Review] but now we read fatalistic voices decrying MOOCs as "a futile experiment."[1] One has to place one's bets here, and our feeling is that the phenomenon follows the *Gartner Hype Cycle* (Figure 1), where a phenomenon is hyped too much, followed first by waning interest and then by slow and steady subsequent growth.[2] If this is so, it is worth studying the phenomenon

now—perhaps particularly now that skepticism seems to reign—because the present offers a good opportunity to take a stronger hand in shaping the course of the future.

Figure 1. Gartner Hype Cycle.

Let's consider some of the virtues of MOOCs and some qualifications.

WIDE REACH OF MOOCS

While, like traditional broadcast media, MOOCs can in principle reach tens or hundreds of thousands of individuals, the Internet can seep into corners where access to traditional broadcast media is limited. Furthermore, MOOCs can more easily solicit participation than televised or streamed video as participants can blog, post videos, engage in online discussion sessions, stream their own live video sessions, and so on.

On the other hand, access is not necessarily cheap even if the courses are themselves free. Access to material resources such as the necessary broadband, reliable computers, etc., is a problem especially for streaming video, but also audio, which require webcams and microphones at a minimum. A somewhat up-to-date computer is necessary even to access content online. One needs to recall that 75 percent of the world's population has no internet access or lacks the "connectivity" necessary for satisfactory access to cloud-based apps; 81 percent of Internet access in China is via mobile devices, which are a tight fit for online course work.[3]

Moreover, the broad diversity of participants militates against quality and consistency of participation as teenagers mix with older students, as the highly educated mix with the unschooled, and as cultural expectations diverge—for the very diversity which offers unique opportunities of communication and learning can lead to deep problems there as well, particularly in courses which use peer-grading.

The distance format and the large number of participants can make it difficult to take full advantage of the opportunities provided by the mix of cultural attitudes and to integrate them into coursework. The idea of critical engagement with others requires a sense of privilege or an easy egalitarianism not everyone is comfortable with, and even societies that tout their openness are often surprisingly eager to restrict cross-cultural debate; for example, recently the U.S. government has compelled Coursera to ban students from Cuba, Iran, Sudan, and Syria.[4] Cultural diversity imports not only problems of linguistic understanding but also problems of tone, temper, and status, exacerbating the notorious challenges of maintaining civility, tolerance, and nuance in online discussion.

EVALUATION OF WORK; CREDENTIALS

Most courses do not seem to offer credentials or offer credentials, which seem little more valuable than the paper (or PDF) the student receives. And the *London Times* has reported that, when given the option to get course credit for their MOOC (for a fee), none of the thousand or so students who enrolled in a British online class did."[5]

And the drop-out rate from MOOCs is enormous. A study from the University of Pennsylvania found that only 4 percent of registered users finished their courses, and half of the enrolled did not view even a single lecture:

> Emerging data from a University of Pennsylvania Graduate School of Education (Penn GSE) study show that massive open online courses (MOOCs) have relatively few active users, that user "engagement" falls off dramatically—especially after the first 1–2 weeks of a course—and that few users persist to the course end.[6]

It is not clear whether what we are looking at in these cases is a "bug or a feature"; as a recent contributor to *Slashdot* put it:

> In "The Online Education Revolution Drifts Off Course," NPR's Eric Westervelt reports that 2013 might be dubbed the year that online education fell back to earth. Westervelt joins others in citing the higher failure rate of online students as evidence that MOOCs aren't all they're cracked up to be. But viewed another way, the ability to try and fail without dire debt or academic consequences that's afforded by MOOCs could be viewed as a feature and not a bug.[7]

According to a recent study by *Coursera*, many people treat these courses as a resource which they "browse" for interesting lectures or learning something of interest, not to earn credentials or certification.

It seems a clear *prima facie* good to offer to a wide interested public such easy access to university-level courses, at a reasonable price (cost of equipment and bandwidth) and largely independent of time and place, even if the public does not treat it as an opportunity to gain a degree or university discipline. This *prima facie* good may be particularly advantageous to philosophy, a field that interests many but to which most people have limited access outside of university settings.

WOULD PLATO OFFER A MOOC?

Professional philosophers have an interest in attracting a wider public to their work, but there are questions about the suitability of the medium. These questions are particularly delicate for philosophers, who do not always agree about the ends and methods of the discipline, and for whom, indeed, the proper ends and means are part of the subject matter. If you conceive of philosophy as requiring thoughtful dialogue leading towards reflective equilibrium about an issue, significant problems for philosophical instruction and practice are posed by the very massiveness of MOOCs, their lack of intimacy, the discontinuity of

discussion, and absence of mutual acquaintance in both the student-teacher and in the peer relationships in the course. As Alison Byerly points out, professors take it for granted that they should respond to emails from students, provide advice on further study, write recommendations, and perhaps meet with students but in some cases "responding to even one percent of those taking a MOOC could mean interacting with 1,000 students."[8] Moreover, individuals often do not produce work themselves—they may just "attend" lectures—or do not receive pointed feedback and evaluation of their work, virtually assuring their engagement will be "casual."

We may think even of Plato's hostility towards writing in the *Phaedrus*, where Socrates denigrates the value of writing, which he compares to a mere image of speech—unable to explain or defend itself, to adapt and respond to its audience, or to know when to speak or be silent. While we may shake our heads at what seems to many of us today to be a misguided and technologically deterministic dismissal of the value of writing, many of our current pedagogical concerns with MOOCs are not much different, both in content and structure. Surely Plato was right to some extent to worry that philosophical development cannot take place by engaging with dead words on a page which cannot answer back to our questions and critiques, and yet this admission in no way commits us (or Plato, apparently, since he wrote this very dialogue) to the view that written work cannot play a vital role in philosophical development.

Similarly, a conception of philosophy as requiring intimacy of dialogue and interaction does not argue against the utility of MOOCs; instead, it simply points up their limitations and due recognition of their limitations may open up their true promise. A course in which students do nothing but read texts in lonely isolation and take periodic quizzes looks unattractive as pedagogy but a canned MOOC is not much different from that. But just as videos and guest lectures can play a vital role in learning, so can MOOCs when combined with trenchant discussion, serious writing that receives individual assessment, and thoughtful counselling from a teacher.

Even without the living word MOOCs can still have their usefulness; one notes that most MOOCs operate at an undergraduate level—thus, they are not geared to generating and organizing original research (except, perhaps, for the teachers!). They instead introduce amateurs (often in the original sense of the word) to basic concepts and techniques and hopefully entice them to look further. MOOCs can open the world of philosophy to people whose busy lives occupy them elsewhere but who want to participate in the life of the mind.

PITFALLS FOR THE PROFESSION

Aside from these pedagogical concerns, there are also reasons to be concerned about MOOCs and the future of the profession of philosophy—much more significant concerns. In a recent piece in the *Chronicle of Higher Education*, Peter Schmidt reports that the AAUP is wary of the copyright implications for course materials teachers develop:

> With the emergence of MOOCs, however, colleges have begun asserting ownership of the courses their faculty members develop, raising the question of what is keeping such institutions from claiming ownership of other scholarly products covered by copyright, such as books.[9]

It is important that scholars and teachers, and the APA, keep eyes peeled for threats to intellectual property.

There are also significant concerns about the effects on labor and employment in the profession. Sometimes teaching staff is enlisted for offering MOOCs at much lower salaries than regular faculty, especially at less prominent universities. In addition, enrollment caps on online courses are sometimes set higher than in traditional classrooms—with MOOCs, we should expect this trend to either hold or expand. For these reasons, we worry that MOOCs could provide an avenue by which administrators may either cut lines in favor of increased use of contingent faculty, or simply reduce adjunct employment by increasing the number of credit hours served per instructor per class.

This bottom-line thinking might enhance the employment opportunities available within the profession in some ways but jeopardize them in others. The courses most well-suited to MOOCs are those introductory and general education courses which are the primary source of adjunct teaching and employment opportunities for recent graduates and others seeking to land a full-time position. If classroom capacities are higher in MOOCs than in traditional classes, there may be fewer courses available to those seeking tenure-track employment opportunities. Arguably, MOOCs can lead to decreased tuitions and expand employment opportunities for contingent faculty; the danger is that these opportunities might provide these teachers less value if they are deprived of credible teaching evaluations and the rich teaching experience that support applications for regular employment.

And the heavier the emphasis on general education as a potential revenue stream for finance-strapped universities and colleges, the more we should be concerned for the fate of the liberal arts ideal of engaged, Socratic, student-centered learning in a university culture increasingly focused on vocational training and cost-saving measures.

We must also beware of false economies. The conviction that MOOCs will enhance the bottom line for universities with inadequate budgets may be a fantasy. MOOCs "require investing expensive technological and labor resources to create experiments of questionable educational value to be given away," as Jason Mittell writes.[10] Big-name universities, showcasing academic stars—which may incidentally condition the public to favor "intellectual celebrities" over other worthy teachers and courses—are in a far better position to take these risks than public universities with limited budgets.

The idea that MOOCs offer relief for the problems of underfunding of higher education may have broader and unwelcome consequences for the "educational divide" between, on the one hand, prestigious colleges and

universities that can offer their students vivid face-to-face engagement with real teachers and, on the other hand, lesser-funded public schools whose students may become consumers of packaged courses or at best interact with a teacher who is no more than a "glorified teaching assistant."[11] But is it better to have an excellent teacher and researcher such as Michael Sandel in a video presentation or living interaction with faculty of the local university or college? This is a false dilemma so long as we retain the ability to design courses that combine the virtues of both approaches with respect for both modes of teaching.

TREADING WITH CARE

It seems to us that MOOCs offer some promise of opening the gates of philosophy to many people near and abroad who could not otherwise approach it, but many MOOCs are now constituted in a way that limits their pedagogical value to undergraduate coursework or just casual browsing usually without much promise of academic credit. Unless integrated as one component among others of live education with professors who are actively engaged in research and teaching, the medium still seems ill-suited to the practice of philosophy as reflective collaboration and argument. And the broad reach of MOOCs carries its own dangers of intercultural misunderstanding.

Professional philosophers and the APA should work closely with administrators to address concerns of justice in both intellectual property and the remuneration for labor, which should also include consideration of how MOOCs affect the career path of members of the profession, and how MOOCs may put existing faculty lines and departments at risk. The APA should be particularly concerned about the long-term future of the discipline if academic positions are curtailed and promising scholars are barred from pathways to solid entry-level positions. And as citizens we should all resist tendencies that can degrade the quality of education for the broad public.

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