Understanding Concepts and Values for the Future of Online Education through the Practice of Design

Michael Marcinkowski, the Pennsylvania State University
Fred Fonseca, the Pennsylvania State University

Abstract
The rise of interest in online education from pedagogical, administrative, and technological perspectives presents numerous possibilities and challenges for researchers and practitioners, the most basic of which is the fundamental question of the determination of the concepts, categories, and values used to guide their work within this rapidly developing field. Drawing from contemporary discussions of the possibility for the instantiation of values and categories in the work of design, critical approaches to questions of technology and conceptual development surrounding the design of technological systems are discussed. It is argued that current value driven approaches to technological design, when refined and considered through a logic of conceptual deconstruction, offer a broad and open basis from which the direction of online education can best be considered. In the formulation of such an approach, general lessons for interaction design and information science as a whole can be found.
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Contact: mrm5586@psu.edu, fredfonseca@ist.psu.edu

Introduction

The continuing rise of interest in both traditional online education and new forms such as massive open online courses (MOOCs) raises questions for educators (Bennett & Lockyer, 2004; Fleming & Becker, 2007; Logan & Froehlich, 2007), administrators (Byerly, 2012), and technologists (Berg, 2000; Russell et al., 2013) alike as they grapple with the meanings and forms surrounding these relatively new educational paradigms (Allen & Seaman, 2011, 2013; Dutton, Dutton, & Perry, 2002; Harasim, 2000). In many ways, these challenges mirror similar challenges faced by those working in interaction design, including those specifically working to design systems for online education. The challenges occasioned by the surge of interest in MOOCs offers an opportunity to consider a number of novel concerns regarding the role of traditions of education, use, and the institutional apparatuses that support and constrain innovation. For both disciplines (and particularly, though not exclusively, higher education and online interaction design), a flood of users and data poses questions of both scale (Cramer, Rost, Belloni, Bentley, & Chincholle, 2010; Hickey, Kelley, & Shen, 2014) and audience (Dutton et al., 2002; Fuchsberger, Nebauer, Moser, & Tscheligi, 2012; Ingram, Ou, & Owen, 2007), challenging established methods for both socio-technical modes of interaction design (Dubberly, 2008; Norman, 2010) and online education (Bovill, Cook□Sather, & Felten, 2011; Tsai, 2010). In each, the meanings of long standing concepts are reconsidered (Day, 2011; Dubberly, 2008; Harasim, 2000) and the shifting of the values and categories which have defined their work becomes starkly visible. At their center, each is propelled by competing discursive and ideological movements which look to define and establish a future course for their work (Elliott & Kraemer, 2008; Kling & Iacono, 1988; Njenga, Cyril, & Fourie, 2010; Ravid, Kalman, & Rafaeli, 2008).

Still at a nascent stage of development, specific challenges for the development of MOOCs have yet to be concretely identified outside of the broadly-cast questioning over their potential function (as in research regarding the potential for large-scale peer-assessment (Kulkarni et al., 2013), for instance). As with most innovations in education, online education (and MOOCs in particular) raise questions surrounding the purposes, values, and future of education (Hiltz & Turoff, 2005; Kim & Bonk, 2006; Mitchell, 1999; Petre & Shaw, 2012). In their engagement with a wider-than-disciplinary field of action, these questions for education align with an understanding of interaction design which links the use of technological systems to wider social structures. The reliance of MOOCs on technological development (particularly in their reliance on the Internet) presents a unique challenge in that it brings traditions of interaction design into close proximity to the established practices and traditions that surround education (Berg, 2000; Volery & Lord, 2000).

In this collision of concerns, the vision of the function and organization of online education presented here is largely reflective of the larger aims of the development of a broader information science: how can the study, use, and function of information and information technology be conceived of as a multi-faceted and unifying discipline (Bates, 1999; Bawden, 2008)? Without discounting or marginalizing the importance of specific discourses of education (a tendency which has been argued against (Ascough, 2002)), this paper advocates for the consolidation of the concerns surrounding online education under a rubric of radically-considered practice of technology and interaction design. That is, it is argued that by framing the discussion of the development of values, meaning, and concepts in online education first as one of technology design, it is then possible to better integrate the particular and nuanced concerns of education into the work of technology and interaction design. As will be detailed, by approaching this challenge from a technological perspective, designers and educators are able to take advantage of well-established and extensible approaches to design that account for the variability of the developing situations and concepts surrounding education, while accounting for a certain non-teleological picture of technological effect that will be developed here. Understood in this way, it is our aim to give theoretical framing to the entire negotiation of the values, meanings, and concepts in the design of online education and the networks of political, economic, institutional, and historical forces at work in their definition. By focusing on the question of a technologically-founded practice of interaction design rather than these complex networks of influence, we start by immediately attending to the phenomena of what makes online education what it is (as instantiated through the practice of interaction design) rather than starting with the rhetorical positions that surround it.

In order to consider how best to approach questions of the development of values and categories in online education design and how such design work should be conducted, a Derridean view of both technology and the function of the concepts surrounding it will be discussed. In examining this kind of conceptual development and the ideological bulwark that can be found with it (Kling & Iacono, 1988), Derrida's critique of Althusserian ideology (Sprinkler, 1993) will be utilized as an example of the necessity for a radical openness to the development of new concepts. The purpose of such a discussion is to provide a philosophical and deeply considered approach to the problematic of the management of concepts in the historically-developing setting of online education. Based on this, several recommendations for the conceptualization of online education are given and larger lessons for conceptualizing human technological activity are considered.

The Question of Technology and Online Education

Looking back at the history of online and distance education (Harasim, 2000; Larreamendy-Joerns & Leinhardt, 2006), it becomes apparent with each reformulation of the media of education and the necessary reductions of the field that are made in order to fit it to a new paradigm (Gedik, Hanci-Karademirci, Kursun, & Cagiltay, 2012), that any technological reformation leads to the reevaluation of the aims (Garrison, Anderson, & Archer, 2003; Hiltz & Turoff, 2005; Mitchell, 1999) and central concepts

of education (D. Harvey, 2002). This is not to immediately call for a link between educational philosophy and technology, nor is it to preach some version of technological determinism as has been critiqued (Njenga et al., 2010). Rather, it is only to highlight the effects that the changing context for education can have on how it thinks about itself, technology being one contextual and linked aspect in a long chain of political, historical, and economic determinations.

Perhaps more than any discussion of the aim or spirit of education, these technological transformations press questions of the value (both economic (Petre & Shaw, 2012) and moral (Mitchell, 1999)) of various approaches to education. For example, the value given to educational approaches such as distributed knowledge building is dependent on the technological means available to support it (Gedik et al., 2012; Ravid et al., 2008). While not arguing here for a direct link between certain technologies and certain values, new technologies (it is hoped) make possible modes of education not previously possible, and in their technological amelioration of certain problems in education, new aims can develop. In this, there is friction (though not necessarily in an adversarial sense) between both the different modes of education employed as well as the differing aims that are expressed by each of the forms. MOOCs, in particular, challenge a wide set of fundamental values in education, including epistemic and institutional authority, the ancillary value given to specific educational systems (such as the modern university system), and the basic concept of classroom-based learning.

The most basic mode of conceptual development at work in the design on online education relates to the determination of the purposes and values that should be associated with educational enterprises (Hiltz & Turoff, 2005; Mitchell, 1999). In the design of online education, each step in the process serves, in whatever small way, to construct a sense of these values and purposes in material (if only digital) form. The concepts, values, and categories that are used (perhaps tacitly) in the design of new systems of education are embedded as much in the analytic discourses surrounding the technologies as in the technologies themselves. For online education moving forward, it is imperative that these values, concepts, and the methods and discourses surrounding their development are understood in a manner which provides not only practical, but also theoretical value to the work of technological design on which it relies.

General Technological Practices

For online education, one of the central features that distinguishes it from other considerations of education is its explicit reliance on various modes of information communication technology, notably the Internet. The practice and design of online education is linked to an entire network of explicitly and primarily technological determinations (network protocols, routing infrastructures, computer interfaces, etc.), many of which (if not most) exist without concern or connection to the discipline, values, and concepts of education itself. While this feature of online education alone is not enough to support thinking of online education primarily through the lens of technological design, it does force at least an initial consideration of what technology is, and thusly, how we might connect it to educational practices.

At its most general, the practice of technology or interaction design is linked with a sense of having something to say, or putting forward some point of view about what is made in those practices. Looking back to Aristotle's *Nicomachean Ethics* (1998, bk. VI, 4), τέχνη is presented as a virtue concerned with "contriving and considering how something may come into being which is capable of either being or not being, and whose origin is in the maker and not in the thing made" (p. 141). Here, the kind of knowledge found in τέχνη, as the root (techne) of the contemporary use of "technology," is understood as related both to the produced object and the intended mode of the use of the object (Heidegger, 1997). τέχνη is seen not just as an epistemic virtue connected to the making of the object, but is also linked to the function of the object once completed and put to use beyond the purview of the creator. In this, τέχνη is not focused on the conditions of the present moment, but instead on the

possibilities offered (Heidegger, 1997) and how those possibilities may continue to play out beyond the initial moment of creation.

From this early definition, technological activity contains an implicit anticipatory orientation for the possibilities of the object made that extend beyond the object or the knowledge of how to make the object. For the design of online education specifically, this comes to expand the work of technology design beyond the combination of relevant technologies together in a particular way for the already-defined purpose of education. Instead, design is to be understood as working with and producing a relevant and intentional vision for what is possible. This understanding of technology design as extending beyond the establishment of a kind of mechanical function is reinforced by Susanne Bødker (1998) when she says that design "focuses on the parts of computer system development that are directed toward the creation of something new" (p. 109).

This kind of specificity given to our understanding of what technological practices are in some ways obfuscates a more fundamental consideration of the role of technology in constituting the presence of thought. In a consideration which begins in his critique of Husserlian phenomenology (2011) and continues into work concerning the function of the trace (1997), Jacques Derrida clarifies a basic understanding of how to understand the relationship between technology and the possibility for thought (Johnson, 2005; Shakespeare, 2013). Navigating the divide between immanent and transcendental experience found in phenomenology, Derrida (2011) asserts that in its reliance on the figure of the trace, the basic sense of an internal voice of thinking is a technological matter, as inscription transcends the bounds of the immanence of the individual subject in an autopoietic manner. That is, the basic act of human consciousness and cognition become an issue of technological inscription. This schema guides Derrida's (1982) development of his non-concept of *différance* which serves as the locus of his assessment of the relationship of a technological *trace*, and which allows for "the possibility of conceptuality, of a conceptual process and system in general" (p. 11).

While a radical assertion, Derrida's claim for a leveling of what is property of the human subject and what of technology, and his inability to oppose an anthropocentric concept of the human and a non-anthropocentric concept (Roberts, 2005) lays the groundwork and provides philosophical support for the subsumption of the whole of human activity to some broadly-writ mode of technological activity *or vice versa*, each under the banner of *différance*. This function of *différance* appears as an open system (Johnson, 1993) out of which the figures of humanity, technology, and even education arise, without ever becoming wholly distinct (Roberts, 2005). Each term, the technological and the human, is understood to be dependent on and contained within the other. Any attempt toward analytic distinction is impossible.

For the purposes of understanding the relation of a technological practice to the educational aims of online education, it is enough that such intertwined and paradoxical foundations of human beings and technology can be, for the moment, only hastily sketched out and the implications left to rest. While any analytic distinction between the basic constitution of the human subject and technological practice becomes difficult, there remains an at large surface distinction between what is considered technological and what is understood as the educational purposes at work in the design of online education. Here, the central problematic of the technological instantiation of certain values for education confronts the open and anticipatory nature of technological practice. In looking to establish a framing for the development of educational concepts within a blossoming of online education, how should the values and categorical understandings of the discipline of education be incorporated into the critical practice of design? By shifting the primary consideration of online education design toward a wholly technological design-centered discourse, it is possible set the problems and questions faced by online education under a single rubric or paradigmatic set of terms that is able to account both for the medium of education, as well as the concerns surrounding the instantiation of values in design.

Categories and Values in Design

Already within the domain of technology and interaction design, there is a well-established and diverse body of work surrounding the question of the intentional shaping of values through the work of design. Founded on the basic conception of user-centered design which was established to promote the needs of users over the purely technological possibilities of a system, a number of approaches such as participatory design (Schuler & Namioka, 1993), meta-design (Fischer, Giaccardi, Ye, Sutcliffe, & Mehandjiev, 2004), and value sensitive design (Friedman, Kahn, & Borning, 2008) have been developed. For the most part, these approaches seek to incorporate the particular insight of users and those working within specific domains (such as, for instance, educators and students) into the work of design and to guard against problems that can develop when human values and needs are covered over by technological solutions.

Such an assortment of techniques and recommendations for the management and inclusion of certain sets of values in design, however, does not automatically guarantee that it is possible to attend to the design of online education primarily through a technological rather than a domain specific discourse. In order to accommodate the specifically-anticipatory and forward looking situation of the development of online education, it is necessary to look more critically at how questions of the inclusion and, more importantly, the development of these kinds of broad-based values are handled in a technological practice.

Already, even starting from some of the earliest critical work in the study of interaction design, the question of the possibility of finding some ontologically-neutral framework for understanding the relationship between human modes of understanding and computing remained a point of debate. In looking to structure the function of computers and the surrounding socio-technical systems in a foundational way, there came to be widespread agreement that the ontological perspective of computing (one which was rigid, pre-determined, etc.) did not match up to the ontological perspective of human beings (which is considered as flexible, open to change, etc.) (Ackerman, 2000; Dreyfus, 1979; Winograd & Flores, 1986). While there was some suggestion that these ontological differences could be subsumed by a recourse to categories of communicative action (as developed from a perspective based on Austin's (1975) speech act theory) (Flores, Graves, Hartfield, & Winograd, 1988), this notion was tamped down by the complaint that any attempt toward the establishment of categories to describe human activity was, in its very constitution, a limiting and mechanical move (Suchman, 1994). The carving out of specific categories for others to use was seen as a mode of disciplinary control over those who may come to be subject to the use of such categories.

The question of the disciplinary mandate of the category is raised again, in a different light in discussion surrounding the continuing development of value sensitive design (Borning & Muller, 2012; Dantec, Poole, & Wyche, 2009; Friedman et al., 2008). There, against the proposal that there should be basic sets of values that designers should be cognizant of in the process of design (such as human welfare, ownership and property, privacy, freedom from bias, etc. (Friedman et al., 2008)), the question of whether such a listing off of categories of values is enough to really respect the needs and desires of users has been raised (Dantec et al., 2009). That is, are values, amorphous and far reaching as they are, able to be reduced to a checklist or should they be approached in some more broadly-stated humanistic fashion?

Each of these critiques of the possibility for a certain mode of formalized consideration of values or conceptual categories in the work of design points in the direction of a Derridean dissemination of meaning as established in his thinking of *différance*. For Derrida, the stability of any concept, in its repeatability, relies on a network of other terms, to which any meaning is deferred. Just as with the inability to isolate the concept of human being from its supposed opposite, the technological, the establishment of any category or value is fraught with implications beyond (and sometimes contradictory)

to its intention. In this figure of the deferral of meaning, as with the anticipatory nature of the coming newness in design, Derrida (2006) draws out a non-religious notion of a messianic “to come.”

Just as technology and design are each concerned with the implications of what is not yet present, our understandings of what is necessary when considering categories and values for the future of online education is likewise not yet present and still to come. The conceptualization of values and categories of online education are radically open things not to be decided before hand, but only in the work of design itself. For Derrida, this sense of of the “to come” is not relegated to a simple novelty of innovation, but speaks to a kind of ontological novelty which is founded based on a more broadly-set consideration of the occurrence of events rather than of the experience of technological novelty. Such question of the sometimes convoluted path of technological novelty (as discussed by David Edgerton (2007), for instance), are distinct from both Derrida's explication of the “to come” and the kind of situated newness in design considered here. As will be discussed further on, whether an innovation in online education is presaged by some previous tradition or not, or if an innovation serves to simply replicate an existing ideological structure, there still remains an anticipatory and not-yet-present aspect to the work of design.

Building on the basic connection between human thinking and technology, this radical recasting of the determination of values in design begins to open up a consideration of practical measures involved in the establishment and development of values in an area such as online education. Already at this provisional point, given the open and praxis-based nature of the instantiation of values, the figure of the discipline of interaction design, with its already-considered critical approach to questions of the instantiation of values, seems well-established to guide online education as it moves the paradigm forward. By pointing to critical aspects of the function and possibility of meanings which are left yet to come, the work of online education design is given an explicit framing for understanding the development of new values and concepts. All this under the rubric of technological thinking.

The Critical Example of Ideology

In looking at how to account for the instantiation of values in design, it is clear that there exists the potential for not just looking at the values and concepts themselves, but instead to look to the influence of various ideological movements that come shape the kinds of values and concepts put forward in online education. In this way, the problem of overlaying some (arbitrary) system of values atop the situation of the design of online education is avoided in favor of tracing the conditions that lead to the present state. The influence of ideological movements on the development of computing more generally has been seen to push toward the establishment of “a preferred social order” (Kling & Iacono, 1988, p. 227) which, with each new development in computing, takes on a new ideological character (Elliott & Kraemer, 2008). Either generally (Njenga et al., 2010) or with specific aims (Ravid et al., 2008), ideological movements present sets of values and visions for what online education, as it develops, can be and how it is to be understood. That is, the values and concepts that arise as part of online education do not just appear of their own accord; rather, they are motivated by certain already-developed concerns and historical antecedents (Harasim, 2000; Larreamendy-Joerns & Leinhardt, 2006).

While considerations of the various forms of ideological influence possible in the determination of values in online education (administrative, pedagogical, economic, political, institutional, etc.) can be of value (particularly from a historical-critical perspective), the specific manner in which values in computing are instantiated in material form (in a mode reminiscent of Langdon Winner (1980)) calls for a particularly materialist theory of ideology which runs counter to the radical openness of the generalized technological practice as developed. In particular, this contrast can be understood through Derrida's critique of Louis Althusser's theory of ideology. In explicating the nuanced distinction between discussions of ideology and of our account of design, we will contrast an Althusserian reading of the rise of MOOCs with Derrida's (in

our view) more basic consideration of *différance* and the role that it has in understanding the development of the concepts and values surrounding education.

Considered in blunt terms, there are two main approaches to the organization of MOOCs: cMOOCs and xMOOCs (Clow, 2013). cMOOCs, largely considered to have initiated the concept of massively-scaled education, sought to bring together large numbers of users who would be able to combine their individual knowledges in a connectivist learning practice (Siemens, 2005), drawing together various fields and developing new insights. From the standpoint of an educational philosophy, this kind of broad based and peer to peer strategy stands in contrast to the type of MOOCs that followed and that which gained wider appeal, xMOOCs. In xMOOCs, as first widely popularized through Stanford's course on artificial intelligence introduced by Sebastian Thrun and Peter Norvig (Martin, 2012), students engage with a course largely in the manner of a traditional face to face, top down course: they watched a lecture, read texts, took quizzes, and so on. Where cMOOCs placed interaction between students themselves at the heart of the function of a course, xMOOCs maintain a more traditional approach to student interaction, seeing it as a benefit that follows along after the main pedagogical guidance of the instructor. That is, the values of traditional modes of education are carried over more directly in xMOOCs. The reasons for why xMOOCs flourished while cMOOCs simply continued on their own path can be read as an illustration of the reproductive function of ideology, particularly in the materialist understanding of ideology developed by Louis Althusser. Denying any ideal sense of ideology founded on conceptual belief, Althusser (2001) emphasized a more deeply rooted form of ideology that instead functions and is reproduced through material practice. In a manner later taken up by Anthony Giddens (2013) with his structuration theory, ideology has a material existence that is kept up through participation and repetition. As Slavoj Žižek (1994) puts it,

> "[w]hen Althusser repeats, after Pascal: 'Act as if you believe, pray, kneel down, and you shall believe, faith will arrive by itself,' he delineates an intricate reflexive mechanism of retroactive 'autopoetic' foundation that far exceeds the reductionist assertion of the dependence of inner belief on external behavior" (p. 12).

In the case of the development of MOOCs, it is possible that the current popularity of xMOOCs over cMOOCs can be understood in just this light. It is not that there is necessarily any ideological belief that one approach is superior to the other (either in the eyes of the public or educators), rather it is simply that the more traditional educational model expounded in xMOOCs is that which, in terms of practice, is known and repeated throughout the world. The values and concepts that are given shape in xMOOCs are simply reproduced from established material forms through a kind of habituation of practice, on the part of educators, administrators, designers, and students. Both in terms of the educational practices themselves or the economic or other practices that surround educational institutions, this kind of ideological rendering can give a robust account of the development of the systems of values in MOOCs.

Despite its usefulness in understanding the reproduction of ideological concepts, such an accounting faces a similar challenge from Derridean deconstruction as does the previous consideration of the deployment of categories of values in design. While Althusserian ideology gives a neutral account of the reproduction of values (that is, not overlaying an artificial set of categorical values on any situation), any recourse to ideology is stymied by the ethical distinction that the question of ideology seems to make—one which sets ideological reproduction against that which is either "natural" or "scientific."

In responding to Althusser's formulation of ideology, Derrida strikes a tone similar to that as when he asks for a genealogical approach to be taken toward concepts in general:

> "I believe that ideology has a history, that the concept of ideology has a history, that the word ideology has a history—a history that teaches us to mistrust the sharp break between science and ideology. . . . Around Althusser people acted as if the word and the concept of ideology were conventionally definable and as if they were going to be able to start all over again in order to

> have them accomplish a new task without questioning their genealogy. As if the concept and the word themselves were going to begin functioning by cutting themselves (scientifically) off from their history, from semantics sedimented within it, etc., as if one could obtain a non-ideological, uncontaminated, scientific concept of ideology" (Sprinkler, 1993, p. 202).

This critique of a stable and easily defined concept of ideology is illustrative of Derrida's general approach in which a historical "contextual necessity" (Sprinkler, 1993, p. 202) helps to drive conceptual definition and the choices that go along with such a calculation. The presentation of a simple replication of systems of education and their values in the form of xMOOCs papers over the accounting of a more general system that can be given in *différance* and in the "to come" of the work of technology design.

At bottom, where Althusser's conception of ideology falters most severely is the way in which his concept of overdetermination can be worked against his own argument for ideology (Sprinkler, 1993). For Althusser (2005), "overdetermination" provides a useful shorthand for discussing the sometimes overlapping and multiple causes of historical phenomena (as might be found in the varied reasons for xMOOCs' success). In attempting to define any particular ideology, overdetermination proves to be problematic, undermining the possibility for the recognition of any unifying feature of an ideological movement. The naming of any monolithic ideological movement runs afoul of the potential for the multiple, layered, and contradictory causes that might engender any event in the field of historical determination. For example, in the case of the rise of xMOOCs, while it is possible to detail some movement of ideological influence, to ascertain and understand what that influence consists of in light of the kind of overdetermination brought on by the varied aims and influence of educators, students, administrators, etc., any singular ideological story begins to appear brittle.

In this, Derrida's critique of Althusserian ideology provides a direct example of the kind of ungrounded perspective on the development of meaningful concepts that Derrida's mode of deconstructive analysis provides. In looking toward the stability of any concept or the decisions that go into the formulation of any concept, such as education, instruction, students, etc., one comes up against what Derrida calls a set of "more or less identifiable and overdetermined trajectories" (Sprinkler, 1993, p. 203).

More than simply analyzing and asserting the presence of certain ideologies or even the contaminations influencing the values and aims of the developing picture of online education, it is necessary to, following Derrida's critique of Althusser's concepts, engage in a continual renewal of the setting of ideology in the same manner as recommended in the case of values and categories. It is not enough to consider the modes of ideology at work, or the kinds of values and categories being instantiated in online education, but it is also necessary to consider the broader terms (values, categories, ideology) as well.

Ethics and Events of Design

This sense of being unable to rely on any foundational or final concept is perhaps what provides the best evidence that the design of online education should be understood in technological terms (as formulated by Derrida). In its radicalized form, a technological interaction design steps away from the safety of the terrain of already-established and present concepts and instantiates that which, for all intents and purposes, can only be thought of as new. Recalling Bødker's (1998) definition, the result of design is always and necessarily founded as some kind of eventful newness that is disentangled from any structural genesis that may be found as antecedent. In laying this out in ontological terms and (as discussed in section 4 above) avoiding a historical reading of novelty, it is this kind of unstructured genesis that Derrida's conception of *différance* makes clear.

What subsuming the question of education to a technical practice does, under this Derridean schema, is to make the forward looking and anticipatory practice of designing online education one which

is centered on a consideration of ethics. For Derrida (1995), the question of the ethical decision is one which is founded on this exact sense of anticipation and openness. The truly ethical decision is that for which the response and the consequences of such a response can never be known or calculated in advance. In the elevation of the central quality of an unknown newness over mechanical assemblage of known parts for a known function, the work of technical design turns and becomes more innately human than any discourse founded in a disciplined educational practice.

This view of ethics—of the need for a radical moment of judgement—carries with it a shadow of an Aristotelian version of virtue ethics, and the kind of skillful, non-categorical judgment that is to be fostered under such a system. Particularly in the figure of *phronesis* (practical wisdom), the mode of judgement is such that it relies explicitly on this kind of undecidable setting. Like hermeneutic interpretation (Gadamer, 2004), *phronesis* relies on the translation of past experience to present (and unique) settings. The figure of technological practice, as that which is fundamentally linked to the constitution of the human, rests on this mode of undecidability with the moment of design decision coming as a break between the undecidable future and (on the basis of the need for its interpretation) the undecidable past. Considered in this hermeneutic light, set at the opposite pole from the opening of the "to come" in the event of design is the reliance on such a moment of decision on a background of experience and tradition that guides such decision.

In this, the result of understanding the development of concepts and values surrounding online education wholly within a technological frame binds the question of design to traditional concepts such as ethics and values, while, at the same time, asserting the weakness of any such concepts, as they too are subject to deconstruction and critical re-evaluation in the opening of the "to come" in design. This sense of conceptual weakness sheds a particular light on the travails of information science as a whole. Given the link between human activity and technology (and particularly as it is seen in the link between information and its technological expression), the conceptual weakening seen in this reading of the work of design is addressed more broadly to the work of information science. This kind of conceptual weakening highlights the reflexive function of information science, illustrating that it must be open to the constant reformation of the possibilities of information, technology, and values and concepts that are expressed through them.

Recommendations

While it goes somewhat against the spirit proposed by such a discussion of the necessity for a continual reevaluation of concepts (even those as fundamental as technology or education), several concrete recommendations are nevertheless possible. The four recommendations that follow are offered as two sets of countervailing pairs with each recommendation offering a nuanced contradiction to its partner. In this, they represent the apophantic position contained in any anti-humanist stance. As Hans-Georg Gadamer (2004) puts it, the question is "not what we do or what we would to do, but what happens to us over and above our wanting and doing" (p. xxvi). As in the consideration of the possible determination of specific values in education, these recommendations serve to highlight the contingency of making design decisions within an emerging domain such as MOOCs.

7.1 **Recommendations for Understanding**

7.1.1 Tradition as Guide, Not Law

In looking to understand the concepts, values, and ideologies surrounding and shaping online education, it is necessary to look to the established traditions of education in order to guide the evolution of concepts and values. Understanding emergent forms of online education necessarily relies on established and sometimes even stale considerations of education. For MOOCs, these traditions range from considerations of early online education (Harasim, 2000) to understanding the correspondence courses which set the stage for what distance education could be (Larreamendy-Joerns & Leinhardt, 2006). Such

traditions, of course, are neither perfectly knowable nor are they without contradiction to one another. As such, while the guiding theme of hermeneutics recommends a firm attention to the traditions of interpretation surrounding any object of culture, such tradition cannot be held to in lock-step manner. Instead, it is important to approach the question of tradition with a sense of *phronetic* judgement. This kind of practical wisdom built on a wealth of experience is the model on which it is possible to understand our hermeneutic relationship to tradition. The work of the design of online education is such that the designer must be guided by the previous traditions and the concepts and forms that they bring to light, but must also be judicious in their re-translation of this tradition into new technological forms instantiating new values.

7.1.2 The Undecidability of the Concept

As is central to Derrida's mode of epistemic interpretation, it must be remembered that our ability to fix any particular conceptual meaning in place is limited, with the definition of a concept being spread out over a network of historical and conceptual linkages. When considering the development of the meaning of education across a span of time or various interpreting populations, there remains the practical possibility for an epistemological break in which the terms, values, and categories used in online education at one moment are incommensurable with another moment of their interpretation. It is possible that how we understand online education today will be at odds with the way in which we consider it tomorrow. Such a shift is already readily visible in the development of MOOCs as the terms of what is considered successful in education are subject to rapid shifts and radical re-interpretation (Koller, Ng, Do, & Chen, 2013). Whatever the motivation for such re-interpretation, the technological developments that herald them accord to the undecidability explicated in *différance.*

7.2 Recommendations for Action

7.2.1 The Decisive Nature of Ethical Action

In light of the need for individual action within an ever-developing historical field, there is, as established in slightly different forms by both Derrida (1995) and Alain Badiou (2001), a call for a radical form of eventful ethical decision that can be applied to the work of technology and interaction design. As discussed, this kind of ethical action takes the form of a true decision. Given the kind of undecidability present in any concept, the work of instantiating particular values in the design of new systems for online education immediately takes on this kind of decisive character. There is a need to consider the way in which, as a creative activity, the design of online education functions as an event that, in the undecidability of the terms of its conceptualization, should be considered as being ethically conditioned, as there is no predetermined outcome the the chain of the deferral of meaning. For online education, this points to the value of a cyclical and reflexive mode of design (Clow, 2012) in which the need for an initial decisive act of design is necessary to begin a robust and reflective approach to the continued iteration of the work of education design. In this, as in the recommendations for understanding above, an appeal to tradition for the direction of the initial work of design is complicated by both the instability of any conceptualization of tradition and the following translation and iteration in design.

7.2.2 The Field That Contains This Action

Outside of any undecidability of understanding, online education still also feels the pull of tradition, such as can be conceptualized as either a hermeneutic ideal or even Marxist materialism. This gets to the heart of the quote from Gadamer above: that even beyond our ability to act, there remains some course to development that we have no hand in. As such, for the design of online education (and this is the grand lesson demonstrated by Social Informatics (Sawyer & Eschenfelder, 2005)), we are not, as designers and educators, able to design completely away social problems or to wholly reconfigure the social forms so as to be most hospitable to our (technological) hopes for online education. Online education takes place within a wide field of historical action which is itself both overdetermined and undecided. As they develop, the artifacts of MOOCs themselves come to play an active role in the determination of this sense of

historical effect (Ponti, 2014), adding complexity to this field which delineates the possibilities for any ethical action.

Discussion

More than offering a formula for direct future action, these recommendations are aimed toward a kind of critical conceptual development. They point to the more broadly writ central contribution of this paper: that the work of design is always within a particular historical and contextual setting and as such, by definition, functions in a radically open fashion. The link between the work of design and the values that it produces is founded at this fundamental locus of contingency and openness. Just as the values, meanings, and functions instantiated in the work of design are best understood on a case by case basis given the particular setting of any design problem, so too is the work of design contingent. The technical and social novelty of MOOCs makes this evident.

While empirical insight and the development of tools to improve online learning provide valuable contributions, for the work of interaction design itself even these kind of scientifically derived best practices are still beholden to a more foundational and situated interpretive mechanism. Indeed, it is precisely because of the situated nature of the work of design that user-centered and value sensitive design have been developed. For online education, the specific domain level insight of educators plays an important role, one that is able to be accounted for in the design process, but not the other way around. Educational discourses may be contained within discussions of technology, but to structure it the other way around seems impossible. Technological discussions of the politics of artifacts, the act of technological making, or of how values and categories can be determined through processes of design are able to go on without recourse to the specific discourse of education, but the reverse of the situation can not be possible. This is not to in any way give ontological privilege to the technologies involved in online education over the educational impulses themselves (a move which would contrast sharply with the Derridean framing given here). Rather, it is simply to set out a useful and expedient framing of the space shared by technology and education. By establishing the discussion surrounding online education as one of technology design and founded on the already existent critical considerations of values and categories in the work of design (especially as radically reconsidered here), those educational discourses voiced by teachers and administrators are given the kind of open space that they need in order to make the most impactful contribution possible.

At bottom, this paper is meant to serve the kind of edifying and therapeutic function described by Richard Rorty (1979): It is not that we will find any final answer for the way in which new concepts in education develop, but that by approaching questions in a philosophical way, we condition ourselves for confronting them. Such discussions steel ourselves for further action.

In the same way, the present discussion of the values and purposes of online education and how these issues should be approached and managed seeks to provide a similar sense of therapeutic benefit. By framing the anxieties and possibilities surrounding online education as, above all, technological problems, the hope is that this formulation offers a therapeutic framework that can be turned to as educators, designers, policy makers, and researchers seek to continue the ever-changing project of redefining education for our era. MOOCs, in particular, seem to engage these anxieties in both broadly social (Byerly, 2012) and technological (Russell et al., 2013) ways. The possibilities for MOOCs, like the work of design that makes them possible, remain open.

Conclusion

Aimed toward a reconciliation of the developing aims of education and the kind of technological development necessary for the design of online education, this paper gives a sense of the ways in which the needs of both design and of education, as they each grow in radical new ways, are able to be

consolidated under the banner of a flattened understanding of a general technological activity, one which is inextricably linked to basic human practices and the open field of conceptual development represented therein. Even more basically, this rough sketch of the disciplinary alignment possible between education and interaction design provides a conceptual model for how to understand the unifying potential found in information science. By clarifying basic philosophical issues that lay deep within disciplinary activity and by providing an open ended and non-teleological path for the continued development of concepts and values in the work of information science, this paper demonstrates the need for and benefit of a constant reevaluation of the purposes and aims found in the work of information science and its technological applications.

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