What Technology Reveals: Countering Binaries and Moving Toward the In-Between

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Reflecting on educational practice, in an increasingly globalized and technologized context, inevitably involves trudging into the rough waters of the debate over online education. As I survey the literature, it is distressing to me how much of the literature participates in and validates the binary of the online classroom *versus* the more traditional classroom. Whether the text is venerating online education as the hope for future equality and a decrease in poverty, or even if the text is taking a much more skeptical stance, the volley back and forth is around which is better — the one or the other — online education *or* bricks-and-mortar classrooms. More concerning still, skeptics of online education have argued that online education is *anti* real, anti-embodiment, anti-expertise, and anti-human. And, even when educational scholars talk about creating hybrid or blended online programs, the language tends to involve the creation of a this-space-*then*-that-space kind of plan, where students will be asked to come to campus for two or three class periods — in order to provide some sort of humanness or "real" college experience — and then the students will take the rest of the course online. Such understanding of the potential for educational technologies and online courses belies a lack of imagination and a participation in the binaries of the field: that online education *should* somehow be seen as the opposite of bricks-and-mortar education. This essay acts as a counter to those binaries.

In order to counter the binaries of here (bricks-and-mortar classrooms) versus there (online spaces), I rely on a strategy that David Blacker argues can *show* how some of our common sense notions are in error. Blacker suggests that in order to truly understand technologies and their potential, we must "allow technologies to reveal."[1] That is to say, we need to really look at what the technology allows and disallows; what the technology makes possible, probable, and impossible. As we examine technologies, we can better understand how the *technology* shapes practices, and, on the other hand, how socio-discursive knowledge and regimes of practice shape how we *use* technology — regardless of the potential of that technology. In this essay, I use Blacker's strategy of allowing technologies to reveal the possibility of hybridity, flow, simultaneity, and in-between-ness. I use examples from spaces of digital play to show how technology might be used differently; how we might re-imagine hybridity in a more productive way.

This strategy of focusing on the ways that technologies shape what is possible, versus the ways that humans think that technologies *should* be used, is grounded in the work of John Dewey, Martin Heidegger, and Michel Foucault. These philosophers — while differing in the ways they venerate and talk about technology — each mount an excavational inquiry that, rather than taking practices and artifacts as forgranted or — to borrow Heidegger's term — "ready-to-hand," drive us, instead, to

PHILOSOPHY OF EDUCATION *2013* | Cris Mayo, editor

make technology "present-at-hand."[2] Heidegger compels us to make technologies visible, and reflect on the work that they do. We need, as Dewey suggests, to see what technology "makes possible" and how it reveals the "contextual field."[3] Dewey makes clear that only by looking at multiple incarnations and possibilities of a technology can we come to fully take the measure of that technology. Foucault makes similar calls for excavational work. In *The Order of Things*,[4] *The Birth of the Clinic*,[5] and *Discipline and Punish*,[6] Foucault calls for the excavation of technologies that involve the training, organization, conduct, and performance of the self. By making technologies visible, Foucault subverts the "natural" order of things. My work draws from this same vein: I aim to make technologies visible in ways that undermine binaries.

In this essay, I will foreground the texts that tend to validate the idea that online education should be positioned as apart from or counter to bricks-and-mortar education. I will show that there is a yen to position online courses as counter to an embodied, real, and present educational experience. I will then draw on both post-humanist scholars and media theorists to suggest that — in fact — technology has inherent in it the potential to link up, to become hybrid, to be simultaneous, rather than to stand as *anti* to other ways of doing or being. Finally, I will present examples of technologies that create a truly hybrid, simultaneous, and in-between experience. My hope is that these examples can inspire us to think beyond the narrow binaries of online versus bricks-and-mortar, and, instead, to reflect on the hybridizing potential in educational technology. I begin by focusing on the literature that deploys the binary of bricks-and-mortar versus online educational spaces.

The View of *Here* versus *There*

It is fair to say that most educational scholars understand that the debate over online education is complex and nuanced. There are not any scholars worth their salt that see online education as either all bad or all good. However, I am concerned that, thus far, the preponderance of writing has positioned bricks-and-mortar spaces as either better than or worse than online spaces. Online education has been positioned as antithetical to bricks-and-mortar classrooms. This has been the case regardless of whether the authors are more skeptical or optimistic about online education.

For example, articles by Jennifer Richardson and Karen Swan,[7] and articles by Credence Baker[8] are largely laudatory of the online educational experience. These articles suggest that students do just as well if not better on tests and assignments when they are in online courses as when they take a more traditional course. These articles also give evidence that students can be just as involved and engaged in online courses as in campus-based courses. However, the presupposition is still that online courses should be seen as counter to campus-based courses.

This binary or dyadic model of educational space becomes even more pronounced when we read the skeptics of online education. In this literature, online education is often positioned as: not real, not fully present, not embodied. Thus, online education is rendered not only antithetical to campus-based programs, but rendered antithetical to some sort of "real" educational experience. Note the ways that online courses are positioned in the following quotes.

doi: 10.47925/2013.315

Terry Anderson advocates the "importance of the body in establishing and maintaining human relations" as part of the classroom experience.[9] Thus, says Anderson: "virtual communities by comparison to real ones [create] abstract, diminished, fragile and tenuous relationships, easily broken precisely because they lack the concrete situatedness of embodied subjectivity and intersubjectivity."[10] Notice the ways the author creates a binary between online education, which becomes synonymous with disembodiment, and "real" "embodied" education as synonymous with the bricks-and-mortar classroom.

Hubert Dreyfus furthers this validation of the binary between online classrooms and campus-based classrooms. Dreyfus rejects the use of online courses because he believes that online spaces lack the "actual situations" of embodied learning; and, instead, these online spaces create "disengaged discussions and deracinated knowledge acquisition characteristic of the Net."[11]

Dreyfus, while having a complex and nuanced understanding of how technologies shape and are shaped by human interaction, still seems to buy into the positioning of online classrooms as antithetical to campus-based classrooms. Hubert and Stuart Dreyfus warn us that "real" education calls for real human judgment that is cultivated *in situ*. That is to say, education and learning are produced through the living and practice of real world experiences. And, while I think that most of us would agree with this belief, it is odd that they deploy this belief as an argument *against* online education. In an argument in support of bricks-and-mortar classrooms, the Dreyfuses have warned:

> It would be a mistake to replace skilled air-traffic controllers, seasoned business managers, and master teachers with computers that cannot come close to their level of expertise. Computers that "teach" and systems that render "expert" business decisions could eventually produce a generation of students and managers who have no faith in their own intuition and expertise.[12]

Hubert Dreyfus envisions a world where the real and living teacher must always be in competition with the computer-as-teacher. In the 2009 re-publication of Dreyfus' book, *On the Internet*, Dreyfus advocates the idea that "machines cannot recognize meaning and so cannot duplicate … human judgment."[13] These remarks become a preface for Dreyfus's overarching argument: that humans and machines "learn" in different ways and for different ends.[14] While this claim may or may not be true, my concern is that this writing validates a competitive or contrary (polar) stance: humans and bricks-and-mortar classrooms *versus* machines and online classrooms.

Robyn Barnacle, while drawing on the works of Dreyfus, makes this same move. Says Barnacle: "What Dreyfus calls 'embodied intentionality' forms the basis of all propositional knowledge in that it is the driver for the establishment of new forms of understanding. Crucially, then, not only are formal and embodied knowing integrated but the former is dependent on the latter."[15]

Barnacle tries to distinguish "formal" or real schooling spaces as necessitating a type of embodiment that is only to be found in the campus-based classroom. And, while we may argue over whether or not that type of embodiment really *is* necessary

doi: 10.47925/2013.315

for learning, the more potent point is that the online space is, once again, positioned as antithetical to the "real" space.

The literature guides us into a belief that we must make a choice: either online educational spaces or bricks-and-mortar educational spaces; either an education where students interact with machines or an education where students interact with people. This is a false binary. If we, as Blacker and others suggest, "allow technology to reveal," then we come to see that technology does not, in fact, necessitate this binary. In fact, in many ways, digital technologies are optimized to create hybridities, linkages, flows, simultaneity, and the experience of in-between-ness. New Media theorists and post-humanist scholars are keen to point out that we are beyond the time when it makes sense to think of technologized experience as contra real and embodied experience.

A Pause for Theory

These scholars invite new ways of understanding the hybridity inherent in digital technologies. New Media scholars Henry Jenkins[16] and Manuel Castells[17] have suggested that new technologies are *designed* to converge, multiply, hybridize, and flow into each other. According to Jenkins and Castells, the digital sphere is reliant on human connection and linkage; reliant on spreading into multiple online and real world contexts, in order to stay relevant. Jenkins believes that, unless new technologies link into multiple online and material spaces, these technologies will die.[18] New technologies (media, software packages, other forms of content and *doing*) are designed to create active commitment, engagement, and the desire for "spread" in audiences.[19] So, a sign of a successful technology — in this new era — is that it must *link* spaces, knowledges, and people into relationships. It must form links between digital and "real" spaces. Given this understanding of *how* a technology must work, it becomes counterintuitive to create online classrooms that are considered separate from material educative experiences in the real world.

Post-humanist scholars have further troubled the binary between *virtual* spaces and experiences and *real* spaces and experiences. Sandy Stone gives an example of a not-so-new technology that subverts this binary. Stone[20] gives an example of phone sex workers. She argues that phone sex workers are, in a very real way, selling an embodied experience. Says Stone:

> These sex workers took an extremely complex, highly detailed set of behaviors, translated them into a single sense modality, then further boiled them down to a series of highly compressed tokens. They then squirted those tokens down a voice-grade phone line. At the other end of the line, the recipient of all this effort added boiling water, so to speak, and reconstituted the tokens into a fully detailed set of images and interactions in multiple sensory modes. Further, what was being sent back and forth over the wires wasn't just information, it was *bodies*. The majority of people assume that erotics implies bodies; a body is part of the idea of erotic interaction and its concomitants, and the erotic sensibilities are mobilized and organized around the idea of a physical body which is the seat of the whole thing. The sex workers' descriptions were invariably and quite directly about physical bodies and what they were doing or what was being done to them.[21]

Stone notes that these workers are linking, through the use of technology, the real and the imaginary into a set of visceral experiences — real enough to be worth paying for. Katherine Hayles,[22] Donna Harraway,[23] and others also show that new

doi: 10.47925/2013.315

technologies have rendered forever problematic the distinction between real and technologized.

As post-humanist scholars have pointed out, the wearing of prescription eyeglasses, the wearing of prosthetic body parts, and the use of nanotechnology or biotechnology (pacemakers, hormone releasing devices, designer cells) have rendered the divide between humans and technologies, forever troubled. While it may be awkward to feel one's self wearing eyeglasses for the first time — or think of one's self as a body which has been implanted with an IUD — eventually, the technology becomes so seamlessly integrated that, in practice, it makes no sense to think of the human individual as "anti" or "contra" the technology.

These scholars point to a new way of thinking about hybridity. They position technology *not* as antithetical to embodiment, presence, or real-ness, but as an augmentation of, or continuation of that real embodied presence. This notion of hybridity stands in stark contrast to some notions of the "hybrid" classroom. My experience is that, when scholars and administrators talk about a blended or hybrid classroom, they usually mean an experience where students come to campus for a small percentage of the classroom days, and then spend the rest of their time taking the course online. This creates a here-and-then-there model of education. This is, indeed, different from the here-*or*-there model of education. However, this understanding of hybridity and blending does not get at the potential of online education; it does not get at the seamless, liminal simultaneity that is spoken of by New Media and post-humanist scholars.

In this next part of the essay, I offer examples of technology that *show* hybridity and in-between-ness; they show the ways that technology can be used to create a truly blended experience. In a very real sense, they counter the binary of the bricks-and-mortar experience *versus* the online experience. As we "allow technologies to reveal" their potential, my hope is that we will be inspired to think about online spaces and online education as more potentially compound or amalgam.

Technology as Flow, Simultaneity, Hybrid, and In-Between

As Blacker, Heidegger, Dewey, and Foucault suggest, if we are to really take the measure of technologies, we must look at them in multiple contexts, for their potential, and for the ways they shape what is possible. Here, I follow that advice as I foreground technologies of play that complicate the online versus "here" binary. These technologies can be seen as an augmentation of or in simultaneity with "real life" experience, rather than counter to it.

My first example comes from the sport of geocaching. Geocaching is an outdoor treasure hunt that can take place within the confines of your own city, your state, your country, or the whole world. In geocaching, participants use GPS-enabled devices to find treasures or "caches" that are buried or hidden in various places. Once you have found the cache, you document the fact that you have found it by signing a logbook, or taking a picture of yourself at the cache and uploading it to a record-keeping website. You must go online to document your hunt experience. Users comment on each other's experiences and share photos of the hunt. You can also

doi: 10.47925/2013.315

create a geocache or geocache hunt, and upload coordinates for the cache to one of the various geocaching websites. You can then invite friends and family to your "hunt." There is a general sense of community and sharing on these websites; people after the thrill of the hunt who want to share their love with other people. Geocaching is a user-generated game or sport that requires both the use of digital technology and the actual movement from one space to another. It is a sport that operates simultaneously online and in the real-world environment.

This sport exemplifies an in-between sort of space. The participant must operate online in order to get the coordinates, the participant must operate using an augmenting device (GPS), and the participant must move from one real world location to another. Additionally, the participant must document and share the experience by — again — going online. Here is an activity that cannot be seen as *either* an online experience or an offline experience. Rather, this activity is simultaneously online and offline. It is hybrid. It is a space where embodiment, learning, and lived experience happen *in-between* online and offline spaces.

In the case of geocaching, technology is used to facilitate simultaneity of presence. Bodies are both *here*, in the material world, and *there*, online, *simultaneously*. Another example of this type of hybridity comes from the explosion of sites like Strava.

To use Strava, you "Grab a GPS device. Go out for a run or ride. View your activities on Strava.com."[24] Participants carry a GPS-enabled device with them on their runs or bike rides and then, by registering their device with Strava.com, users can: see where they have gone; see how fast or slow they were in different spots on the trail; compare their new stats to previous stats, and even compare their own stats with other registered Strava users. Strava enables you to see what other registered runners and riders are doing. You can then compare the time it took you to do a twenty-mile course with how long it took other users. Additionally, Strava allows you to "challenge" any other users to run a particular course, or meet a particular goal. Strava will tell you how many people "accept" your "challenge," and how many people follow through. While Strava is a vehicle for increased competition, it also creates a sense of community. There are forums were you can chat with other users. Strava provides "leaderboards" for various trails: so you can see who has the best numbers on a trail in real time. Strava also gives out "suffer points" to those users who have chosen to go through particularly grueling runs or rides.

With the use of Strava, runners and riders participate in a moment that is concurrently online and in material space. Runners and riders are moving along trails in the material world. GPS-enabled devices are tracking their progress online. Fellow users are watching the progress online. Both the runners and the watchers will chat about, curse over, and laugh at the day's happenings in the online forums. Strava is a great example of the ways that a community can form — through the use of technology — even when users are spread out and do not know each other personally. It is also a great example of another activity that is online and offline simultaneously. In both of the above examples, technology fosters hybridized

doi: 10.47925/2013.315

experience — not the binary experience of online versus the material world (here versus there).

Here is one last example of hybrid technologies. In the past few years, digital device designers have started to ramp up the melding of technology and a person's fleshy body: creating wearable technology. This yen for a simultaneity and connectedness between flesh and digitalia is evidenced by the example of *Google Glasses*. Not to be confused with *Google Goggles* (a sort of smart phone app that provides a connected, simultaneous, and multi-layered experience when you view a space using your smart phone), *Google Glasses* are devices that are designed to be worn by the user. They offer an *augmented* reality for the user. Looking like a pair of Oakley's, these glasses come complete with a retina screen, several motion sensors, GPS, 3G or 4G connectivity, and a camera that would allow the user, with a tilt of the head, to overlay information onto and even record whatever location is within sight range. Wearing these glasses creates an experience where the user can go through the material space, get directions, share information and personal thoughts with friends about the space (or anything else), see reviews on or information about the space, and even create recordings overlayed with information chosen by the user, to send to friends. Designers are imagining an experience where the fleshly body is important and acknowledged (a lot of care went into designing something that would be easy on the body to wear and to use), but where there is also a hope of creating an experience that is linked in with other people and information. The idea behind these glasses is not to create a digital experience *instead of* a "real" experience. Rather, the intent is to create the *possibility* for an experience that is simultaneously real, fleshly, material, connected, and digital. With this device, it is not the human versus the technology, but rather an integration; a melding. Technology *need not* be positioned as *anti* real human embodiment.

Implications for Schooling

This essay has troubled the binary of online education versus bricks-and-mortar education. Here, I will acknowledge that the use of various educational technologies to create hybrid experiences relies on both material resources and a sense of boldness and imagination. The use of online platforms requires a real attunement to how different forms of embodiment and different embodied identities shape one's relationship to technology. Although, here, too, digital play provokes reflections on how embodied difference might be more accommodated or taken up in an educative ways.

Due to changes within the gaming community, there is an increased awareness of the need to think about how different bodies access digital games or other forms of digital play. The AbleGamers movement has changed the gaming protocols that many designers use as they create online games. Games are being optimized to use gaze-based software/hardware or "One-Switch" software/hardware, for the motor-impaired. These packages allow users to play a game using their gaze or one to two fingers. Games are now being designed that integrate these packages seamlessly. Furthermore, game designers — influenced by the new AbleGamer and International Game Designers Association guidelines — are changing how they design

doi: 10.47925/2013.315

games from the ground up. Stipulations like: don't use drag-and-drop interfaces; don't require excessive double clicks; don't have long menus or a lot of right-click menus; create changeable key-bindings — are becoming the new industry standard. AbleGamers have also suggested: increased use of captioning; increased camera angles in-play; and the use of NanoClay, that can be shaped by the user and by commands in-game to *become* the type of controller that each individual user needs.

The AbleGamers association and other inclusion movements in the gaming world have stressed that multiple types of bodies need to be visible in-game. So, there has been an increase of avatar options. Thus, rather than being confined to a male/female body, or to a white body, or to a walking body, as options for how one represents the self, there has been an explosion of ways to represent embodiedness. While games can be used to validate and normalize oppressive identities or positionalities, games can also be used to trouble expected ways of being.

My examples of digital play do not provide a blueprint of how online education should look in the future; they do, however, show that there are different ways to use technology to create community; to learn. They show that there does not have to be the binary between the online space and the bricks-and-mortar space. There can be hybridity and in-between-ness.

More work needs to be done to use technology in ways that: reveal possibilities; explore new forms of embodiment; and cultivate hybridized knowledges and spaces. What would it look like to develop pedagogies that focus on multiple forms of embodiment? How can we design courseware that propagates hybridized spaces? How can we explore the integration of humans and technologies to think beyond the social imaginary of the traditional classroom space? These are questions that deserve more reflection as we move forward with the proliferation of online learning.

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1. David Blacker, "Allowing Educational Technologies to Reveal: A Deweyan Perspective," *Educational Theory* 43, no. 2 (1993): 181–194.

2. Martin Heidegger, *Being and Time* (New York: Harper and Row, 1962), 99.

3. John Dewey, *Experience and Nature* (Mineola, NY: Dover Publications, 1958), 101–105.

4. Michel Foucault, *The Order of Things* (New York: Random House, 1970).

5. Michel Foucault, *The Birth of the Clinic* (New York: Random House, 1973).

6. Michel Foucault, *Discipline and Punish* (New York: Random House, 1978).

7. For example, Jennifer Richardson and Karen Swan, "Examining Social Presence in Online Courses in Relation to Students' Perceived Learning and Satisfaction," *JALN* 7, no. 1 (2003): 68–88.

8. For example, Credence Baker, "The Impact of Instructor Immediacy and Presence for Online Student Active Learning, Cognition, and Motivation" *Journal of Educators Online* 7, no. 1 (2010): 1–30.

9. Terry Anderson, *The Theory and Practice of Online Learning* (Edmonton: Athabasca University Press, 2008), 153.

10. Ibid., 156.

11. Hubert Dreyfus, "Anonymity Versus Commitment: The Dangers of Education on the Internet," *Educational Philosophy and Theory* 34, no. 4 (2002): 374.

doi: 10.47925/2013.315

12. Hubert Dreyfus and Stuart Dreyfus, "Why Computers May Never Think Like People," in *MIT Technology Review* (Boston: MIT Press, 1986), 375–376.

13. Hubert Dreyfus, *On the Internet*, 2nd ed. (New York: Routledge, 2009), 19.

14. Ibid.

15. Robyn Barnacle, "Gut Instinct: The Body and Learning," *Educational Philosophy and Theory* 41, no. 1 (2009): 22–33. Here, note that her essay is far more nuanced and agrees that when we go online we do not leave our bodies. Still, she draws some of the same conclusions that position online spaces as places where our bodies seem to disappear.

16. Henry Jenkins, *Convergence Culture* (New York: New York University Press, 2006).

17. Manuel Castells, "Preface," *The Power of Identity* (Oxford, UK: Blackwell Publishing, 2010).

18. Henry Jenkins, "If It Doesn't Spread, It's Dead," http://henryjenkins.org/2009/02/if_it_doesnt_spread_its_dead_p_7.html.

19. Ibid.

20. Allucquere Rosanne Stone, *The War of Desire and Technology at the Close of the Mechanical Age* (Cambridge, MA: MIT Press, 2001).

21. Ibid., 7.

22. Katherine Hayles, *How We Became Posthuman* (Chicago: University of Chicago Press, 1999).

23. Donna Harraway, *The Cyborg Manifesto*, http://www.egs.edu/faculty/donna-haraway/articles/donna-haraway-a-cyborg-manifesto/.

24. Strava, "How it Works," http://www.strava.com/how-it-works.

doi: 10.47925/2013.315