

Thinking Though Technology: Frankenstein's Problem (or: How I Learned to Stop Worry- ing and Love Technology)

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Thinking through technology¹ began for me as a response by a philosopher to a Dean's rather ominous charge to the faculty to incorporate technology more thoroughly into our college teacher education courses. I had recently begun drawing on videos to enhance text materials, but I knew that this was not what the Dean fully had in mind. How was I, I wondered, a philosopher who 'taught' her courses by developing a lively, embodied, dialogic 'community of inquiry' around common course readings (and now viewings, too) to face up to the challenges of technology in the classroom? Moreover, how was I to do that as a philosopher?

Not willing to cede what was left of my teacher's authority - the notion (under continued assault by an overdetermined 'learning theory') that a good teacher (me) has (in some important educational sense) knowledge, experience, and insight that a student does not have, I was reluctant to redesign my courses into 'chat rooms'. At the same time, I was also becoming painfully aware that my graduate Philosophy of Education course was no longer addressing (if it ever did) primary questions of education *in ways that mattered*. I was beginning to think, along with Stuart Hall, that increasingly one of the main functions of concepts (and hence of traditional conceptual analysis) was that 'they help us to sleep well at night'. A good night's rest is not a thing to toss away lightly. But, it was also becoming clear to me that any efforts to think about the purposes of education must take into account the ways in which technology - not only electronic technology - has permeated everyday life - and in which culture itself has become technoculture.²

In addition, it increasingly seemed to me that without a philosophical understanding of the political and social character of the new technology we had no way to assess our place (both as educators and as ordinary people) in the emerging technoculture. In effect, in order to preserve the democratic possibilities that remained open to us, I increasingly saw the problem for education and technology as

one of expanding our pedagogic responsibilities beyond a functional relation to technology altogether. The overriding question initially became: In an era of scientific, technological dominance over much of our social and economic life, can a form of democracy survive without a critical technological citizenship? To the extent that we failed to develop and teach critical technological and media literacy in this broader sense, we were participating in the decline of one of the essentials of democracy.

I then set about redesigning that Philosophy of Education course according to the following premisses: We (those of us, especially, in highly industrialized societies) are immersed in a technologized media and consumer culture, and thus it is important to learn and to *teach* not only *how to* but importantly also *to* understand, interpret, and criticize its meanings and messages. To the extent that this technological literacy is lacking, we, as Marshall McLuhan advised almost 30 years ago, will 'drive into the future looking through the rearview mirror'. We will have legend and myth, but no history; persuasive speech making, but no rhetoric; religious feeling, but no theology; feeling itself, but without moral sensibility. Without some critical approach to technology, (which I tried to develop in that course), we remain adrift in technoculture, and at the mercy of its many lures and seductions.

I drew upon Neil Postman's distinction between teaching how to use technology and technology education.³ Postman's point is that learning to *use* technology is not a trivial matter - we all need to know how to best use the tools that technology provides. But *use* or function is only part of the way in which we need to understand technology. We needn't take a negative or Luddite attitude to new technology, but technology education in Postman's sense does entail a critical, analytical attitude. Postman describes it as: 'learning about what technology helps us to do and what it hinders us from doing; it is about how technology uses us for good or for ill, and about how it has used people in the past; it is about how technology creates new worlds, for good or for ill'.

Technology education, then, seeks to look at what, in our newly emerging technological society, is put at stake in our common understandings of human agency, mind and body, reality and fantasy. What happens to education when we shift from contextualized meaning to discrete, decontextualized 'information'? How does virtual reality change our relations to truth? What is the relation between human intelligence and 'artificial' intelligence, between smart human beings and smart machines? Can machines 'communicate' with other machines? If so, then are they 'human'? What is their historical agency? Are we machines? How do we understand 'memory'? Do computers 'teach'? Do they 'learn'? Accompanying these questions, and framed by them, are urgent ethical questions: environmental, bio-medical (human genome project and cloning), surveillance and privacy, war and so called 'smart' bombs and 'surgical' strikes.⁴

DEFINING OURSELVES

There is a second reason why I think a sole emphasis on technological use or skill is misguided, and needs to be curbed in our classrooms, and that has to do with the changing economy and the changing nature of work. In their book *The Jobless Future*, authors Stanley Aronowitz and William Di Fazio⁵ claim that we are witnessing the partial eclipse of paid labor - and with that work itself as a defining activity for

the formation of self and identity. Work itself is not disappearing, they argue, but it is being replaced as a cultural ideal (in terms of which we orient our senses of self) by *consumption*. Hence, we identify ourselves, and are identified, not by what we do, but by what we wear, eat, watch, drive ... brand names, slogans, etc.

As we face a shift in the nature of work, and the rise of a production process in which science and technology are central, knowledge (know why and know to) and not skill (know how) increasingly defines the process. 'Knowledge' is not know-how, or skill in the old sense. Students almost intuitively 'know' this. For example, computer-aided designs or CADS in building and JITs in manufacturing and in transportation have taken over human skill dimensions of work. It is the knowledge component - the conceptual, the theoretical - that is now the basis for the scientific, technological, and social relations of production.

This opens up a new terrain for education. Skill training through apprenticeship is disappearing, and the older institutions that were designed on Fordist models as the carriers of those skills are breaking down. Schools, especially, are caught in this tension.⁶ As the tacit knowledge of the skilled worker is being incorporated into the new technologies, and as we enter the 'Age of the Smart Machine', smart machines embody the skills. We become the bearers of the conceptual, theoretical knowledge.⁷ Students (and I might also warn, teachers) who *don't will* easily be replaced by smart machines, and will face the jobless future. It's already happening. Technology, once embodied in 'teacher-proof textbooks, now is embodied in 'teacher-proof computers. As the language of 'learning theory' is wedded to the logic of techno-culture, teachers are now commonly referred to as 'learning facilitators' and students are increasingly engaged in something called 'service learning'. Indeed, 'teaching' as a concept (if not the activity itself) independent from 'learning' is already being replaced by endless learning, and by 'virtual' classrooms.⁸

CARING FOR OUR CREATIONS

We risk being the Victor Frankensteins of this new technological world if we continue to only teach technological *use*. Like Frankenstein, we, as educators, are creating beings that we are sending out into the world with little concern for how best to include them in the dynamic and changing human community. Mary Shelley's gothic tale contains a modern parable about our ambiguous relationship to technological creation and power. Indeed, its subtitle is: *The Modern Prometheus*. The monster explains to Frankenstein that the Doctor was wrong to release him into the world with no provision for his role or influence in the presence of others. Already his attempts to find a home, says the monster, have had disastrous results. He asks Frankenstein to recognize that the invention of something powerful and new is not enough. Thought and care must be given to its place in the sphere of human relationships. But Frankenstein denies the request, and the monster takes his revenge. The issue truly at stake in the whole of Shelley's tale is the plight of things that have been created but not in the context of sufficient care. This characterizes much of our orientation to the 'technical'.⁹ We *use* techniques and organizations and tools and media uncritically, with no attention to the ways in which these unexpectedly arrange our lives.

LIVING WITH THE CYBORGS

American culture is technoculture. Technology - for good or for ill - permeates all aspects of our lives. As Donna Haraway has famously said, 'We (she qualifies that 'we' by including those of us who occupy certain regions of transnational production) are all cyborgs now'.¹⁰ We are creatures that are both 'wondrously human' and technological. I'm suggesting that the purpose of education, if not of teaching, is to continually learn to thoughtfully and responsibly inhabit the world anew. Technology - the pursuit of efficiency, speed, freedom from labor and ignorance - will not free us unless it is accompanied by broad democratic practices that themselves endow individuals with some sense of place and purpose and pattern.

Hannah Arendt, in her essay written in 1959 titled *The Crisis in Education*, calls us to our embedded responsibility as educators. She says, 'Insofar as the child is not yet acquainted with the world ... care must be taken that this new thing comes to fruition in relation to the world as it is ... Educators stand in relation to the young as representatives of a world for which they must assume responsibility although they themselves did not make it, and even though they may, secretly or openly, wish it were other than it is. This responsibility is not arbitrarily imposed upon educators; it is implicit in the fact that the young are introduced by adults into a continuously changing world. Anyone who refuses to assume joint responsibility for the world ... must not be allowed to take part in educating children'.¹¹

To assume this responsibility, we need very different stories about relationality, connection and disconnection. We needn't be hostile to instrumental accounts and learning to use technology as tools. They *are* tools. But we need also to recognize that that is not *all* they are. The tool metaphor, however, is *too* powerful. As a metaphor, it predisposes us to see some things and not others. Give a person a hammer and everything looks like a nail. It has impoverished our images, and imagination. Consequently we say things almost ritualistically. We don't really 'speak', we utter jargon. As uncritical language users, language uses us. Why, for instance, do we use 'action' language to describe essentially inert activities? Do we really 'surf the net? Or 'travel' on the information 'highway'? In what sense do we really 'reach out and *touch* someone with our KIT phones? That is exactly what we cannot *do* with a phone. How meaningful is a 'smart' bomb or 'surgical' warfare'?

If we heed Shelley and Arendt to become adults about technology, and take up our responsibility as educators to teach things (to move away from so-called 'child-centered' techniques) and to teach 'in a context of sufficient care', it might involve courage as well as being a little scared. You can actually get hurt, some people more than others. There is pleasure *and* danger in embracing technology. 'Becoming adults' would require that we critically address the *noir* side of technology, the ways in which our thinking about technology has become over-determined by techno-logics, and the in-built principles that aim at deskilling, information gathering, surveillance, and social management of peoples. This would, at the least, include a 'broadening' of the term 'technology' to include techniques.¹²

OUR TASK AS EDUCATORS

I now think that there are at least two parts to this pedagogical project that can be separated out from each other. The first part is outlined above - the one for a critical classroom design. As teachers, it is our growing responsibility to explore techno-culture with our students as the world in which 'we' (in Haraway's restricted sense of that) now live. Mary Shelley is right to insist that unconscious interests, values, and commitments (the *noir* side of techno-culture) should be brought to light and subject to critical scrutiny. How values, ideas, and interests embodied in technologies remain hidden from view becomes a bit less mysterious if we reflect that many technologies take their place comfortably *as part of the ordinary everydayness of our surroundings*. It is this more than anything that obscures the political and cultural message of so much technology.

Yet how can concealed values become part of public discussion, debate, and deliberation? If technology shapes forms of life, if it reflects not only who we are, but who we aspire to be, and if it mediates our relation to the world, then which technologies get developed for what purposes must be a central concern for any democracy. No democracy can survive if the deepest and most far-reaching questions facing it remain hidden.

As educators, we must find ways to demystify and decode media and technology, and to make technology literacy part of the curriculum. To do this, we can make use of the following three methodological distinctions. These can all be made to fit existing curricula and student experiences. Ontological - ask what technology IS. What are examples of technologies that students use? Think about the everydayness of technologies - eyeglasses, pens, books, etc. Pragmatic - ask what technologies DO - and what they help us to do. This is the level at which most education and technology rests. Phenomenological - ask what technologies, in doing FOR us, also do TO us. Broaden the concept of 'technology' to explore the values that technologies carry. I have found that the first part of Chaplin's classic film *Modern Times* provides a good way into the phenomenological question. The phenomenological dimension asks also what it is to be, in Tiles and Oberdiek's sense, conscientious. To continue to assume that technological products work in the same way and with the same effects independently of the environments in which they are used may constitute a form of willful negligence. The instrumental or tool view of technology makes it easy to overlook the embeddedness of all techno-products. It is unrealistic to think that technological solutions to practical problems come without side effects, which have the potential for creating new problems. At the same time, we should never underestimate our dependence on technology. Technology, they wisely caution, often simply allows us to go on doing stupid things in clever ways.

Following Tiles and Oberdiek, what we perhaps have to become is more 'mindful or thoughtful users' of it. «The questions - perhaps more complex human questions - that technology cannot solve, although it will always frame and condition the answers, are: What should we be trying to do? What kind of lives should we, as human beings, be seeking to live? And can this kind of life be pursued without exploiting others? But until we can at least propose answers to those questions we cannot really begin to do sensible things in the clever ways that technology might permit.»¹³

ADDENDUM

This was where I had originally ended the project ... with the teacher in the classroom. But that now seems inadequate, and misleading. It is too tidy ... too packaged. Too much of a 'course' in ethics and not enough genuine philosophical inquiry. The second part of this project would develop points of the above: What does it mean to say that we need to 'become adults about technology'? Or that we will find 'pleasure and danger in embracing technology'? Even the above analysis did not escape the emptiness of Hegelian 'reason'. Like architectural space, it was still emptied of inhabitants and the 'messiness' of life. Still too controlled and administrative. I needed to heed what I used to charge my students with: roll up your sleeves and get your heads dirty. I had forgotten - in trying to package a course, that humanity will always be in excess of its administration. It was this 'excess' that I sought to understand, an inquiry which Hegel does not well equip us to undertake.

I have begun to outline this second inquiry as an attempt to seek words and ideas that place us in more dangerous and menacing zones than we might have chosen for ourselves. These zones are mental territories that reflect the history of our present - but they reflect it as counter-memories, not 'simply' decode it. They are attempts to shift the foundations altogether - away from the 'premise keepers' - and break away from the myths of necessary unfoldings, the *deus ex machina* logic. I see it as an effort to dispossess ourselves - and philosophy - of certain forms of thought, and a certain muteness or silence in the face of 'subterranean' forces of our time. It involves us in a kind of 'science fiction' move of imagining possible worlds.

This is a bigger project. In freeing thought from formal structures, we place it onto or against an historical field, where it must confront the singular, the contingent and the arbitrary - which operate in what is *put forward* as universal, necessary and obligatory. The questions shift: not 'what can I know?' but rather, 'How have my questions been produced?'

In this inquiry, we model our relationship with technology - if we can even phrase it in such binary terms? - as a reflexive relation that presents technology's relation with the 'historical subject' as an active one. This challenges our earlier reading of *Frankenstein* and calls on us to recognize the humanity in our own constructions. The humanity in our otherwise emptied constructs - or rather constructs we populate with myths. The real monster in Frankenstein - in this reading - is neither Frankenstein nor the 'Monster' - but the logic or state of mind that permits these acts, that produces and reproduces them. It is writing and speaking about reality as if Auschwitz existed. 'We' are both in the belly of the monster - which dehumanizes - or a-socializes - humanity and technology. There is no exit, only an endless practice of freedom by means of an impure reason.

Marina Warner's book, *Six Myths of Our Time: Little Angels, Little Monsters, Beautiful Beasts, and More* is not a bad place to start. (See quote below) Other compass headings can also be taken by following works that open up to us the 'dangers and pleasures' of territories marked by an emerging vocabulary of 'impure' constructs: hybrids, nomads, migrants, rhizomes, resistance. They enable us to radically question the humanity in technology and the technology in humanity. Following Haraway,

what does it mean to say. We are all hybrids/nomads/migrants now? Knowing that there is 'no exit', what are the places of resistance? Of complicity? And following Foucault, what are the 'technologies of the self' that help construct the politics of identity? At what point, and in what discourse, do these important questions rightfully enter our classrooms?

«And all the little monsters said in a chorus: You must kiss us.

What! You who are evil, Ugly and uncivil,

You who are cruel, Afraid and needy, Uncouth and seedy.

Yes, moody and greedy. Yes, you must bless us.

But the evil you do, the endless ado. Why bless you?

You are composed of such shameful stuff.

Because, said the monsters, beginning to laugh, Because, they said, cheering up.

You might as well. You are part of us.»

Suniti Namjoshi

*St. Suniti and the Dragon*¹⁴

NOTES:

1. I am indebted to Carl Mitcham for this phrase, from the title of his book, *Thinking Through Technology: The Path between Engineering and Philosophy*, University of Chicago Press: 1994.

2. I have found two texts especially helpful in imagining this construct, *Technoculture*, Constance Penley and Andrew Ross, eds., University of Minnesota Press: 1991; and *Technoscience and Cyberculture*, Stanley Aronowitz, Barbara Martinsons, and Michael Menser, eds., Routledge: 1996.

3. *Technopoly: The Surrender of Culture to Technology*, Alfred A. Knopf: 1992.

4. In addition to the Mitcham book mentioned above, helpful ways to begin philosophically addressing these questions can be found in *Philosophy of Technology* by Frederick Ferre, University of Georgia Press: 1995; and *Philosophy and Technology*, edited by Roger Fallows, Cambridge University Press: 1995.

5. Subtitled *Sci-tech and the Dogma of Work*, and published by University of Minnesota Press: 1994.

6. The socio-economic dimensions of this tension are beyond the scope of this paper, but the interested reader might turn to *Post-Work*, edited by Stanley Aronowitz and Johnathan Cutler, Routledge: 1998, for an overview of critical issues.

7. Especially see *In the Age of the Smart Machine: The Future of Work and Power*, by Shoshana Zuboff, Basic Books: 1988. Zuboff's book has become a classic reference here, and students found her construct of 'informating' especially helpful.

8. I attempted, during a session at the NAACI Conference, to argue that this reduction of teaching to learning, of teacher authority to student authority, and of the overall shift from educational purpose to students' needs, are all part of the continuing 'feminization' of education, increasingly including higher education. Of course this is more complex than space allows for here.

9. I am indebted to Langdon Winner for opening this line of inquiry in his book *Autonomous Technology: Technic-out-of-Control as a Theme in Political Thought*, MIT Press: 1977.

10. This phrase can be found in Haraway's now classic and widely reprinted article *A Cyborg Manifesto*.

11. The full quotation can be found in Arendt's article *The Crisis in Education*, published originally in *Between Past and Future: Eight Exercises in Political Thought*, by Hannah Arendt, Viking Press: 1961.

12. In class I pursued this path by using Mary Tiles and Hans Oberdiek's extremely thoughtful book, *Living in a Technological Culture: Human Tools and Human Values*, Roudedge: 1995.

13. Tiles and Oberdiek, *op.cit.* p. 197.

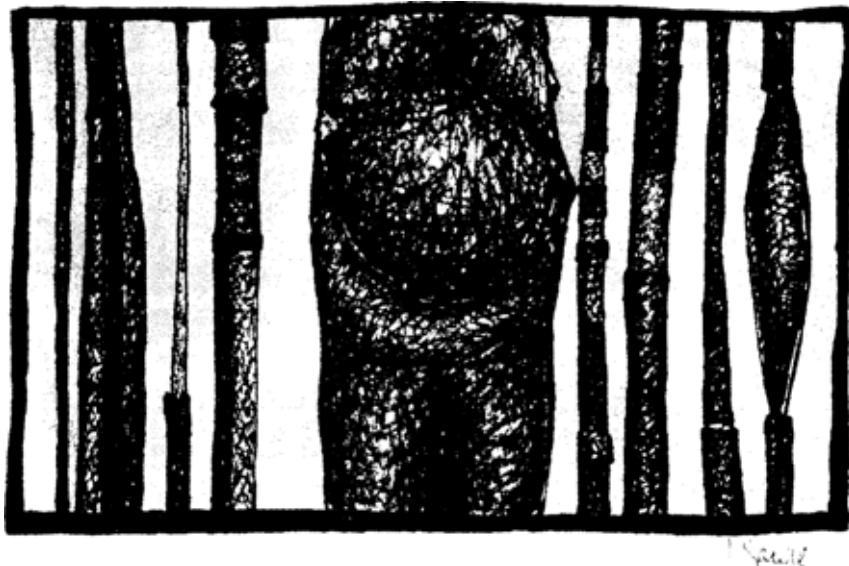
14. Reprinted in *Six Myths of Our Time: Little Angels, Little Monsters, Beautiful Beasts, and More*, by Marina Warner, Vintage Books, 1994.

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