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# Judging Technology, Judging Intent: The Doubling of Need in Design

Michael Marcinkowski<sup>1</sup> and Frederico Fonseca<sup>1</sup>

<sup>1</sup> Pennsylvania State University

## Abstract

Confronted by the challenges posed by the development of massive, open, online courses, design in information science research takes on a unique ontological character. Not simply a progression from human needs toward technological fulfillment, it comes to be understood as the eventful moment of the interplay of ethical decision and the material possibilities of technology. Conceptualized as such, design work presents an image of information science as progressive, deeply historical, and immanently concerned with the question of how to live. Starting from a consideration of the social-technical gap, the hermeneutic interplay of the distinct epistemological stances of ethics and technology is discussed, and an ontological understanding of design as centered on the logics of event and hospitality is introduced.

**Keywords:** design, online education, MOOCs, hospitality, socio-technical

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**Contact:** mrm5586@ist.psu.edu, ffonseca@ist.psu.edu

## 1 Introduction

The arrival of massive open online courses (MOOCs) has brought back a key issue in the design of applications: the interplay between a single designer and a multiplicity of users. While many applications and systems today (ranging from Google, Facebook, to even something like Angry Birds) are designed by a single person or by a very tight and small group of people, they are nevertheless used by thousands of people of different ages and cultures. In the case of MOOCs, designers must be able to take the well-defined content of a course and be able to convey that to a massive, culturally-diverse, and largely unknown audience. In their design, MOOCs raise the question of how the specific intents and goals of a designer are able to match to those of a widening variety of users, each approaching the course from their own personal and cultural perspective, all within the field of technology.

The modes of interaction found in MOOCs and other online systems provides an opportunity to improve on the understanding of the ideas behind approaches to user-centered design. At its best, user-centered design provides guidance for how to understand what needs to occur in design. As others have noted, as an idea, user-centered design can be strained by either too much and too specific of input from users (Norman, 2005) or by a lack of access to users by virtue of either distance (Blom, Chipchase, & Lehtikoinen, 2005; Crabtree et al., 2006). By inviting a diversity of users all with unique cultural and individual needs, MOOCs strain existing understandings of the task of design.

Central to these concerns is the assertion that social and cultural motivations are important for understanding use and that the work of design is itself embedded within larger socio-technical structures of traditions of use, notions of the possibilities offered by technology, and the historical context of design work (Irani, Vertesi, Dourish, Philip, & Grinter, 2010; Sengers et al., 2004). In all of this, there is a push toward understanding the work of design as contingent and specifically amethodological in its reliance on personal, interpretive, and sometimes arbitrary choices on the part of a designer (Neustaedter & Sengers, 2012).

### 1.1 Online Education Design, Information Science Design

The continuing development of the question of what online education design should be is reflected in the more general questioning over what information science is. Reflecting on the development of the definition

of information science, David Bawden (2008) noted that "[t]he cynic might say that we are still waiting for this, nearly 30 years later" (p. 416). This cynical waiting for definition is, in many ways, not just a symptom of the growing pains of a new discipline, but a necessary indeterminance found in a field which plays a largely synthetic role "concerned with the integration of the contributions of other sciences" (Meadow, 1979, p. 221). For us, what is important here is not any particular definition of information science (as Bawden (2008) shows, there have been many views that have disputed this particular formulation), but rather that information science, whatever it may or may not be, is at its core, an evolving and progressive discipline, one that is concerned with subjects that themselves are evolving and progressive. As Ronald Day (2001) demonstrates, the question of how to understand information (and information science) is one that deserves a historical account, as it is a progressive and changing thing whose identity is shaped by the aims and machinations of the powers of each particular era. The progressive and historical nature of understanding of the role of information is what, perhaps, gives information science a sense of being undetermined.

For us, the question of how to understand design in information science is, above all, an ontological question, one that serves to orient our research in a philosophically ontological manner (Fonseca, 2007). We are concerned with questions of design in information science and online education, and with using the fundamental question of what design in information science is in order to gain insight into the pressing questions that surround the increasingly important role that design plays in our society (Norman, 2010).

In building out an ontological understanding of design in information science, we will start from the gap between human needs and technological possibilities, radicalizing this ontic distinction through a discussion of Hans-Georg Gadamer's concept of the situation. In turn, this hermeneutic understanding of the situation will be examined under the conditions of a process of design. Following this, a conception of design as an event of ethics and technology will be developed, and their interplay in the form of Derridian hospitality will be discussed. Finally, we will return to online education to demonstrate how this ontological view of design can be understood in context.

## 2 Understanding Design in Information Science

An often-cited (Carroll, 1997) starting point for understanding design in information science comes with the definition of design given by Herbert Simon (1969) as any course of action "aimed at changing existing situations into preferred ones" (p. 55). This definition is reinforced by Lois Lunin (2009) who in defining design says that it "can be defined as the combination of both the vision and the plans to realize the vision" (p. 1942). These definitions both highlight the double, quasi-dialectical ontology at work in information science. Lunin does this most overtly, with Simon's definition needing slightly more analysis in order to draw out the dual proposition of design. In both, there is a sense of the need for, as Lunin calls them, both vision and a plan to realize that vision: for a designer to have an idea and the technological means to make that idea real.

This two step work of design, comprised of both an intent or idea and the means to effect that idea, comes to be the hallmark of information science, particularly given its progressive and evolutionary stance. As will be developed, these two impulses interact to form the ontological domain of design in information science.

### 2.1 The Social-technical Gap

Working in the area of computer-supported cooperative work (CSCW), Mark Ackerman provides a useful model for beginning to understand this dual nature of information science and information science design—albeit one that is not directed toward the present question. Looking at the "fundamental mismatch between what is required socially and what we can do technically" (p. 198), Ackerman (2000) diagnosed what he termed the "social-technical gap" looming between what is necessary and what is technologically possible. While human beings are nuanced, flexible, and often ambiguous, technological systems, if they are to

function, are not. In formulating this, Ackerman established a theoretical distinction in CSCW between what is technologically possible and what is humanly required. For Ackerman (2000), it is this social-technical gap that gives CSCW its theoretical motivations and "although it certainly can be better understood and perhaps approached" (p. 198), this gap is unlikely to be done away with entirely.

Ackerman (2000) defends this understanding of the social-technical gap against two symmetrical charges that seek to diminish its importance. The first is that "the social-technical gap will be solved shortly by some new technology or software technique" (p. 189). This can be, quite obviously, considered to be the technological solution to the gap, while the second, that "the gap is merely a historical circumstance and that we will adapt to the gap in some form" (p. 189), is obviously aligned with a social or human amelioration.

What is interesting about each of these critiques—which Ackerman answers easily and provides a convincing case for the permanence of a social-technical gap within CSCW—is that they are both couched as historical and progressive steps toward the elimination of the gap that exists in current human uses of technology. That is, they are concerned with socio-technical design at large, extending beyond the immediate conditions of use that Ackerman addresses. Within this historically-developing and progressive setting, there remains a naggingly-present mismatch between the subjective and responsive needs of users, and the more staid (though still changeable and changing) artifacts of technological design. Ackerman's explication of such a gap highlights the continual mutual adjustment that goes on in fitting technology to a situation.

## 2.2 The Situation of Design

The model of the gap that exists between potentially unlimited needs and the finite conditions of technological possibility is a theme that can be seen more generally in the work of Hans-Georg Gadamer (2004) and his consideration of the hermeneutic nature of understanding. Central to this is a mode of fore-understanding necessitated by the hermeneutic circle, with understanding only being possible based on an already-existent (historical or traditional) understanding. For Gadamer, understanding is only ever developed on the basis of the particular historical situation of the interpreter. As he puts it, "[u]nderstanding is, essentially, a historically effected event" (p. 299). As he develops his hermeneutic view of historical understanding, Gadamer works against the idea that it is possible to ever wholly take on someone else's understanding, and asserts that any interpretation is founded on the particular situation under which it is enacted.

This situational and temporal view of understanding can be applied directly to the socio-technical gap in several, complementary ways. Most directly, the gap can be seen as attempting to acquire an accurate picture of use so that design work may be properly addressed.

In their *Understanding Computers and Cognition*, Winograd and Flores quote Gadamer on the difficulty of attempting to provide an accurate depiction of the situation of use:

"To acquire an awareness of a situation is, however, always a task of particular difficulty. The very idea of a situation means that we are not standing outside it and hence are unable to have any objective knowledge of it. We are always within the situation and to throw light on it is a task that is never entirely completed." (Gadamer, as quoted in (Winograd & Flores, 1986, p. 29))

While, according to Vera and Simon (1993), Winograd and Flores use Gadamer's assertion to place

"particular emphasis on the difference between acting in ill-structured, real-world situations as compared with well-structured, defined situations, arguing that symbolic approaches, even if they take account of the bounds of human rationality, cannot handle ill-structured situations adequately," (p. 12)

a more fundamental issue beyond their concern for an ontic environment of action (and one more directly related to the practice of design itself) is at stake.

In describing the concept of the situation, Gadamer provides an account of the epistemic difficulty presented that resonates with Ackerman's gap between what we know we should provide and what we are able to provide. Saying that we "are unable to have any objective knowledge of [the situation]," Gadamer attends to a more formidable difficulty beyond concern for unstructured needs and structured solutions. Just as where in the socio-technical gap there is an inability to match human, subjective needs with the affordances of an objective system, it is the task of hermeneutics "to consider the tension that exists between the identity of the common object and the changing situation in which it must be understood" (Gadamer, 2004, p. 308). In their hurry to offer means to close the socio-technical gap under the rubric of progress (either social or technological), Ackerman's critics instead reinforce the gap in a more fundamental way: the constant shifting of needs and technological means over time simply turns an ontic consideration of the gap (that of the practical question of proper fit) into a more ingrained and ontological gap in understanding as found in Gadamer's hermeneutics.

Of course, for both Ackerman and Gadamer, the challenges posed by a separation between need and technology or between object and interpretation are not insurmountable, but are instead largely productive. For Ackerman (2000), the explication of such a gap is itself important in refocusing research toward "[e]xploring, understanding, and hopefully ameliorating this socio-technical gap" (p. 179). For Gadamer (2004), the "true locus of hermeneutics is this in-between" (p. 295). Similarly, for each, the distance discovered does not close off possibilities for research, but instead opens them up. Gadamer (2004), in particular, in his consideration of the human sciences, sees the uncovering of this kind of limiting structure as immensely important and generative:

"Every finite present has its limitations. We define the concept of 'situation' by saying that it represents a standpoint that limits the possibility of vision. Hence essential to the concept of situation is the concept of 'Horizon.' The horizon is the range of vision that includes everything that can be seen from a particular vantage point. Applying this to the thinking mind, we speak of narrowness of horizon, of the possible expansion of horizon, of the opening up of new horizons, and so forth." (p. 301)

This concept of the horizon is the locus of how Gadamer's approach to the tension between two settings is productive, with the task of hermeneutics being found "in not covering up this tension by attempting a naive assimilation of the two by in continuously bringing it out" (Gadamer, 2004, p. 305). Putting this in terms of the socio-technical gap, the challenge is to not naively bring certain needs together with a solution, but to instead fuse the two perspectives by a hermeneutic dialogue between the different horizons of experience that they represent. "Projecting a historical horizon," Gadamer (2004) reasons,

"is only one phase in the process of understanding; it does not become solidified into the self-alienation of a past consciousness, but is overtaken by our own present horizon of understanding. In the process of understanding, a real fusing of horizons occurs—which means that as the historical horizon is projected, it is simultaneously superseded." (p. 305-306)

For Gadamer's (2004) hermeneutic phenomenology, the interpretive processes that mirror and give shape to this developing link between social needs and technological solutions necessarily have a grounding in the common basis for interpretation that he poses:

"When our historical consciousness transposes itself in historical horizons, this does not entail passing into alien worlds unconnected in any way with our own; instead, they together constitute the one great horizon that moves from within and that, beyond the frontiers of the present,

embraces the historical depths of our self-consciousness. Everything contained in historical consciousness is in fact embraced by a single historical horizon.” (p. 303)

Such an approach is closely tied to Gadamer’s insistence that the weight of traditional understandings bears heavily on any present interpretation, and that there is, despite whatever difference may be felt at any particular moment, one common core to any sense of “truth” can be achieved through philosophical hermeneutic reflection (Bernstein, 1982). That is, our needs and technological offerings are linked by a common tradition of use and design.

### 3 The Ontology of Design in Information Science

While maintaining an a priori separation between human needs and the technological answers to those needs is a useful approach to understanding the ontic theoretical problem-space of information science, such an approach proves difficult in providing an ontological account of the work of design. While Ackerman’s social-technical gap provides a useful orientation for CSCW and gives ontic import to the theoretical work in the field, its stark division between technology and human needs is not ontologically viable for understanding the role of design in information science. Which is not to say that that is its purpose. Ackerman’s gap describes the immediate space of what is needed out of technology—for technology to satisfy needs as a singular theoretical whole—but does not set the question of the match between technology and need within a more fundamental framing of the ontological relationship between human beings and technology that extends beyond the moment of use and to the moment of design. As does Gadamer’s hermeneutic approach, the model of the socio-technical gap struggles to approach the activity of design as it is spread across the situations founded by use and the situations founded by the technological artifacts involved. While each point to, neither provides an ontological account of the enactment of the possibilities offered.

Still, an approach which isolates human need from technological capability under the banner of the general requirement of satisfaction does provide a useful beginning to understanding an ontology of design in information science. Following such an approach, the component parts of design—technological means and intent—will be examined individually.

#### 3.1 Technological Possibility

Herbert Simon provides a good place to start in order to understand the role of technological possibility in design, particularly in that his conception of design is almost purely technical. While including the idea that the goal of design is to “make artifacts that have desired properties” (Simon, 1969, p. 129), he excludes this sense of imperative from his formal description of design, making it wholly about the question of optimization toward a goal. In judging success, the benchmark is always, “does the system designed create the desired change?” The technological branch of information science design is one of effectiveness that is couched in the ability to set up systems that do what one wants them to do. In online education, for example, the question of the technical ability to communicate a message from one place to another (where the question is of whether the message arrived or not) is wholly different from the question of what the intent or motivation, in terms of educational goals, seeks to accomplish. The former would be a question of technological possibility, while the latter is of ethical intention.

In its basic appeal to what is technologically feasible, this sense of possibility has an almost universal and positivist character. If such a technological system is able to accomplish what it does for one person, it will do it for another. So, in the example of online education, what can be understood as being technologically universally possible is the fact that a message can be communicated using online tools. This says nothing about whether it will accomplish any particular educational aims. This mode of technological possibility exists independently of any cultural value or intent. In many ways, such an account begins to

reinforce Ackerman's social-technical gap, showing an unbreachable divide between human needs and technology, albeit under different terms and conditions, and with different implications.

Gadamer (2004) too distinguishes between this kind of "technical" application from other types of application, saying that

"[i]t is not only that moral knowledge has no merely particular end but pertains to right living in general, whereas all technical knowledge is particular and serves particular ends. Nor is it the case simply that moral knowledge must take over where technical knowledge would be desirable but is unavailable. Certainly if technical knowledge were available, it would always make it unnecessary to deliberate with oneself about the subject. Where there is a *techne*, we must learn it and then we are able to find the right means. We see that moral knowledge, however, always requires this kind of self-deliberation." (p. 318)

The limits of technical knowledge, of the object of technology, then comes to be understood in contrast with moral knowledge, which "can never be knowable in advance" (Gadamer, 2004, p. 318) and "has to respond to the demands of the situation of the moment" (Gadamer, 2004, p. 319). What Simon's (1969) account of design leaves out when describing design work as being concerned "with devising artifacts to attain goals" (p. 133) is an explanation of how to determine "how things ought to be" (p. 133). That is, for online education, there is, beyond any technical accomplishment, a fundamental question concerning the educational purposes and modes that should be instantiated in any technological design.

### 3.2 Ethics and the Intention of Design

As the development of a concern for culture and human perspectives within information science has shown (for example, (Ehn, 1988; Kling, 2007; Suchman, 2006)), the question of what should be done technologically under any particular circumstances is an important one. In many ways, the basic question of information science once the question of technological efficacy is momentarily suspended comes very close to Aristotle's (2004) original question concerning ethics: of what to do in order to live a good life. In framing his ethics, Aristotle was not concerned with a basic question of whether or not any discrete action is ethical or not, but rather with what should be done in order to achieve a good life. At issue here is a consideration of what types of activities one should invest their time in and how we should judge the outcome of any effect of our efforts. Looking beyond Simon's explication of design, when viewed from the position of an Aristotelian framing of human action, there is a distinctly ethical component to information science design. It is only once our goals and values have been examined and we have decided what should be done that we are able to design technological systems to achieve those things.

Diverging from the picture of technological possibility as described in the previous section, this ethical question of what to do is not universally answerable. What is good for one person in one moment may not be good for another. More than just appealing to a sense of individual or cultural determination, this heterogeneity of ethical intent and desire is one that is situationally and historically derived. At its center, this kind of ethical variety is consequential particularly in the way in which it is subject to Gadamer's concept of the situation of interpretation: that the circumstances and terms of any ethical consideration are always only able to be approached from an insular and situational perspective.

While ethics in design has been discussed in many ways (Brey, 2000; Floridi, 1999; Friedman, Kahn, & Borning, 2006; Winner, 1980), we are not concerned here with the possible representation of any particular ethical system, but instead with a general inducement toward action that an Aristotelian consideration of ethics brings. What is of interest here is the way in which technological possibility interacts with the basic question of "how to live" and thus contribute to an ontology of information technology design. Neither the question of ethical intent nor the question of technology, however, is limited to such a singular consideration, and each (when starting from such an a priori distinction) needs to be subject to a double consideration: first in their initial formulation (as technology and as intent) and then again when brought together in the

activity of design itself. That is, when understood in an ontological fashion from an initial divide between intent and technology, each aspect (the moral force of the technological action and the materials involved) must necessarily be considered twice.

## 4 Ontological Doubling of Design

What we see in the ontological constitution of the field of design in information science is a progressive interaction between these two distinct impulses: the technological and the ethical. In their inextricable connection and following on the theme developed by Gadamer, the two take on the character of the hermeneutic interplay between figure and ground (Martin & Fonseca, 2010). In traditional forms of hermeneutic textual interpretation, the meaning of a particular passage is interpreted based on a reading of the whole of the text (Grondin, 1994). The whole of the text (the ground) invests the particular portion (the figure) with its meaning and vice versa. Here, on the one hand, technological possibilities offer a field on which we are able to articulate the figure of our ethical ambitions, and on the other, our ethical ambitions serve as the field against which we derive technological innovations.

Central here is that the ethical goals set in the process of design and current technological capabilities are each, and in their own ways, determinate of the ontological field of design in information science. Each are progressive and evolving, and following the figure of the hermeneutic circle, change over time in each instance of design. In this, the kind of ontological understanding that is developed in this hermeneutic process “proves to be an event” (Gadamer, 2004, p. 308).

### 4.1 The Event of Design

As has been described above, as a progressive and ever-changing field, the work of information science design comes to rely on the logic of the event in order to provide an ontological account of its development. Coming out of various veins of post-structuralist philosophy (Badiou, 2007; Deleuze, 1990; Derrida, 1995), the logic of the event focuses on the absolute uniqueness of certain sets of occurrences. In the present use of the term, “event” explicitly means that which is not typical or universal and finds some lineage with Heidegger's *Augenblick* in which “[t]he singularity and uniqueness of the moment is a crisis calling for an individuating decision and resoluteness in response to the situation” (Nelson, 2007, p. 103), as well as with Gadamer’s (2004) consideration of the phronetic instance of legal judgment in which “every law is necessarily in tension with concrete action” (p. 316). That is, such a moment cannot rely on general prescriptions for action and instead pushes them away. It is a “dynamic and unstable moment” which

“destabilizes pre-existing concepts and habits, even while it evades and resists normalization and being subsumed under categories, classes, and universals.” (Nelson, 2007, p. 103)

In this, design, as it is comprised of the moment of ethical decision against a backdrop of technical possibility (and vice versa), takes on a unique ontological character. It is not simply the progression from human needs toward technological fulfillment, but it is a unique and eventful moment in history which comes to be in the interplay of our ethical decisions (in the Aristotelian sense) and the material possibilities of technology. It punctuates the otherwise constant progression of information science.

This event, as such, revokes previous considerations and presents a new historical situation (in the Gadamerian sense) to the designer involved. This new situation is unique from anything previous, and accounts for the mode of innovation or newness that is found in design (Bødker, 1998). In Derridian (1995) terms, this new situation, as the eventful confluence of ethical intent and technological possibility, becomes a kind of *mysterium tremendum* in that

“[e]ven if one thinks one knows what is going to happen, the new instant of that happening remains untouched, still inaccessible, in fact unlivable.” (p. 54)



Above and beyond the mode of hermeneutic interaction of intent and technology that is seen in producing the event of design, there is a further step required, one that is necessary in order to frame the work of design in a temporal and evolving setting such as presented by information science in general.

## 4.2 Integration and Hospitality

In looking at the eventful interaction of the dual impulses of design, it is useful to consider a conceptual position introduced to information science by Claudio Ciborra (1999, 2004) as a way to re-orient the ontological understanding of information system design and organizational integration (Brigham & Introna, 2006). Also focusing on a mode of design work, Ciborra approaches design from a less immediate position than here, and attends to wider, more systematic concerns. Nevertheless, examining the relationship between technological artifacts and organizations, Ciborra uses Derrida's (2000) concept of hospitality to re-figure the relationship between existent organizational practices and practices that are introduced by a new technology. The concept of hospitality, for Derrida, relies on a radical acceptance and openness to the coming of a stranger. The stranger, in being appropriately welcomed, is treated as equal of the host, given the same rights and opportunities as the host, all the while still remaining only a guest: "The guest becomes the host's host. The guest becomes the host of the host" (Derrida & Dufourmantelle, 2000, p. 125).

For Ciborra, while this logic of hospitality provides an insight into how information system design should approach the integration of a new technological system into an existent social one, what is important for us is the ontological picture of design that it provides. In looking at the event of design as occurring with the interplay of technological possibility and human ethical intent, it is possible to first see the way in which each of these discrete impulses welcomes the other, while still each remaining distinct. Just as it would be impossible to imagine any form of information technology (as material artifact) to exist without some motivating human intent, neither would it be possible for human intention toward information (whether considered traditionally technological or not) to exist without the object on which it can project that intention (Day, 2011). In both cases, the one opens itself completely to the other.

While this largely follows the already-discerned hermeneutic structure of the interaction of figure and ground, there is one distinct difference between the kind of interaction that is present in Gadamerian hermeneutics and the picture of hospitality drawn out by Derrida. Whereas the case of hermeneutics is predicated on the necessity of some pre-given tradition on which to build an interpretation (as in the case of the interpretation of the law by a judge), Derrida's (2000)

"unconditional law of hospitality, if such a thing is thinkable, would then be a law without imperative, without order and without duty." (p. 83)

In our scenario, such unconditional logic is what allows for any kind of newness or innovation in the work of design to appear.

More importantly than just providing an alternate and more immediately progressive picture of the interaction of intention and technology found in hermeneutics, the mode of disjunction seen in the concept of hospitality gives shape to the nature of the event of the interaction between the two as well as the kind of innovative and progressive newness that design brings. As Derrida (2000) describes it,

"absolute hospitality requires that I open up my home and that I give not only to the foreigner . . . but to the absolute, unknown, anonymous other." (p. 25)

That is, there comes to be a decisive acceptance of the result of the conjunction of the initial event of design; when confronted with the unexpected and heretofore unknown conjunction of the ethical intent of design work and the technological materials of it, there is an ontological necessity that such an event be welcomed, even as it may be unknown.

In this ontological picture of design in which technological possibility comes together with ethical intent in an event in which each opens itself to the hospitality of the other, design achieves a fully historical

and situational character. The decisions of design concerning this mode of hospitality become, for designers, truly ethical decisions: “ethics is hospitality” (Derrida & Dufourmantelle, 2000, p. 17).

In Derrida’s (1995) account of the moment of ethical decision, the ethical decision is that which cannot be planned out in advance. If one were able to decide before the occurrence of an ethical decision what the correct decision would be, then such a decision would not in fact be an ethical one. It is this inability to prescribe the outcome of any ethical decision that leads design as whole toward a logic of the event and hospitality. In this temporal contingency, in which designers are faced both with judgments of ethical intents previous to the event of design, and in the event of design itself when such ethics comes into relation with technological possibility, design takes on the character of a doubly ethical moment. Design becomes strung between these two moments of decision.

## 5 The Case of the Event of Online Education

As has been sketched out, an ontology design of online education can be conceived of as an eventful interaction of intention and technological possibility. There are both moral aims in education, as well as technological concerns that, more in line with Simon’s more engineering-centric picture of design, serve to provide a distinct and portable formulation of how to achieve some goal. The technological tools that make such things as long distance and distributed communication possible are a kind of accomplishment that can be considered in a way wholly-distinct from educational intents.

This independence comes to an end with the event of design in which the ideals of education are expressed in technological terms, or, conversely, when technological tools are given purpose in an educational context. While an initially hermeneutic rendering of this points to the revelation of a unified horizon which supports the two distinct positions, the event of design introduces such radical alterity that it must be confronted in a mode of hospitality. That is, from the perspective of design work, the event of design does not reveal anything about the world, rather, it asks of how this new design may be welcomed into the world. This can be seen in the case of MOOCs: rather than providing insight into the existing conditions of education, their design has challenged present understandings of what education can be going forward (Russell et al., 2013).

In the ontology of online education design, there is not simply a gap between technological capabilities and the needs of users. Instead, both the aims of education and of technology are understood to be developing, with the event of design bringing these two distinct epistemological framings together into a coherent formation. For designers, this places their work within a specifically historical moment, one which not only provides the ethos of education and the technological tools, but also the surrounding situation into which their work will be welcomed.

## 6 Conclusion

The question of design in information science is one which presses the progressive and historically-situated character of both information science and design. Rather than being focused on a staid socio-technical gap that provides a model for the field, an ontological understanding of design relies on a dynamic account of the interaction that occurs within the space of the gap, and presents a series of ethical questions to designers concerning the purposes of their work, and how that work may be integrated into a larger field of socio-technical activities. MOOCs, with their field-defining potential, particularly serve to provoke ontological questions concerning the nature of design in information science.

In laying out an ontological and ethical understanding of design which relies on the concepts of event and hospitality, our work points to future questions concerning the determination of intention in design work, how design decisions may be better understood in large-scale design situations, and how the technological and ethical possibilities come to be established. As the rise of online education demonstrates,

fundamental aspects of human activity have become intertwined with questions of technology, and there remains much to do in understanding the complexity of their relationship.

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