

VIRTUAL REALITY AND THE POLITICS OF TECHNOLOGY

VR vividly demonstrates that our social contract with our own bodies has brought us to a point where we have to decide fairly soon what it is we as humans ought to become, because we are on the brink of having the power of creating any experience we desire.

— Howard Rheingold, *Virtual Reality*

Recently I attended a large gathering of corporate representatives interested in the industrial prospects for Virtual Reality VR.. The gathering, called the Annual Industry Symposium on Virtual Worlds Technology, was sponsored by the Human Interface Technology Lab (HITLab) at the University of Washington. The authority granted the HITLab to host such an event is largely garnered from the influential position of the lab's director and founder, Professor Thomas Furness as well as its cutting-edge projects and technical developments in the still formative VR field. Most of the participants listened eagerly to the promises to be fulfilled through industrial projects and the benefits to be derived from working closely with the HITLab as a member of their industrial consortium. From the list of consortium members it would be difficult to deny that the VR field has some promise, at least as a viable commercial enterprise. Members of the consortium include US West, Microsoft, American Express and the Boeing Corporation, all well-established financially and already heavy with social prominence, influence and reputation.

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The symposium also illustrated with uncanny accuracy the broader, cultural nature of VR in particular and most high-technology developments in general. What was most interesting were the sometimes subtle, but more often assumed influences VR has or will have on cultural development and social discourse. Of course technology has often brought about profound changes in society. The common examples – Ford's automobile and the introduction of a new style of industrial management, the launch of the Soviet satellite Sputnik, the discovery of the genetic coding in the DNA molecule – are well-entrenched markers for a whole study of technology and society. But VR is particularly intriguing because it seems to hold so much of the spirit of contemporary popular culture in a way that anticipates and precedes the introduction of any viable product. It also inserts itself in the center of many important social debates; military-based scientific authority versus public policy making; centralized control over decentralized management; political ecology versus the green ecology; technological progress over social utopianism; body politics and gender issues.

The list can continue, but it need only go so far before one realizes that the values embodied in this technology, as in any, are fully culturally derived. Any "meanings" to be attributed to VR make sense only in one or another social context, and these meanings are highly complex and specific to a particular set of beliefs and ideals. It is not fair to say that VR is merely an pernicious and imposing operational device with the ability to coldly determine and rationalize expected human behavior. While VR may operate on human behavior, VR (and technology in

general) is a social artifact, hence it is built and used in order to acknowledge and account for decidedly human concerns in a specific social, political and historical context.

The symposium began with a stark reminder that VR is originally a technology designed to facilitate military superiority in the interests of one nation's proposed hegemonic world order. VR, the symposium attendees were reminded, came from Professor Furness' research during his 23 year stint with the United States Air Force. There he addressed his research into the design of new technologically superior fighter aircraft that could confront adversaries on the electronic battlefield of future wars. The influence of military ideology on commercial and then social projects is still most powerfully marked by the futuristic technologies we saw during the Persian Gulf War, a war that was decidedly about oil politics and the dependence of industrialized societies on foreign resources. These were war-making technologies that in most every way were reminiscent of the sorts of power and control VR developers are promising. For instance, the ability to project one's presence (called "telepresence" by VR developers) to some remote site was profoundly imaged by the video camera equipped "Smart Bombs" that allowed an electronic eye to capture the immortal act of destruction for battlefield generals and (with no loss of significance to media critics) a huge, attentive television audience. The promise for a seamless electronic grid of information flows, including banking transactions, "commuting" to work via VR, and the new fiber optic information highway, were demonstrated during the war through the coalition forces ability

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to manage unprecedented logistical operations, facilitated through advances in command, control and communications technologies.

Furness' talk also reminded the audience of the vision-centered nature of the technology and, skillfully linking commercial promise, the vision-centered nature of society, in particular the obsessive appeal of computer imagery to the culture of "Nintendo kids." We were briefly told about the optical nature of the technology and how virtual reality is all about "virtual optics," the illusory effect of seeing an image "out there," "in" a mirror, say, where no physical object really exists. The VR project extends and complicates the illusion by controlling the image with computer generated scenes or "virtual worlds." While the imaginative possibilities for a computer-controlled virtual world are compelling, they force questions of visual production, representation and vision physiology. For instance, Furness mentioned a major project at the HITLab, the Laser Retinal Scanner. This device projects low-intensity laser light onto the retina of a human in rigidly controlled patterns. But despite the technically innovative nature of this technology it was clear that the scanner disrupts deep-seated bodies of knowledge and theory about how images are produced and observed. With the laser scanner, images are no longer contingent on the creation of permanent objects through traditional means – say, photographs – but are increasingly reliant on computer mediated techniques thanks to the requirements of highly regulated modes of automated industrial production. Similarly the act of "seeing" images is rapidly falling into the same general paradigm of

digitization. The Laser Retinal Scanner signals the cusp of the rupture, as Furness alluded: the scanner is the first device where the permanent image no longer exists except as a sequence of neural stimuli on the retina whereas previously the image came through the optical effects of reflection and refraction, indirectly making its way to the eye. The utility of this device will no doubt have a significant and provocative influence on future military, commercial and entertainment developments. But whatever the utility, the directness of this new technique – painting images directly on the eye – marks a radical departure from accepted image making practices and will force accepted wisdom about visual representation to be entirely rethought.

For some it may be unnerving to have such influential practices as visual representation be so far preceded by an adequate and well-defined critical theory that is able to explain and respond to the meanings and influences of such deep knowledge ruptures. Almost by definition a critical theory cannot always anticipate such drastic departures from conventional practices. But in a less formal way some forms of critical discourse can prepare society for future changes. Precisely because popular culture is very often the target audience for innovations like VR, the earliest intimations of the immanent change is generated from popular movies, science-fiction and various video games. It is from within these social texts that most people have come to form a sense of what VR is and where its potential may lie. For example, Brett Leonard's *Lawnmower Man* (1992) portrayed a menacing distortion of the potentially rehabilitating utility of VR, reminding movie goers that,

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depending on whose purse strings control its development, the new technology is easily swung across the line of subjugating control versus empowering social utility. To the HITLab, the Lawnmower Man make a mockery of the VR field of study and its potential for socially progressive uses. But this sort of criticism does not get beyond the most basic attributes of film fiction in that it does not explain the ways that fiction influences social thought and imagination, especially for a film that was so widely anticipated.

This criticism anticipated one of the main themes of the symposium. That being that there is a general acknowledgment among VR developers that the enterprise is being crippled by a prevalence of media hype and speculation: too many promises and science-fiction and not nearly enough good, hard, practical science. This can be read largely as a radical ascension by the technology-minded HITLab to wrest control and authority over the field from the most socially minded VR discussants, including science-fiction writers of the cyberpunk genre. Indeed one might say without being overstated that most of the work, at least in terms of plotting directions of growth, has occurred chiefly in the fringe VR elements including Cyberpunk authorship, underground low-tech culture and – in general – a popular culture that is so fascinated by the possibilities of new technology developments, speculative or not. Most of these directions of growth point critically toward the possibility of a dystopian social future created by what the Cyberpunk genre categorizes as dehumanizing technologies, including many VR-like apparatuses. The Cyberpunk and low-tech cultures create this imagery by

cobbling together the widespread evidence of a failed modernist project and projecting the imagery through various forms of cultural production – technology produced art, science-fiction, computer outlaws and hackers. Their responses to the guiding aegis of social modernity, the rationalization of social behavior, are radical in the extreme and at least counter-New World Order. More directly, the Cyberpunk and low-tech attitude says that the new technologies are to be quickly pirated and used in ways that destroy any chance for a seamless hegemony ordered by the new cybernetic technocracy. The Cyberpunk science-fiction genre speaks quite directly to this anti-authoritarian sentiment, but is nonetheless a curious source of inspiration for many VR developers. Having ceded such a position of influence, the VR project falls prey to those who would advocate social change through the radical democratic appropriation of technology – the cyberpunk sensibility – rather than allowing for further elitist, First World domination of directions of technological and social development.

Part of the responsibility to be attributed to this widespread phenomenal appeal can be traced back to places like the HITLab where the ability to garner financial support is directly reliant on building an image of a wild, fantasy-making technology that will have widespread appeal. But the cost of this media blitz is a loss of imaginative control and a loss of scientific authority. The HITLab and its like must play spin-doctor and tone down their own speculation so that they may order the field and direct it in more pragmatic and sober ways. But every one has their own idea about what constitutes speculation and hype. The HITLab

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saw nothing fanciful about announcing at the symposium that, should things go as planned, the VR industry would provide \$1 billion a week in revenues by the turn of the century.

The VR project as represented at the symposium is epic, not only in projected financial scale but also in the breadth of its effect on the history of human consciousness. It stands as a marker to a new paradigm of technology utility – forecasted by New Age’s cognitive enhancement practices and hip, urbanite Mondo technophilia – that focuses on the users in full control, siphoning their full potential from the center of the machine’s cybernetic process. Along with the enormous (and precariously regulated) market for cognitive enhancement drugs, psychotropic elixirs and mind massaging light strobes, VR is seen by the Mondoids and others at the cusp of consciousness design, as the next step in the technology mediated revamping of the human mind. And their devotion and use of technology is not wholly derided by the technology developers, who themselves are seen more and more encouraging the use of technologies for these alternative uses.

The effects of technology are constantly cited as the probable cause of any potential global disaster in the years to come, whether biological (bodies poisoned by industrial toxins), biblical (prophesied Judeo-Christian apocalypse sparked by some Middle Eastern government that happens to get a few ounces of plutonium and a precision detonator) or biotopic (airconditioner and automobile exhaust finally depletes the ozone layer.) It is not surprising, then, that in the late twentieth century,

technology design should focus on empowering the human in a way that prepares the gene pool for the long haul into the next millenium.

As a requisite response to the critiques of the “dehumanizing” and destructive nature of technology, humanist sentiments have become an integral part of the new technological designs and, more importantly, the discourse of technology developers. By tapping into the cognitive processes of the subject – creating “high bandwidth to the brain” – VR developers suggest that the technology is part of the vanguard next generation of smart, presumptuous technologies.¹ The technology developers have thrown themselves at the task of deriving humanly compatible techniques through the design of new technologies that acknowledge the irrational, unquantifiable species known as *Homo Sapiens*. Beyond the VR project, there are many examples of this renewed emphasis on the human element of the human-machine interface. For example, a formal calculus called “fuzzy logic” which accounts for the gray area between truth and falsehood, or “yes” and “no” – distinctions that the previous generation of technologies was not equipped to handle – has become the technological order for the day, as has a theory that describes mathematically the behavior of chaotic, tumultuous systems like human emotion-based behavior. Tapping into deep human behavioral patterns with VR and the knowledge embodied in volumes of research on cognition, perception and human-factors, is what will be recorded historically as the “New Humanism in Science.” It is this notion of a New Humanism in Science that

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underwrites the possibility, suggested by VR developers, that VR will become an empowering technology.

Humane technology and high bandwidth to the human brain? If VR becomes as pervasive as its developers suggest and if it can provide a more direct tap into human consciousness the possibilities for exploring the nature of humanity and the individual may become new idle pastimes: no more need to worry about the couch potato, Nintendo addicts or rampant illiteracy. But in a commodity-centered society reliant on the exchange and production of capital, how much of this free thinking will be tolerated before it becomes “unproductive?”

There are many reasons to be wary of this humanist movement with science and technology development, not the least of reasons is the promise by VR developers that the technology will afford “natural” and “intuitive” forms of use and interaction – extensions of the 1990’s technology buzzword “user-friendly.”² These highly charged words applied to technology presumes that anything in the human-made object world can be natural (a quality traditionally reserved for first nature, the world of natural organicism and the “green” ecology) or intuitive (a characteristic of second nature that is understood to be cultural traits derived from experience, habit and custom.) These reasons to back the VR project – magical textual tropes like “natural” or “intuitive” that appeal to public consciousness about wholesome goodness – while compelling at first glance, neglect to consider the cultural specifics, first, of language and how society comes to attribute meanings to words like “natural” and “intuitive,” and,

second, that the embodiment of these meanings in a technology could only represent a minuscule societal cross section.

The tradition of science culture, as distinct from public or lay culture, has been to distance itself from the body at least in the ways that the body may be used as a mode of sensing the world around us. It is also a culture faithful to specialized forms of literacy and communication through particularly esoteric and abstract texts. Empirical observation in this culture is almost exclusively reliant on objective sense devices and other mechanized instrumentation. The problem of technology in the service of humanity has now come down to empowering the technology user in ways that are steeped in the communicative traditions of lay culture.³

Thus the New Humanism in Science has technologists and scientists emphasizing the epistemologies of the oral-gestural tradition, a tradition typically associated with lay culture's modes of communication. This oral-gestural epistemology includes an important set of sensibilities that focuses on the body's relationship to natural and cultural codes such as "user-friendly interaction," "natural behavior" and "intuitive operations." This shift in emphasis by the science community is not so much a deep rupture in science culture when one considers that science has itself developed extensive forms of oral-gestural communication in such things as on the job training, technician apprenticeship hierarchies, conferences that focus on hands-on and tutorial-based learning and knowledge sharing consortiums.

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This New Humanism in Science, while offering imaginative possibilities, should be regarded with a critical eye, particularly because there is no consensus on exactly what new operative, pedagogical and design modes will facilitate the new humanism. Should it be the human or the machine that should be doing the accommodating in order to create a “natural” or “user-friendly” human-machine interface? The new humanism will almost certainly not provide the sorts of emancipatory and liberatory promises that have been trumpeted until a framework for instituting it is adequately prepared by more than just the VR developers or speculators. High profile VR journalist Howard Rheingold assumes that the human is the variable:

Perhaps we will want to change ourselves when we find out how the right kind of machines can bridge a few barriers to optimal functioning. The human experiment still has some major bugs in it, several of them potentially fatal, that must be solved in some way very soon; changing ourselves to suit our machines might not seem so terrible when it is contrasted with suitably grisly alternatives.⁴

If this is the prescriptive for the old, broken mode of human-machine interaction then there is not so much that is different from what has been the norm for ages. As humans we have traditionally had to accommodate ourselves to the machine’s quirkiness. In any case, one can almost bet on the new humanism carrying over an almost religious devotion to machine-based solutions to social problems. Also, there is evidence that the New Humanism in Science will hang on to old, contested codes of social organization. Consider the speculation surrounding the notion of sex facilitated with VR. This is a proposition that would be impossible to comprehend – let alone

discuss – under the old science and technology tradition of bodiless empirical processes. Although the body is a more active component of technology development, it is not without its marks of old gender inequalities. While sex culturalists like Susie Bright see enormous possibilities for exploring the limits of human intimacy, Robert Anton Wilson unwittingly reminds us that the technology is wet with decidedly male pubescent fantasies about control, mastery and sexual prowess when he exclaims that, “[With VR I could] have an appointment to fuck Marilyn Monroe tomorrow...”^{5,6}

I imagine that the New Humanism will be thoroughly explored by those affiliated with a novel branch of anthropology called “cyborg anthropology.”⁷ Here, investigations into the post-humanist order intimated by radical shifts in the nature of the way humans use machines will unearth, I suspect, new meanings attributed to the machine that carry definite humanist allusions: smart, organic, intimate, intuitive and natural. As Alluquére Stone has indicated, the introduction of VR as a human-machine and human-human interface technology “instantiates the collapse of the boundaries between the social and technological, biology and machine, natural and artificial that are part of the postmodern imaginary.”⁸ The possibility for working a more democratic, egalitarian and sustaining humanity through these refigured boundaries exists, of course. But more than ever before, the opportunity to realize it will have to be fought for.

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- ¹ Meredith Bricken, "Virtual Worlds: No Interface to Design," in *Cyberspace: First Steps*, Michael Benedikt, ed., (Cambridge: MIT Press, 1991).
- ² Bricken, p. 364–366.
- ³ For an important treatment of the culture of scientists and engineers see Carolyn Merchant's *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century*, Chapter 1, "Inventing the Expert: Technological Literacy as Social Currency," (New York: Oxford, 1988), pp. 9–62.
- ⁴ Howard Rheingold, *Virtual Reality*, (New York: Summit, 1991), p. 228.
- ⁵ Susie Bright, *Susie Bright's Sexual Reality: A Virtual Sex Reader*, (San Francisco: Cleis Press, 1992).
- ⁶ Robert Anton Wilson, "Interview," *Magical Blend*, October 1991, pp. 22–23.
- ⁷ Sarah Williams, personal communication.
- ⁸ Alluquére Stone, "Will the Real Body Please Stand Up? Boundary Stories about Virtual Cultures," in *Cyberspace: First Steps*, ed. Michael Benedikt, (Cambridge: MIT, 1991), pp. 85.