Broken Tools and Misfit Toys: Adventures in Applied Media Theory

Marcel O’Gorman
University of Waterloo

ABSTRACT The majority of media theorists who have applied their work in new technological contexts have eschewed formal experimentation to produce a print-oriented mode of discourse. Even in the digital humanities, scholars build and use tools that ultimately lead to the creation of traditional academic essays and monographs. Applied Media Theory (AMT) is a method that engages in formal experimentation with media to generate critical discourses and technologies. This article identifies a new applied critical practice that not only examines, but also intervenes, in the formation of digital culture, primarily by combining digital art practices with conventional research methods. AMT is outlined here through a description of projects underway in the Critical Media Lab at the University of Waterloo.

KEYWORDS Digital Art; Media Theory; Digital Humanities; Practice-based Research

RÉSUMÉ La plupart des théoriciens des médias qui situent leurs travaux dans de nouveaux contextes technologiques préfèrent un discours orienté vers l'imprimé plutôt que des expérimentations sur la forme. Même dans l'étude des médias interactifs, les chercheurs développent et emploient des outils qui mènent ultimement à la création de monographies et d'articles traditionnels. La théorie médiatique appliquée est une approche où l'on effectue des expériences formelles avec les médias afin de générer des technologies et des discours critiques. Cet article identifie à ce titre une nouvelle pratique critique appliquée qui examine non seulement la formation de la culture numérique mais intervient aussi dans cette formation, principalement en combinant les pratiques d'art numérique et les méthodes de recherche conventionnelles. Cet article présente aussi la théorie médiatique appliquée en décrivant des projets en cours dans le Critical Media Lab de l'Université de Waterloo.

MOTS CLÉS Art numérique; Théorie médiatique; Étude des médias interactifs; Réseaux de recherches fondées sur les pratiques

Our inventions are wont to be pretty toys, which distract our attention from serious things. They are but improved means to an unimproved end.
—Henry David Thoreau, Walden Pond

Hermie doesn't like to make toys.
—Head Elf, Rudolph the Red-Nosed Reindeer
On a recent visit to the National Gallery of Canada, I accidentally happened upon an installation that haunts me to this day. Cramped by a tight schedule, I entered the museum specifically to see its showcase exhibit at the time: “The 1930s: The Making of The New Man.” This was an ambitious collection documenting what might arguably be called the height of anthropocentricism in Western culture. Disoriented by the vast range of pieces in this exhibit and by the unfortunate speed with which I had to observe them, I took a wrong turn on my way out of the gallery and passed what looked like a large storage room cluttered with random objects. The disarray before me provided a shocking contrast to the controlled spatial arrangement of the “New Man” exhibit. Certainly, this was not a gallery storage space. At the entrance, I was greeted by an uncanny blonde dog lying in a fiberglass display case, his left paw neatly bandaged. Above, a stuffed moose, positioned stiffly on its side, looked down at me with one large brown eye. These beasts were only two of the hundreds of random objects—car parts, broken toys, unopened Christmas gifts—piled high on shelves that flanked the space, which was about the size of a one-car garage. As I lingered at the entrance, I noticed the smell of burned wood. I probed further, and sure enough, ten feet into the space, there was a large hole in the left wall where a fire had seemingly burned through. I reluctantly stepped through the hole into a darkened room about the same size as the first, and saw a car draped with a protective cover. Behind the vehicle there was a chair, placed as if to beckon a visitor to sit. I responded appropriately, and after sitting I noticed a rectangular slot at the rear of the car, smaller than the size of a license plate. Falling deeper into the heart of this unheimlech cabinet of curiosities, I bent low and peered inside. There, somewhere in the bowels of the vehicle, a small fire was burning. I stood and headed back toward the entrance, only to find that there was yet another adjoining room on the right-hand side of the space. Caution tape prevented any entry into this room, which housed a large mechanical contraption, perhaps some sort of perpetual motion machine, made of lumber and rope. At this point, a docent entered the space and asked if I had any questions. “Yes,” I replied, pointing to the strange, malfunctioning apparatus. “What is that?” He told me that it was a “mechanical sculpture,” but that it wasn’t currently working, so they closed off the room.

What I had stumbled onto—or into—was actually an installation called “The Discourse of Elements” by BGL, a French-Canadian collective. The project, which can be imagined as three adjoining suburban garages, brings together multiple objects that BGL collected during a decade of surreal performances and installations. In this sense, the project is indeed a sort of archive, an art storage room, or better yet, a cabinet of curiosities. Placed in storage, BGL’s collection of curiosities are revealed as ordinary, dumb objects that greet us only as “malfunctioning apparatuses,” or broken tools, if you will. And yet, a discourse still burns within each and every one of these discarded artifacts. It is up to gallery visitors to bend down low, peek inside, and spark the flame.

Like most avant-garde art, “The Discourse of Elements” is an exercise in estrangement and disorientation. Faced with BGL’s nonsensical assemblage, there is no recourse to science or truth; rather, we are forced to generate a discourse for these objects, to speculate, perhaps even to ventriloquize, or speak for the objects themselves. In the
end, we can relate to these objects only as humans, only as a different sort of object in a shared space with other objects. But it is in the gesture toward bridging that gap, toward giving other objects a voice, where contemplation, art, and philosophy happen. Today, the design of communications objects (cell phones, computers, handheld devices, et cetera) is premised on providing the opposite experience: these objects should not disorient the user or provoke contemplation, but provide seamless access to other people and objects.

This discourse on objects with which I have indulged myself gestures toward the relatively new field of inquiry in the humanities and social sciences that we might call “thing studies.” One branch of this field takes a materialist approach to history, literature, and culture, inspiring such titles as The Social Life of Things and A Sense of Things. Another branch of “thing studies” focuses on phenomenology and speculative ontology, as in the work of Graham Harman (2002) and Quentin Meillassoux (2008). Thing studies have led to an explosion of publications on the significance of ordinary objects, from calico curtains (Freedgood, 2006) to clods of clay (Harman, 2002). I will reserve a more speculative discussion of the phenomenology of things for another occasion.

For the sake of this article, I am concerned with the critical discourse on and of electronic or digital things: iPads, heart rate monitors, microcontrollers, Geiger counters, LED TVs, even retro arcade cabinets. If such things could speak critically about their interactions with humans, what would they have to say? Such a question seems ludicrous at best, and yet, this is precisely the sort of question that emerges from the works of media theory, such as Friedrich Kittler’s (1999) Grammophone, Film, Typewriter, and more recently from media archeological approaches in the works of Siegfried Zielinski (2010) and Erkki Huhtamo and Jussi Parikka (2011). For media theorists, thing-orientation provides an opportunity to step away from discussions of disembodiment in the emancipatory and apocalyptic discourses on technoculture, and move instead toward a more grounded understanding of the object-world in which we are stubbornly rooted. This article is not such an archaeological exercise, but rather focuses on relating to technological objects in all their (and our) embodied finitude, and taking that desperate step toward giving technological objects a critical voice. Most importantly, this article describes a methodology called Applied Media Theory, which calls on scholars in the social sciences and humanities to act like artists and engineers, by inventing their own critical technological objects, even at the risk of having them turn out to be nothing more than “broken toys.”

**Hypertext theory**

As Jay Bolter (2003) has argued, deconstructive theorists, such as Barthes (1974) and Derrida (1986), engaged in formal experimentation with text as a means of embodying their theories about textuality. Their formal experiments in print anticipated the structure of another expressive medium: hypertext. This differentiates them from the hypertext theorists of the 90s, whose formal work seems to move anti-chronologically, culminating “in linear essays destined for print” (Bolter, 2003, p.20). For these theorists, hypertext was not a mode of formal experimentation, such as Derrida’s Glas (1986) Barthes’s S/Z (1974), it was merely an off-the-shelf package for literalizing and reifying critical theory.
In *Applied Grammatology*, Greg Ulmer (1985) notes that Derrida’s formal experimentation relied heavily on references to objects and images; moreover, his use of images was not limited to illustrative devices, but also included the sustained expansion of images into models. Thus he gives considerable attention in his texts ... to the description of quotidian objects—an umbrella, a matchbox, an unlaced shoe, a postcard—whose functioning he interrogates as modeling the most complex or abstract levels of thought. (Ulmer, 1985, p. ii)

Throughout his career, Ulmer has drawn on Derrida’s “modeling” technique to invent an applied mode of pedagogy that challenges the formal conventions of scholarly composition. But Derrida’s “objects to think with,” as filtered through Ulmer, might send us in another direction; to paraphrase the citation above, toward an applied mode of media theory in which digital objects are used to model complex or abstract levels of thought related to the forms and social impacts of digital media. In other words, my interest is in a form of generative critique that uses digital media itself to critique digital media. As Bolter suggests, “poststructuralism was in fact a critique of the assumptions of the medium of print from within that medium” (2003 p. 30). Applied Media Theory (AMT), which I introduce here, is a critique of the assumptions of digital media from within those media. AMT is a response to the following “post-hypertext” challenge to media theorists proposed by Bolter (2003):

What we need is a hybrid, a fusion of the critical stance of cultural theory with the constructive attitude of the visual designer. This new media critic that we are imagining wants to make something, but what she wants to make will lead her viewers to reevaluate their formal and cultural assumptions. (p. 30)

The remainder of this article is divided into two sections that respond to this challenge by illustrating the AMT concept and methodology. First, various object-oriented theoretical methodologies will be investigated in order to distinguish them from AMT. Second, a description of a number of projects conducted in the Critical Media Lab at the University of Waterloo, which are informed by the AMT methodology, will be provided. The goal of this article is not to argue for the uniqueness of AMT, but to place the method within a historical framework of formal experimentation in critical theory, and to extend this framework into contemporary artistic practices, which provide some of the best models for formal experimentation in digital media. Thus, this work is intended to generate a productive conversation about “applied” methodologies, object-oriented theories, and the points of intersection between artistic creation and scholarly research practices.

**Exemplars for Applied Media Theory**

In *Picture Theory*, W.J.T. Mitchell (1994) establishes a method of critical inquiry inspired by what he calls the “pictorial turn” in critical theory that has taken place over the last century. As Mitchell notes, this turn might be identified with phenomenology’s inquiry into imagination and visual experience; or with Derrida’s “grammatology,” which de-centers the “phonocentric” model of language by shifting attention to the visible material traces of writing; or with the...
Frankfurt School’s investigations of modernity, mass culture, and visual media; or with Michel Foucault’s insistence on a history and theory of power/knowledge that exposes the rift between the discursive and the “visible,” the seeable and the sayable, as the crucial fault-line in “scopic regimes.” (p. 12)

Central to Mitchell’s examination of the pictorial turn is the “hypericon,” which he describes as

a piece of moveable cultural apparatus, one which may serve a marginal role as illustrative device or a central role as a kind of summary image ... that encapsulates an entire episteme, a theory of knowledge. (p. 49)

Derrida’s postcard (1987) and Foucault’s pipe (1973), are superb examples of hypericons. But Foucault did not paint La trahison des images; he simply borrowed it from René Magritte. An applied media theorist must learn to create her own hypericons, and to create not just “summary images,” but summary objects, or, “objects-to-think-with.”

The term “object-to-think-with” is borrowed from Sherry Turkle and slightly repurposed here. In Life on the Screen, Turkle (1995) argues that screen life reflects postmodern theories about identity formation. According to Turkle then, the computer gives people “a way to think concretely about an identity crisis. In simulation, identity can be fluid and multiple, a signifier no longer clearly points to a thing that is signified” (p. 49). Echoing the hypertext theories of the 90s that were at their height when Turkle wrote Life on the Screen, she suggests that “[c]omputers embody postmodern theory and bring it down to earth” (p. 18). Like the discourse of her hypertext-enchanted peers, Turkle’s aphoristic language serves primarily to reify postmodern theory, to demonstrate its truth by pointing to its instantiation in a physical object. Strangely, this practice of reification is rather ironic coming from a scholar informed by postmodern theory. Nevertheless, Turkle’s object-orientation is indeed instructive for postmodern theorists looking to engage in formal experimentation. Rather than considering digital objects (beyond hypertext) as opportunities for reifying various theories, however, we might consider objects as vehicles for testing or generating theories. But for this to be most effective, experimenters would be required to create their own “objects-to-think-with.”

More recently, Turkle refined her object-oriented theory by proposing the term “evocative object,” which she identifies once again as a way of bringing “philosophy down to earth” (2007, p. 8). In the anthology Evocative Objects, Turkle (2007) moves away from the reifying narrative about the computer as an embodiment of critical theory, and turns instead to the way in which ordinary objects (such as a bracelet, a yellow raincoat, a stuffed bunny) can serve as epistemic repositories, embodying an individual’s unique way of knowing. The authors in Turkle’s anthology explore “how an object tied the author to intellectual life—to building theory, discovering science or art, choosing a vocation” (p. 5). These essays are all acts of reification—not the reification of concepts from postmodern theory, but of an individual’s emotional and intellectual way of being. The objects described in the anthology encapsulate specific components of human experience and render them in tangible form. From a cynical perspective, the book’s focus on “evocative objects,” many of which are off-the-shelf items, may be seen as a celebration of capitalist consumption, as if the only way that we can pos-
sibly understand ourselves is through the objects we consume. Then again, as Bill Brown (2003) suggests, in the context of the modernist “thing,” perhaps the identification of an evocative object saves it from the humiliation of homogeneity, ... from the tyranny of use, from the instrumental, utilitarian reason that has come to seem modernity’s greatest threat to mankind. (p. 8)

Marxist reflections aside, what I would like to rescue from Turkle’s work is her speculation about objects that facilitate thinking about how experience and knowledge are shaped. It may indeed be argued that the authors in Turkle’s work are “creating,” or at least repurposing, their objects of consumption; by generating a contemplative discourse out of these things, they are endowing ordinary objects with philosophical significance. Applied Media Theorists should engage in a similar generative (rather than consumptive) activity, but their work should involve literally designing the objects as well, not simply picking them off the shelf.

Perhaps the greatest contribution that Turkle can make to Applied Media Theory is not her focus on objects, but her focus on application. Turkle’s recontextualizing of postmodern theory and media studies within the practices of psychological research is what makes her work most valuable. Her prolonged engagement in qualitative studies of computer users, as well as her willingness to discuss her own personal experience as a computer user, exemplify what Bolter (2003) calls an “anthropological strain” in media theory: a strain that refuses to maintain a critical distance from the object of study. This intimate engagement with the object of study is suggestive of the sort of practices I am proposing for Applied Media Theory, beyond its focus on “making.” AMT might result not only in the creation of new media artifacts, but in the application of media theory to anthropological or psychological studies of the impact of technology on human behaviour.

**Epistemology engine**

In *Bodies in Technology*, Don Ihde (2002) lays out a new plan of attack for critical theorists engaged with questions concerning technology. This study is meant as a corrective to what Henri Lefebvre (1991) has called Western philosophy’s denial and abandonment of the body through a “process of metaphorization” (p. 407). In Ihde’s words, “the history of epistemology is one of different attempts to disembody the knower or to hide his or her embodiment” (p. 68). For media critics, as Ihde suggests, this willful denial points to a state of helplessness, a willingness to forego agency in the material world of technological production. According to Ihde (2002), if critics of technology expect to produce more than a retroactive and impotent response to technology’s manifold implications on human beings, then they must enter into technological “situations,” not just through the production of reactionary critical discourse, but at the “research and development stages as well as with the later applied ethics stages.” Ihde’s goal is to bring philosophy down to earth not in order to legitimize theories, but rather to shape the ways in which objects (in Ihde’s case, technological objects) are produced.

Like Turkle’s (2007) later work, Ihde (2002) proposes a theory of “situated knowledges,” rooted in the belief that epistemologies are shaped by the materiality of being.
Rather than developing this theory out of “evocative objects” of all shapes and sizes, however, Ihde turns toward the products of technoculture, out of which he draws the concept of the “epistemology engine”:

The devices I shall use are those that bring human knowers into intimate relations with technologies or machinic agencies through which some defined model of what is taken as knowledge is produced—I shall describe epistemology engines. My devices will be particular machines or technologies, which provide the paradigmatic metaphors for knowledge themselves. And through these narratives, I shall trace the visible and invisible roles of bodies. (p. 69)

With this method in hand, Ihde moves from the camera obscura to video games, the internet, and virtual reality (VR) as a way of identifying epistemic shifts from early modernity to postmodernism. His goal is to demonstrate that it is through physical interaction with the world, “in the mutual question and interacting of the world and ourselves,” that “things become clear” (Ihde, 2002, p. 86). In other words, the best way to understand the philosophical implications of technological “things,” is to actively engage with them. Most importantly, through this contemplative engagement, we have an opportunity to become producers, rather than passive consumers of technology.

Unfortunately, in Bodies in Technology, Ihde’s (2002) model of the epistemology engine is itself retroactive, because he chooses as engines technological objects that have already been invented (for example, camera obscura, email, VR, et cetera). Were Ihde to call for philosophers of technology and media critics to invent their own epistemology engines, then he would be thinking like an Applied Media Theorist. Of course, it is not conventional for humanities and social science scholars to create their own media artifacts, except of course for printed essays and the odd hypertextual archive. One purpose of AMT is to provide scholars with models for engaging in formal experiments with new media for the sake of intervening in the formation of digital culture. But in order to do so, as I have already suggested, we must learn to think more like engineers or digital artists than like philosophers or critical theorists.

In his book Bioart and the Vitality of Media, Mitchell (2010) suggests that bioartists can challenge Western culture’s dominant understanding of the term “innovation,” which has come to designate not just invention, but the bringing of a product to market. The challenge takes place when artists start working with the tools and techniques of scientists, but with a radically different, but no less innovative, goal in mind. As Mitchell (2010) suggests,

creating bioartworks requires pulling, bending, and folding these tools, techniques, and relationships [of the biological sciences] into other spaces, which in turn produces new wrinkles in a commercially oriented “innovation ecology” that first emerged in the 1980s and 1990s in the United States (and has since even exported to many other parts of the world). (p. 13)

The same statement might be made for digital artists who make use of technical tools, skills, and spaces, not for the sake of commercialization, but often to question the impact of digital media on society and the human condition. Indeed, the term Applied Media Theory itself may seem redundant to digital artists, many of who already view
new technologies as tools to embody their philosophical understanding of technology. These artists, from Laurie Anderson to Stelarc, to David Rokeby, to David Clark, generally approach the tools not as experts, but as tinkerers or unabashed dilettantes. In the process of working with the tools, they have an opportunity to think about and with them, to engage in an intimate investigation of the tools’ materiality and their potential to shape meaning and experience. Applied Media Theory imports this provisional methodology into the social sciences and humanities, providing a method for researchers to become research/creators.

**Student projects in AMT**
The 2008 European Conference of the Society for Literature, Science and the Arts featured a special stream of panels and exhibits entitled “Art as Research.” As the Call for Proposals suggested, the arts “can generate and formulate knowledge in their different disciplines—music, theatre, literature and dance, etc.—which is equivalent to the production of scientific findings, or which accompanies and supplements these” (Dombois, 2007). But what became clear over the course of the conference is that, in spite of this claim of “equivalence,” in the academic world there are very few models—and even fewer institutional structures—suitable for artist-researchers. What’s more, as the initial title of this stream indicates (“Art as Research/Research as Art”), there is a difference between an artist who conducts research with the ultimate goal of producing art, and an academic who engages in artistic practices with the ultimate goal of generating academic research. This distinction, which is more ideological than practical, became painfully clear when certain participants in the stream refused to identify themselves as researchers or “scholars,” while others refused the label of “artist.” Finally, the conference also demonstrated that while artistic work might certainly “accompany” or “supplement” scientific findings, there are very few opportunities for artists to play a direct role in scientific research programs. This situation led to the founding of the Critical Media Lab (CML) at the University of Waterloo. In response to the problems raised by the conference stream discussed here, the CML was designed to: a) develop new research/creation practices that challenge the boundaries not only between academic disciplines, but also between scholarly research and artistic creation; and b) establish new institutional models that foster research/creation activities and legitimate them within an academic context.

More specifically, the Critical Media Lab is an interdisciplinary unit designed to support the work of humanists, social scientists, and artists who wish to use new media as a means of engaging in a formal and transformative critique of digital culture. Projects in the lab to date have focused primarily on questions of embodiment related to media theory and technocultural studies. As mentioned above, new media artists have asked many of the same questions as media theorists and philosophers of technology, including questions about the impact of technology on the human body. The most obvious example is perhaps Australian artist Stelarc, who has willingly subjected his body to several technological mutations, extensions, and interventions for the sake of demonstrating, in his words, that in technoculture, the human body is obsolete. An illustrative example of Stelarc’s work is Movatar, a digital/mechanical prosthetic worn by the artist that is controlled remotely by a computer beyond his reach, causing un-
predictable movements of his limbs. According to Stelarc (2005), this project demonstrates what happens when “the body itself becomes a prosthesis for the behaviour of an artificial entity” (p. 222). This exercise in helplessness is designed to underscore Stelarc's desire to accelerate human evolution. In order to keep up with our technologies, suggests Stelarc, human bodies must become dry, hard, and hollow, like the machines that are transforming our lives.

Steve Mann at the University of Toronto, a less sanguine prognosticator on the cyborgic future of the body, has engaged in a similar form of technological self-sacrifice. Dubbing himself a “reluctant cyborg,” Mann has sported a head-mounted computer display (the most recent iteration of which is the Wearcomp) on a daily basis for well over a decade. Mann's intention in this case is not to demonstrate the body's obsolescence, but to underscore its stubborn persistence, and to ensure that technological production remains mindful of the body's centrality to the human experience. The projects of Stelarc (2005) and Mann and Niedzviecki (2001), although ideologically divergent, draw explicitly on these concepts of embodiment in an attempt to put the body back into technological production. In this sense, they respond directly to the philosophical entreatments of N. Katherine Hayles (1999), Brian Rotman (1993), and others, to put the body back into technological discourse.

This sharpened focus on embodiment plays a crucial role in the pedagogical methods employed by the Critical Media Lab (CML), primarily through assignments that require a make-oriented component. Students working in the CML go through a research process that combines hands-on creation, reading, and writing. For example, a recent project completed by students in the lab required them to build a retro arcade cabinet, assemble the electronics required for the control panel (buttons and joystick), and design a critical game for the cabinet that embodied concepts covered in course readings. In another recent project for a course called Cyberbodies: Rhetoric and Fiction, students applied readings in media theory toward the design of a “critical toy.” At the end of the term, they had to write a final critical essay for which the toy was to serve as a hypericon, evocative object, or epistemology engine. The toy creation assignment is a typical component of courses in Computer Science and Engineering that introduce students to microcontrollers and sensors. Generally, students in such courses are required to select a sensor-based toy, take it apart, identify its mechanical components, and either rebuild or repurpose it. This process generally occurs without considering the metaphysical implications of such a dissection, which, following Baudelaire (1964), replays the “overriding desire of most children … to get at and see the soul of their toys” (p. 202, emphasis in original). While the Cyberbodies students had the option of repurposing an existing toy, they were encouraged to design a toy from scratch, based on “instructions” provided in the assigned course readings, which ranged from Donna Haraway’s “Cyborg Manifesto” (1991) to William Gibson's Neuromancer (1984). The only design limitation they had to face was in proving that the toy was technically feasible, building on the Arduino microcontroller platform.

Of course, the students also had to face the limitation of being English majors, not computer scientists or electrical engineers. To this end, the course involved a series of workshops on basic electronics, microcontroller programming, and soldering. Stu-
dents not only had to design the critical toy “on paper,” but they also had to demonstrate a working prototype that made use of Arduino and at least one physical computing sensor.

As may be guessed, the project did not result in the creation of sleek, perfectly functioning toys ready to be snapped up by Mattel or Hasbro. But the students did indeed invent a number of evocative objects that demonstrated their ability to apply media theory toward the invention of new digital things. One group of students designed an inflatable doll that would interface with ordinary desktop computers as a way of monitoring children’s “screen time.” The doll, affectionately named “Freddy,” would sense the physical presence of a seated computer user while simultaneously tracking the processing output and hard drive activity of the computer. With increased computing activity, Freddy would inflate. Eventually, after ballooning grotesquely, the doll would squeeze the computer user right out if its position in front of the screen.

One of the students noted that Freddy subverts some of Stelarc’s proposals regarding embodiment:

> With Freddy, we see a refreshingly opposite trend: instead of increasing miniaturization, we see the grotesque inflammation of the human body, the explosion of his body to warn us of the implosion. While the Freddy rationale does not necessarily subscribe to Stelarc’s claim of bodily obsoletion, it is perhaps more in line with Harawayian thought, such as the prototype animation depicts; in it Freddy disintegrates into monstrosity after excessive inactivity. While the Freddy toy does not seek to deconstruct gender binaries, it nevertheless demonstrates Haraway’s “utopian dream of the hope for a monstrous world without gender” (1991, p. 181). Though we have many homeostatic mechanisms, perhaps the rate that technology interferes with human existence is perhaps too great to keep up with. A toy such as Freddy visualizes the potential of technology to override homeostatic mechanisms. So the Freddy doll articulates the state of emergency in terms of our children’s oversaturated technological existence; he demonstrates, through damage to his own body, how we give ourselves over to media technologies. (Chong, 2008, Term Paper)

As this citation suggests, the project did not get very far beyond prototype, and it may best be described as a “monstrous” prototype indeed. But what matters in this case is that the students’ engagement with physical computing tools led them to a novel remobilization of cyborg theory.

Another student project, slightly less novel but more promising, was entitled The CyberSound Glove. As the title suggests, the project involved designing a glove fitted with touch and flex sensors that would play all 88 notes on a standard piano keyboard. The prototype submitted by the students demonstrated that the glove could indeed be created by means of simple sensors interfaced with a miniature Arduino “lilypad” board. Of course, the prototype did not play 88 notes—in fact, it only caused various LEDs to light up depending on which finger applied pressure to a surface. But the students aptly demonstrated the technical feasibility of the product, and they created a polished video of the product in action, manipulating a soccer ball, strumming the
rungs of a banister, et cetera. Moreover, the students demonstrated their project’s rootedness in contemporary media theory. One student’s essay focused on the generative potential of an object-oriented philosophy of technological production:

[Our project] was influenced by a recent experiment of Stelarc’s where he had an ear grafted onto his arm. One of the potential reasons for this may be to find out what an arm hears. Our idea is an inverse of this: what does a chair sound like? Or for that matter, what would a human arm sound like if it could make music? This demolishes the boundaries between the senses, melding touch and sound. It also redefines our concept of music: the songs produced by random objects may not be harmonious, yet they can still be considered music. (Jarzembecki, 2008, Term Paper)

While this may sound like a convenient disclaimer for a product that doesn’t function properly, the argument is based on postmodernist discourse theories that challenge the binary of “signal versus noise.” What is more, the student demonstrates a speculative interest in the life of objects and how technology mediates our understanding of the object world.

A similar musical philosophy was put forth in a physical computing performance held recently at the Open Ears Festival in Kitchener, Ontario. The performance, entitled What Does a Body Know, showcased the singer Marguerite Witvoet in collaboration with a Digital Ventriloquized Actor (dIVA), a glove that produces verbal utterances based on hand movements. While the playbill for this performance promised a duet of sorts, the result was essentially a disappointing product demonstration in which the human diva struggled to manipulate her instrument, while her voice far outshone her digital prosthetic’s infrequent sonic yelps and yawns. In the end, the performance’s lasting impression may well have been no more than that of the body’s failure to adjust to an incredibly complex interface that may well have been designed for a more agile and nimble species than Homo Sapiens as we know it today. The end result, then, appeared to be a striking demonstration of the human body outstripped by technology, though its creators would likely resist this interpretation. The point of all this is that dIVA is not a philosophical argument or a didactic exercise, but an aesthetic performance.

What I would like to stress here are the methodological and ideological differences and similarities between dIVA and the CyberSound Glove. Both projects are attempting to shape technologies that are suitable for the human body, rather than pushing a notion of progress designed to outstrip the body or repress it. Most importantly, dIVA is a sophisticated art project designed to generate aesthetic pleasure, while the CyberSound Glove, a product of tinkering, is a philosophical object—it has more in common with critical writing than it does with art. Applied Media Theory may be misrecognized then as the most extreme example of “didactic art,” which may not make it welcome in galleries or festivals. This didacticism is evident in a student’s description of the glove as an object designed to transform our understanding of technology and our relationship to everyday life. As one student put it:

The glove is designed so as to allow for natural movement of the hand during any given activity. This gives the user the ability to create music at the same time as they write an essay, do laundry, play soccer, or paint a picture. Mann’s
WearComp allows the user to be both a “scientist and photographer, an engineer and an abstract painter” (15) and the CyberSound glove will allow the user to be a scientist and musician, or an engineer and a composer. This breaks down the boundary between work and play – the glove is designed for multi-tasking, allowing the user to turn necessary tasks into artistic experiences. Creativity and responsibility do not have to be considered separate areas of a person’s life, and it is the CyberSound glove that will assist in bridging this gap. This ties in to Norbert Weiner’s idea of placing value of leisure. By turning a wearable device into a toy, leisure is now portable, and can be enjoyed at any point of an individual’s day. (Jarzembecki 2008, Term Paper)

This utopian description of a surrealist object demonstrates that “critical toys” are not “objets d’art” at all, just as they are not consumer products (although they could seed such products). In effect, these toys may be no more than the byproducts of curiosity-driven research, a procedural step wedged between the reading of media theory and the production of media theory. But what these toys represent is an alternative mode of digital production that provokes critical contemplation and resists uncritical modes of production rooted in marketing and uncritical consumption.

**AMT in the Critical Media Lab**

Donna Haraway had “oncomouse,” which turned cancer research into posthumanist media theory. The Critical Media Lab has **OncoGeiger**, which moves in the opposite direction. One of the growing concerns of the Critical Media Lab is to engage in disruptive computing projects that tackle health issues (both physical and mental) related to everyday life in a technological culture. It is essential to note that although work supported by the Critical Media Lab is indeed “critical” in nature, it is not guided by a cynical assessment of technology’s impact on society and the human condition. In effect, projects conducted in the Lab are designed to demonstrate how media technologies can be used effectively to enhance human well-being. Cell phones, for instance, are used to rescue people lost in the woods, just as they are used by terrorists to detonate car bombs. **OncoGeiger** captures the Manichean potential of technology by focusing on one of the most problematic technologies of all: nuclear energy.

**OncoGeiger** is being designed in consultation with Luke Murphy, a Canadian-born artist working out of New York, and patients at a local cancer clinic. This project builds on the Reverend Luke’s experiments in “radioactive art” to develop a device that transforms residual radiation from cancer patients into an interactive multimedia projection. The piece will utilize residual radiation to call up texts and images out of a database, and project them onto both an outdoor surface and a large screen in a cancer clinic. The content of the animated projection will be provided by the patients themselves, who will use the installation as an opportunity to express feelings of hope, anxiety, et cetera. related to their situation. This piece attempts to transform a hazardous and anxiety-provoking element (radiation) into a tool for self-expression and personal empowerment. The objective of **OncoGeiger** is to offer cancer patients a form of therapeutic self-expression, a type of therapy that has been studied primarily in the context of journal writing and traditional artistic practices such as drawing or painting (art therapy).
These methods have proven to be effective in enhancing the wellbeing of patients undergoing chemotherapy and radiation treatments (Malchiodi, 2002; Nainis, 2008). OncoGeiger will be one of the first examples of “digital art therapy.” This project will be developed under guidance from well-established cancer researchers at the University of Waterloo’s Lyle Hallman Institute, who are consulting with Critical Media Lab on the ethical implications of the study. Finally, researchers from the departments of English and Psychology will collaborate on a qualitative study of the project’s effectiveness to enhance the cancer patients’ quality of life.

As I have noted above, one of the greatest contributions of Sherry Turkle to contemporary media theory is her ability to integrate qualitative social science research into a field largely dominated by the rhetorical strategies of humanists. The CML projects outlined here follow her example, while focusing simultaneously on the artistic or artifact-generating potential of media theory. It is possible to outline this methodology with the following configuration: Media Theory® -> Artistic/Design Application (making)® -> Qualitative Research Data® -> Media Theory. Both the beginning and end result, in this case, is the production of media theory; however, this configuration is somewhat false, because it does not point to the various interdisciplinary offshoots that are possible in Applied Media Theory practices. For example, the GPS tracking and visualization software used in a recent CML health studies project was repurposed for a collective GPS art project called Geomosaic (see http://criticalmedia.uwaterloo.ca). And this project in turn has helped lead to new research practices for my colleague, Colin Ellard, who studies the psychophysiology of wayfinding. In the same way, OncoGeiger will serve the health science researchers and cancer patients involved, just as much as it will serve the media theorists and artists who designed the project.

There are no doubt challenges to working in this cross-disciplinary mode. For one thing, scholars in the sciences and engineering must be willing to trust their tools and research in the hands of humanists and artists. This trust is especially difficult to muster for untenured scientists and engineers, for whom such work may not be viewed as an appropriate step in career advancement. Effective cross-disciplinary collaboration relies on the entrepreneurial courage of individual scholars who often develop research relationships out of previously informal exchanges. A laboratory, institute, or centre that promotes such exchanges, or even better, that promotes “elbow rubbing” between scholars with various research interests, is an effective way to foster cross-disciplinary collaboration. Moreover, such collaboration requires scholars to question their own research methods. For example, the projects outlined here rely on the willingness of humanists, social scientists, and artists to take “things” more seriously, or perhaps to take things into their own hands.

In Tool Being, Graham Harman (2002) goes to great lengths in attempting to tease out the implications of Heidegger’s use of the terms “ready to hand” and “present at hand.” When a tool is functioning properly and working smoothly within a predictable context—that is, when it is “ready to hand”—the tool is merely a means to an end; but, when the tool breaks down, we are painfully aware of its presence. In Harman’s terms, Here, the tool is encountered as a tool rather than only quietly functioning as one. Fractured equipment emerges as a determinate entity, torn loose from
the totality; to this extent, it attains a kind of presence in spite of the system that tries to consume it. (2003, p. 49, emphasis in original)

The goal of Applied Media Theory is not, as in Harman’s case, to demonstrate that any thing—from a clod of clay to a child’s toy—can bring the world into being. Still, AMT does promote speculative contemplation about the lifeworld of physical objects. More importantly, this method serves as a methodology for tearing technological tools from their instrumental context, so that they may serve as objects of contemplation rather than distraction, even before they break down. Without wading too deeply into a Heideggerian morass, we might say that Applied Media Theory serves as a vehicle for provoking an experience of technological objects as present-at-hand to one in which they are ready-to-hand.

The projects outlined here represent both the cyclical and generative nature of Applied Media Theory, which complicates the distinction between theory and practice, research and creation. To borrow both BGL’s archival instinct and Graham Harman’s obsession with lists, these projects rely on a “discourse of elements” that brings together media theory, digital art, psychology, health studies, eco-criticism, misfit toys, half-baked things, malfunctioning apparatuses, monsters, flesh, circuits, dirt, and data. My purpose here has been to make something out of this tinkerer’s hodgepodge, to salvage a productive critical method from the mounting scrap heap of our techno-cultural toys.

Notes
1. I am referring here to the baroque tradition of the kunstkabinett. In Materializing New Media, Anna Munster (2006) compares the curiosity-driven organizational schema of the cabinet of curiosity with the aesthetic arrangement of cyberspace.
2. The term “broken tools” is borrowed from Graham Harman (2002), as discussed later in this article.
5. Taking a cue from Heisenberg more than Heidegger, Harman (2002) goes so far as to suggest that objects might even enjoy a rich inner life that is entirely concealed from humans. This suggestion seems especially compelling in his uncanny description of a toy puppet:
   It might even be the case that, like the menacing toys prowling in some depraved Gepetto’s workshop, objects truly flourish only in that midnight reality that shields them from our view. Perhaps entities are actually rendered bland or uni-dimensional only through their contact with humans. Perhaps instead of liberating objects into a clearing, Dasein is actually guilty of chloroforming the things, of pinning them down like the exterminated moths that bulk up an amateur’s private collection. (p. 92)
6. Harman’s speculation could lead to a rather different understanding of the cabinet of curiosities that that proposed by Anna Munster (2006), noted above. But perhaps more mundanely, this citation reflects many of the scenes in Pixar’s Toy Story series, in which toys come to life only in the absence of humans, and appear uncanny only when they are pretending to be “lifeless.”

References


