"Technology as Teacher: Digital Media and the Re-schooling of Everyday Life"

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Abstract: Drawing on examples from my phenomenological inquiries of teachers and students using new media technologies, I propose that software is our new *hidden curriculum*, imperceptibly re-mediating our perceptions and gestures and thereby re-schooling both adults and children in new modalities of knowing, doing, and being in the world.

> The truth is that there are no things, only physiognomies.
> (Merleau-Ponty, 1963/1983, p. 168)

Even before we've wiped the sleep from our morning eyes, many of us now find ourselves reaching for our smartphone or tablet to check the shutterless pulse of the tweeting, facebooking, emailing, googling globe, hoping to catch up on what news has transpired in our brief overnight sojourn. Then, throughout the balance of our day, an astonishing but now taken-for-granted host of digital applications and devices serve to enhance, inform, monitor, entertain, customize, regulate and otherwise touch nearly every aspect of our everyday lives: laptops, ATM machines, Google, grocery checkouts, and for teachers and students, Learning Management Systems, SmartBoards, eBooks and clickers. Our being-in-the-world is increasingly enhanced by, enmeshed with, and seamlessly folded into networked machines, smart mobilities, and sophisticated software environments. This new technology infrastructure is mediating our lived experience with a 24/7 immediacy and sometimes 911 urgency.

Merleau-Ponty once observed that, "our existence changes with the appropriation of a fresh instrument" (1962/2002, p. 143). As we encounter and interact with an ever-refreshing surround of "fresh" digital technologies, we may begin to wonder: what essential changes are transpiring in the corporeal, relational, temporal, and spatial niches of our pre-reflective experiences and primal practices? I explore this question through examining a few of the pedagogical significances and implications of this ubiquitous technologizing of the lifeworld. I hope to show that digital technologies are complex physiognomies—"gestures"—that mimetically invite, scaffold, and interactively sustain new forms of human being in the world. I will forward the claim that the responsive architectures of digital media are our new *hidden curricula*, imperceptibly yet nonetheless thoroughly re-mediating our perceptions and gestures—our performativity—and are thereby re-schooling both adults and children in new modalities of knowing, perceiving and acting.

Not so long ago, I stood in the checkout line at my university library. After a few minutes waiting, I deposited my precarious pile of books before the librarian. Electronically scanning each book one by one, the librarian suddenly paused and began leafing through one of them. "Heidegger!" he exclaimed. "I read him in a philosophy class years ago. Didn't understand a thing really. Would you still recommend him?" A few weeks later, I approach the checkout line with another pile of books, but my favorite librarian is nowhere to be seen. In his place, a "self-serve" checkout machine had been installed. I want to object, but how exactly does one object to a machine? Besides, the line-up was surprisingly short. As directed by the user-friendly screen, I proceed to scan my library card, and then my books. "Did I want a receipt?" Yes. This is easy, I think. I touch the screen, and wait for the machine to spit out the slim bit of paper. Books in hand, I walk through the library security gate, suffering a fleeting but familiar Pavlovian body cringe fearing that the alarm might go off even though I had scanned all my books. Like exiting a department store (or airport security) these days, I cannot help the surge of irrational guilt that wells up as I pass through the security threshold, as if I too believe I should be scanned for possible criminal intent. Walking through the library exit, my innocence is declared dispassionately by the machine's silence, and barely registers as a sigh of relief.

I recount this story because it is exactly here, in the everyday midst of these silent—and sometimes not so silent—machinic declarations to our corporeal being that our everyday lives are being pre-reflectively, but radically rehabilitated. Digital media do not primarily address our reflective, cognitive selves. Rather, the machine and its software appeal directly and immediately to our embodied, perceptual selves. (This is why today's finest technologies seldom come with a detailed instruction manual). The active site of this algorithmic engagement with our lived-body is the *interface*. The human-computer interface, computer scientist Paul Dourish (2001) tells us, is "where the action is".

But what exactly is this so-called *interface* where warm human being meets and interacts with cool machine? We've all heard of user-interfaces, or at least have had some direct experience of them in our everyday lives. There is, for example, the GUI)—the Graphical User Interface—of your Mac or Windows OS. The Mac interface is famously "friendly" whereas the old MS-DOS interface was downright unfriendly. Indeed, a whole new field of interdisciplinary work, Human-Computer Interaction (HCI), has sprung up along the lucrative architected borders of the interface. HCI employs industrial designers, computer programmers, graphic artists, and even cognitive psychologists, in its efforts to improve and render the interactions we enjoy with our hardware and software more sophisticated, "useable" and especially friendly. HCI researchers, for example, design controllers and handheld game consoles such as the Game Boy and Nintendo DS (Huang, 2009) to fit comfortably in a child's hands, with buttons and toggles situated where little thumbs and fingers can gain easy, transparent access. Google's search engine interface is an HCI triumph in simplicity, allowing users to navigate the Internet with dependable ease and transparency. As Wikipedia informs us, the user interface is "the *place* where interaction between humans and machines occur" (*Wikipedia*, my italics, 2010). Of note, is that this "in-between" inter-actional *place* is *marked only by a brief, conjoining hyphen in the field's name*. Digital technologies perform their work in this hyphenated chiasm, where our vibrant, groping, coping flesh meets the cooler, algorithmic flesh of our ambient technological surround. Here, in the breathing midst of our embodied encounter with the 21st century world, our intentional involvements are quietly intertwined with the "disburdening" dispensations of our growing density of standardizing digital architectures.

This fleshy thingly entwinement is of course Merleau-Ponty's phenomenological insight: *flesh* is our chiasmic interrelationship with our lifeworld whereby "I see and am seen, I touch and am touched; it is the means of communication between ourselves and the world" (Kozel, 2007, p. 276). My body, declares Merleau-Ponty (1964),

> is a thing among things; it is caught in the fabric of the world, and its cohesion is that of a thing. But because it moves itself and sees, it holds things in a circle around itself. Things are an annex or prolongation of itself, they are incrusted into its flesh, they are part of its full definition; the world is made of the same stuff as the body. (p. 163)

At the chiasmic interface of human and computer, I see and am seen, I touch and am touched by the digital. My body adorns and mingles itself with sophisticated, expertly tailored new media fabrics. With habituated use, the interfacial seams separating us humans from our hardware and software surround disappear to the point of vanishing. Indeed, from a phenomenological perspective, we do not experience the intimate, communicative interface with our digital technologies as a place or space. Rather, we *are* this space.

As new media scholar Mark Hansen points out, software is reconditioning our primordial being primarily "outside of the phenomenal field of subjectivity." Our interactions with software programs--often via a screen and keyboard/mouse/controller--are direct, sensuous and mimetic. One of the difficulties in grasping the mediating influence of the digital is that its texts—software programs and scripts—do not fit the usual model of representation, wherein humans and objects represent each other via words and images. Software texts concern words *doing* things in particular contexts. That is, the *language* of the machine has direct and reverberating *material* effects on our corporeal, gestural selves. We must, as Hansen (2000) suggests, begin to "focus on our own embodiment as the material site—the bearer—of technology's otherwise wholly inhuman impact" (p. 263). So let us turn now to one of those sites.

The Cyborgian Hand of the Teacher

As a teacher educator, much of my phenomenological research concerns the everyday changes that have been occurring in teacher practices as we entered the 21st century. To give us a baseline for understanding these changes, I want to first turn the clock back and take a brief glimpse in one of yesterday's classrooms, to the embodied site of an 18th century technology that still persists in some schools today.

Picking up a piece of chalk to write her thoughts on the blackboard, the teacher immediately incorporates the chalk-and-blackboard as part of her teacherly being. With chalk-in-hand, she expands the classroom space, literally drawing her students into the world of authorship and textual literacy practices. In this smooth-chalky-blackboard realm, words and thoughts become visible in a new, flowing, letter by letter, curving, dotting and crossing writing sort of way. The simple grasping hold of the piece of chalk (re)determines the teacher's naked hand, empowering it along more potent avenues of teaching activity and significance. This evanescent extension of the corporeal self quietly reconfigures her as chalk-and-blackboard-teacher—a hybrid meld of human being and tool, a 19th century cyborg (if you will)—telescoping her perceptual, temporal, spatial, and relational reach. To paraphrase Michel Serres (1995), in the tangle of this primordial human-material meld,

> The hand is no longer a hand when it has taken hold of the [chalk], it is the [chalk] itself, it is no longer [the chalk], it flies transparent, between the [chalk] and the [blackboard], it disappears and dissolves, [the] hand has long since taken flight in writing. The hand and thought, like one's tongue, disappear in their determinations. (p. 30)

The chalkboard-teacher is teacher suddenly writ and writing larger. We might notice too that the teacher's prereflective reach for the chalk on the board's ledge was an already oriented pedagogical hand engaged in a fundamental gesture of meaningfulness: signifying—a word which literally means gesturing with the hand—through pointing or showing.

Pointing draws our students' attention to the things that we believe are significant, lifting them up and momentarily out of the primordial sea of possibilities, and thus giving them value. This pedagogical gesture of meaningfulness inaugurates the phenomenality or appearance of things. Pointing re-orients and brings things to attention, inviting students to perceive and understand the world as we do. The chalkboarding teacher orients the child beyond what is immediately present, drawing her students into a magical but now taken-for-granted realm of slow scribble and flowing scribe, a symbolic world of ideas written by hand in the representational topology of textual literacy. The chalkboard-teacher opens a shared *topos*, a place that over time reveals to the school-child a wide range of literacy practices and disciplinary orientations, a knowledge *topos* that the child becoming student increasing orients to and mimics on their own slate or notebook.

Another example from post-secondary education: a medical student describes a favorite lecturer:

> On the blackboard, using white chalk, he starts drawing the bones of the lower arm, the radius and the ulna. He puts labels on them telling us what they are. We label ours too on our sheets. The sheets are his hand-drawn diagrams of bones photocopied for us to use. In blue chalk, he draws on the top of the bones the deepest muscle telling us how that works. When he is done, he moves his own arm to show what it does. He points to the blue muscle. Then on top of that muscle he draws in yellow chalk the next muscle. We are also drawing and coloring each of these in with matching coloured pencils, labelling them just like he has. I jot a few notes beside each muscle as I am doing my drawing; my notes match the muscle color.

Such "writing-with" develops a common understanding wrought through the phenomenological power of *mimetic* teacher-student relations. Mimesis, Merleau-Ponty (1964) tells us:

is the ensnaring of me by the other, the invasion of me by the other; it is that attitude whereby I assume the gestures, the conducts, the favorite words, the ways of doing things of those whom I confront…It is a manifestation of a unique system which unites my body, the other's body, and the other himself. (p. 145, in "The Child's Relations with Others" chapter)

Students learn not only from a teacher pointing to or indicating representational knowledge, but through mimetically emulating presentative, demonstrative gestures, such as drawing, writing, and thinking out loud.

And today? Contemporary cyborg-teachers increasingly present and represent their teacherly knowing, not through the chalkboard hand, but via digital technologies like PowerPoint, Learning Management Systems, and SmartBoards. Recalling Tom Cruise's John Anderton character in Minority Report donning a gloved interface to grab and toss windows around the transparent screen, we may begin to glimpse how gesturing itself becomes a new style of writing for the 21st century cyborg teacher, fashioning novel forms of knowing and understanding the world.

Children, in the midst of such knowledge performances, mimetically re-orient to the cyborgian hand of the teacher, prereflectively grasping these compelling new gestures of signification and ways of thinking and doing. At this juncture, we may now begin to have an inkling of how "the appropriation of a fresh instrument" may enact Merleau-Ponty's existential consequences. The adoption of a new technology "topples gestural regimes" (Noland, 2009, p. 212), and in their place, new regimes are established. To observe how this happens, let's return to today, to a contemporary classroom or lecture hall.

"Handy" technologies for teaching

PowerPoint, a technology now ubiquitous in classrooms across the globe, enhances, quite literally, my ability or power to point, show, and (de)monstrate. Through this software, the teacher may now point more vividly, rapidly and accurately at and via texts and images. In the process, the hands of the PowerPointing teacher learn new literacies and adopt different practices. For example one hand of the teacher now finds itself occupied with periodically pressing a key or mouse button, or donning a remote device to command slide changes. Between slides, both hands may be free, for example, to gesture in support of an explanation, to point to a pertinent section of the slide, or even to pick up a piece of chalk or whiteboard marker to write—assuming there is still such equipment in the room.

Yet, in another more meaningful sense, PowerPoint has taken the writing and drawing part of teaching out of our hands. The hand, now involved in advancing sophisticated pre-planned slides, is less drawn to the rougher craft of board writing or the practiced aesthetic of drawing. Both teacher and student write less and draw less with PowerPoint. Importantly, they no longer write or draw together. As a pedagogic medium, PowerPoint is forgetful of the mimetic moments of teaching and learning.
But even before the teacher has set foot in the classroom, PowerPoint has already exercised its unseen touch on her curriculum-as-planned. The teacher, in opening PowerPoint enters a now familiar digital environment, a professionally architected world of surface and interface that she touches and negotiates some small distance away with the tips of her fingers across the keyboard, and intermittent small shufflings of her hand wrapped gently about the mouse. Heidegger (1972) tells us, "When we handle a thing, … our hand must fit itself to the thing. Use implies a fitting response" (p. 187). Reaching out with anticipation of PowerPoint's promise to help her point powerfully, the teacher orients herself toward her windowed screen; her being is drawn in and gently caught in the "draft" of PowerPoint, the unique horizon of possibilities it brightly offers. She responds fittingly.

Within the PowerPoint environment or milieu, the teacher's work materializes as an accumulating series of slides. The basic elements of each slide are text, images, color, and animation. She composes, adjusts, tries out new fonts, samples colours, switches "views," plays with order. She is engaged in representing content as slides, then re-imagining the presentation in the immediacy of a classroom with

her students. Slides, subject matter, the vision of her students, and her presentational and teacherly intentions intermingle. The teacher's activity patterns and meaning structures are being quietly in-formed—conformed, deformed, and reformed—by the software architecture she finds herself inhabiting and by which she is inhabited.

Becoming accustomed to using PowerPoint for teaching opens up new ways to construct knowledge, and invites the development of novel styles of teaching and presenting. But habituating to PowerPoint (or any technology) harbors other implications, including unwitting subscription to its prescriptions, as well as a retreat of critical discourse regarding its presence. The technology slips into the background, its corporeal regimes setting in as unquestioned, unreflective practice. As Nigel Thrift (2005) declares, "software quite literally conditions existence" (p. 241), through drawing us into a mimetic process of habitation. "By providing a framework for action…[technologies] form intentionalities and inclinations within which use-patterns take dominant shape" (Ihde, 1990, p. 141). In the midst of using PowerPoint, the teacher cannot separate the software's possibilities and designs from her own: the aims and inscriptions of the Microsoft programming team and the teacher's intentionalities and inclinations intertwine and reorient. The teacher's world is translated into new vocabularies and presentation genres, expanding her possibilities of action while simultaneously enframing and constraining the teaching world as a PowerPoint world.

When the pedagogical hand turns haptic

Whereas technologies like PowerPoint may enhance as well as constrain the teacher's gnostic/knowing or representational hand, there are other technologies that simultaneously extend and retract the pathic or presentational hand of the pedagogue. Tracy Boger (2011), who is currently investigating the phenomenology of surveillance systems in classrooms, records the following anecdote:

> When I first got classroom management software in my computer lab I absolutely loved it! I felt powerful every time I took control over a student's computer and closed down whatever application was keeping the student off task. It wasn't long before I realized that as long as I was at my desk, students would not even try to go off task. At first this was great but eventually I felt chained to my desk because every time I would venture away from my desk students would see this as their opportunity to go off task. Before I had the classroom management software I regularly walked around the classroom. I enjoyed small talk with students and I am quite sure the feeling was mutual. Now there are significantly fewer opportunities for those types of conversations. I must admit, it has significantly changed the climate of my classroom. Before my class was a lively welcoming place but now the sounds of students' voices have been replaced by the tap, tap, tap, of the keyboard keys.

Here, the technological hand has withdrawn itself from the midst of pedagogical immediacy, preferring to watch over students from the teacher "station" at the front of the room. Students are encountered as icons on a screen. The pedagogical hand no longer rests its reassuring presence on a student's shoulder, or gestures meaningfully in response to a student's question. Rather, the 21st century cyborgian hand rests on a mouse, in the grip of panoptic software that technologizes classroom management, while silently divesting the teacher of the pedagogical relations that once defined her everyday teacherly practices.

Meanwhile, today's North American wireless cyborg children are themselves already "in touch" with their classmates and the world differently. In their everyday lives, many have retreated from the corporeal immediacy and relational community of the neighborhood playground and streets, and instead socialize from their bedrooms and basements via texting, Facebook and videogames. Today's cyborg child stays in touch via the diaphanous chiasmus of software and screen.

But what does it mean when the pedagogical hand too turns haptic, that is, when our pathic apprehension and intuitive in-touch-ness with our children is so continuously remediated by the

machine? I am reminded of a mother-son conversation penned by novelist E. M. Forster more than a century ago. Forster's 1909 story, The Machine Stops, is a chilling piece that presciently anticipates the Internet, Facebook, and other 21st century technologies. The book opens with a woman nestled comfortably in her armchair in a small hexagonal room, "like the cell of bee". A bell rings: it is her son wishing to speak with her:

> A faint blue light shot across [the round plate], darkening to purple, and presently she could see the image of her son, who lived on the other side of the earth, and he could see her.
> "Kuno, how slow you are."
> He smiled gravely.
> "I really believe you enjoy dawdling."
> "I have called you before, mother, but you were always busy or isolated. I have something particular to say."
> "What is it, dearest boy? Be quick. Why could you not send it by pneumatic post?'
> "Because I prefer saying such a thing. I want—"
> "Well?"
> "I want you to come and see me."
> Vashti watched his face in the blue plate.
> "But I can see you!" she exclaimed. "What more do you want?"
> "I want to see you not through the Machine," said Kuno. "I want to speak to you not through the wearisome Machine."

The machinic interface allows the boy to "see" his mother, and his mother to "see" him. Yet Kuno is acutely aware that in some essential way, he is wholly unseen by her: he is not touched by and cannot touch his mother. Here, the mediatic veil of technology fails the test of pedagogic immediacy and meaningfulness.

Conclusion

In the western world, and increasingly across the globe, we are now well into an era of technological-becoming, our sensuous bodies quietly adapting to the inhuman rhythms of an evolving, digitally inscribed and intensifying mechanosphere. We have barely begun to grapple with the profoundly co-constitutive relationships we share with our digital technologies, relationships that open new worlds of possibilities while simultaneously closing down others (Introna, 2007). Grasping hold of these powerful new technologies with growing vigor, they too take hold of us. The ambient collective of expertly calibrated algorithms speak directly to and engage our grappling, "groping" (Carrie Noland) corporeal being, disrupting our gestural regimes and mobilizing new habits of mind. Digital media are inaugurating a new existential landscape. As Heidegger (1998) presciently observed, cybernetic technologies are both symptoms of and complicit in setting in motion a new ontotheological order or technological understanding of being, wherein the world, and all things in it including ourselves, increasingly show up to us as a "standing-reserve" or resource that can be liquefied and "optionalized" (Wrathall & Lambeth, 2011) for our efficient, self-serving ends.

At this juncture we all need to attend mindfully to the hermeneutic and existential shifts transpiring in the interfacial cusp where our reworked phenomenal being is more and more intimately tethered to softwared materiality. Educators, for example, must become newly attentive to attention, and its splintering into hyper-attention, a phenomenon Kate Hayles (2007) suggests is growing in the wake of the disappearing book and its traditional literacy practices in schools. The deep, critical attentional apparatus teachers once helped to construct and habituate through reading, writing and arithmetic is giving way to hyper-attention. Children are more and more schooled in nonliterary forms of grammatization, "psychotechnologies" as Bernard Steigler calls them, built primarily by programming industries interested in uncritical, hyper-solicited consumers (Stiegler, 2010). Stiegler (2010) presents a compelling picture of how the "width" of our critical-minded, modern attentional structure—Husserl's intentional consciousness—is being unpinned in our youth via psychotechnologies that act to foreshorten and erode the retentional (memory) and protentional (imaginal) bookends of attention.

We are positioned on the one hand to lose ourselves to the insoluable, Atlas-sized burden of our globalized world, where our interiority is consumed daily by a host of 7 billion cares and counting, not to mention the earth and her plenitude of creatures. And on the other hand, if we are attentive to our own digital becoming, we may discover a revitalized sensitivity to the robust yet also deeply local, naked, and thus profoundly open ecology of the individual, human self. It will be, I believe, our devotion to the local, the marginal, and the forgotten that may save us. Thus, as we find ourselves fascinated by, grasping hold of and absorbing each new gadget on the horizon into our being, it is on us to more critically discern and evaluate the moral and pedagogical prescriptions being whispered to us deep in the codes of technology's curriculum. For better or for worse, "we are," as Heidegger (1971) declared, "the be-thinged".

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