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Applications of Interactive Technologies
Professor Red Burns

CRITICAL RESPONSE: "**TECHNOMANIFESTOS", CHAPTER 13**

"To live effectively is to live with adequate information"
Norbert Weiner, quoted in ***Technomanifestos***[1]

At its core, the argument framed in the assigned chapter from Technomanifestos revolves around the pace of technological innovation and its adoption. Bill Joy fears that the development of GNR technologies (genetic engineering, nanotechnology, and robotics) is close at hand and highly dangerous. Jaron Lanier dismisses that argument by positing that such innovation is by no means inevitable, and worries more that focusing on the eventual blurring of the lines between human and machine cheapens our own unique, complex identities as human beings. But both, I think, do us a disservice by taking for granted the role of innovators as the ultimate moderators of the pace of technological change.

In some ways, this chapter was as interesting for its use of semantics as much as its ideas. For instance, Joy's thesis blurs many lines – not only within his conception of man as machine and vice versa, but also between the terms *technology* and *information* – words that Joy comfortably uses interchangeably. The author explains why this is so:

> "The three technologies Joy fears most – genetic engineering, nanotechnology, and robotics – are basically just code – information – bits – and therefore can't be physically constrained."[2]

He continues,

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[1] Technomanifestos, p. 335
[2] Ibid, p. 321

> "The nanotech vision is that a powerful computer in conjunction with an inexpensive assembly device can transform code into material substance in the average household."[3]

And sums up the argument thus:

> "Computer viruses and worms that cripple businesses and markets have already foreshadowed such crises. What would happen if these computer viruses could also invade our bodies?"[4]

In Joy's words,

> "There is the dematerialization of information you need to do harm. It is becoming weightless – it's just bits."[5]

It is somehow too difficult (or perhaps too easy) to criticize this argument without a more detailed conception of how exactly this alchemy would take place.[6] I am certainly willing to suspend disbelief, but to the untrained ear these abstractions verge on science fiction fantasies. As a result, one is naturally sympathetic to Lanier's cynicism. But the point remains; in Joy's mind, *technology* and *information* are equivalent.[7]

Lanier calls this "cybernetic reduction" dangerous, not only because it paints an overly ambitious path for the future of technological development, but because it tempts us to see ourselves, like the technology we build, as a mass of accumulated coded information. At the same time, it causes us to describe the development of technology – especially software – in biological metaphors. To Lanier, who seems to harbor a religious sensibility even if he does not express it, "humans are intrinsically separate from their

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[3] Ibid.
[4] Ibid, p. 322
[5] Ibid, p. 321
[6] Joy's ideas might be especially confusing to those of us taught that "sticks and stones may break my bones, but words will never hurt me."
[7] Or as Marshall McLuhan might argue, "the medium (technology) is the message (information)."

creations."[8] Technology may be merely information, but we are not; comparing ourselves to computers is something like comparing apples to Macs.

By virtue of their professions and backgrounds, both Joy and Lanier are both great admirers of technology. The author points out they also "both maintain that people possess reason and free will and are worthy of compassion."[9] But what role should ordinary people play in the development of new technologies? Is there more to our interactions than simply trying to stay abreast of the latest innovations? Indeed, is ubiquitous technology really necessary or desirable? In the words of the last of many insightful quotes shared in Technomanifestos: What, after all, is *adequate information*?

The notion that to live effectively as humans requires merely adequate information stands in stark contrast to the onrushing deluge of information that has (and, by all appearances, will continue to) pour over us since the dawn of the Internet revolution. Although the quote is used by the author to justify a vision of ubiquitous computing[10], I think the phrase *adequate information* can also evoke a society where computing is not necessarily ubiquitous but still useful.

In short, technology need not transform society in order to serve it. The author seems to believe that the power of technology is transformative; for instance, he imagines "a Xanadu-like direct payment plan that reduces the necessity and viability of large corporations." [11] But such grandiose dreams distract us from the subtle usefulness of everyday technology and ignore the modest limits of our own technological transformations.

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[8] Technomanifestos, p. 329
[9] Ibid, p. 331
[10] Ibid, p. 335
[11] Ibid.

Richard Vague, a keen observer of humans' interactions with new technology (he needs to be; since his primary goal is to make prospective customers comfortable with his products) noted in his lecture to our class that, in his experience, "most consumers are only willing to absorb or adopt one new behavior at a time."[12] (That observation, a strong counterweight to the conventional wisdom that the adoption of emerging technologies will proceed unabated, supports Lanier's caution against "the fetishization of Moore's Law".[13])

Even more importantly, it also places each of us in a valued position as arbiters of technological change by setting our own levels of technological immersion, depending on our own needs and comfort levels. We can only deal with so much technology in our daily lives before our interaction with it becomes less adequate and more obtrusive. It is a concept that Bill Birkman is counting on with his idea to deliver Internet access through power lines; his service will closely mirror current offerings in both cost and speed, but his customers no longer need to worry about extra cables in the house or deal with difficult phone company bureaucracies.[14]

It could well be that people like Bill Joy or Jaron Lanier, despite their obvious intellect and best efforts to translate that intelligence into new technologies, are ill-equipped to determine how much information is adequate because of their own vantage point as technophiles. Instead, it might well be the billions of people targeted as the eventual end-users of inventions like Joy's Jini language and Lanier's tele-immersion that

[12] Class notes from September 17th, 2002
[13] It might also throw a wrench into Lanier's plans to develop tele-immersion technologies that seem at first glance an radically foreign way to interact with others.
[14] Class notes from September 25th, 2002

will render the final verdict on what level of information and technology is adequate for them – answers that are sure to vary widely among societies as well as individuals.

Alan Kay is quoted in this chapter with an insightful question; "When is technology an amplifier and when is it a prosthesis?"[15] The answer may seem evident to innovators, but is not necessarily up for them to decide. Although they are familiar with the technologies they may have little conception of how users will eventually interact with them, as the choice of how technology is integrated into our lives ultimately rests with us. Often, as it turns out, we adapt technology to serve purposes that its creators never intended; just as Bill Birkman's rivals once turned telephone cables into conduits for information as well as voices.

Wiener's original quote, as stated at the top of this essay, concludes thus: "Communication and control belong to the essence of man's inner life, even as they belong to his life in society."[16] For the author of Technomanifestos, this is an illustration of "a world of thoroughly distributed computing and tele-immersion."[17] For me, it is a comforting reassurance that I have the control to choose which technologies are beneficial and which are harmful within my own space. As part of the giant peer-to-peer network that is the world, I cherish the right to interact with it as I wish.

[15] Technomanifestos, p. 326
[16] Ibid, p. 335
[17] Ibid.