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# The Prelude to the Millennium: The Backstory of Digital Aesthetics

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Figure 1. Google logo, Leonardo Da Vinci's birthday, digital jpg, April, 4, 2006, [http://www.google.com/logos/da\\_vinci.gif](http://www.google.com/logos/da_vinci.gif).

## Introduction

The artist and scientist have been depicted as polar opposites since Michelangelo claimed that Leonardo da Vinci was wasting time with foolish inventions (see figure 1) while his art suffered. However, the artist taking on the role of the researcher has precedent. In the 1960s, Experiments in Art and Technology (E.A.T.), led by Bell Labs' engineer Billy Klüver, aided artists such as Robert Rauschenberg in pushing the avant-garde to utilize technology. Sullivan asserts that the time has come to examine art as data and artistic practice as research.<sup>1</sup> The digital revolution produced a new artist model for today's avant-garde and has been described as a type of Merlin—a trickster magician.<sup>2</sup> Perhaps a more plausible model is the artist-scientist who is creating a paradigmatic aesthetic shift. Digital art, new media, net-art, or computer art are new art forms that have arrived on the art scene. In order to make sense of digital-based artworks, it is necessary to understand both their predecessors and the technology that makes them possible.

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Dr. Sherry Mayo has been engaged with integrating technology into her studio art practice since 1993 and has been exhibiting in New York, nationally, and abroad. Mayo is an artist whose studio practice and critical writings examine perceptual shifts in how we envision bodily interfaces with artificial environments.

### When New Media Was “New”

New media began in the late 1960s with computer-assisted design (CAD) programs that were implemented in building engineering (see figure 2). Computer imaging came from military research but later became a tool of expression in the hands of artists. Simulation and interaction are attributes that differentiate a digital experience from an analog one. The Sputnik (1957) space race and fascination with *Star Wars* (1977) infused the public imagination with technology as a possible solution to all societal problems.

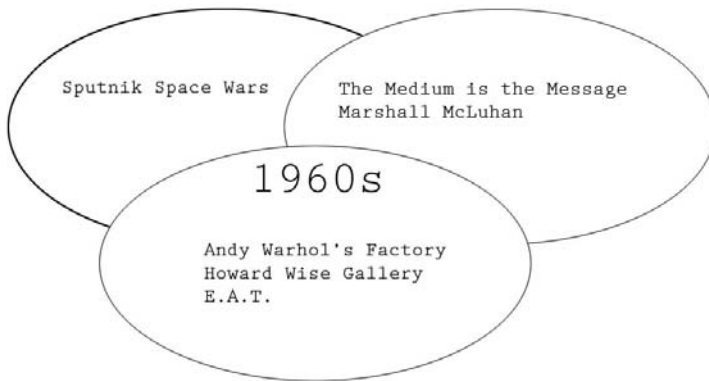


Figure 2. 1960s Spheres of Influence.

Reproduction and distribution of audiovisual data differentiated the latter half of the twentieth century from any other time. The advent of photography (see figure 3) and film made significant cultural impact. From the Moviola to cinema and video gaming, the development of image manipulation, real-time interactivity, 3D animation, and immersive simulation environments has been the focus of computer graphics for more than forty years. Since 1969 the Association for Computer Machinery Special Interest Group in Computer Graphics and Interactive Technology (ACM-SIGGRAPH) has held annual conferences focused on combining the research and development of both artists and scientists. These forums have successfully fused C. P. Snow’s “two cultures” and fostered interdisciplinary collaborations.<sup>3</sup>

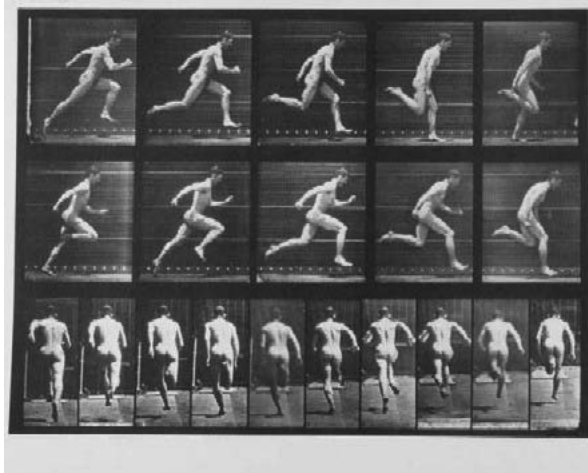


Figure 3. Man Running, Edward Muybridge, 1887, photography (public domain).

E.A.T. began in 1966 when Klüver's passion for film drew him into the art scene.<sup>4</sup> He befriended Jean Tinguely and built one of the first kinetic sculptures for the Museum of Modern Art (MoMA)—*Homage*, a self-combusting sculpture.<sup>5</sup> Robert Rauschenberg met the engineer at the exhibit's opening and enticed him to work on *Oracle*, an environmental sound sculpture. The apex of these collaborations was *9 Evenings: Theatre and Engineering*. This event was held at the historic 69th Regiment Armory, where Duchamp's futuristic nude once descended its staircase, shocking audiences in 1913.



Figure 4. The first color TV by RCA, 1954 (public domain). Case # 27WDF and 28PYB.

In addition to E.A.T., an important forum for arts-technology experimentation was the Howard Wise Gallery in New York City.<sup>6</sup> This 57th Street space supported the kinetic art movement of the 1960s and followed its course through the birth of video art. Howard Wise exhibited Nam June Paik and other pioneers incorporating technology. Wise had mounted a 1969 exhibition entitled *TV as a Creative Medium* (see figure 4). Wise's exhibition was seminal and featured video works by Paik and *Wipe-Cycle* by Frank Gillette and Ira Schneider. This stack of nine TV monitors confronted the viewers coming into the gallery and repeated their image of surveillance. Marshall McLuhan contributed to the brochure for the show because Wise was interested in his ideas regarding electronic media being a vital social instrument. Ben Portis, assistant curator of contemporary art at the Art Gallery of Ontario, refers to Paik as the "George Washington" of video art.<sup>7</sup> Yet Warhol's black and white films were the early precursors for video art.<sup>8</sup> On December 16, 1970, Howard Wise closed his gallery due to the extensive resource demands of these experiments. In the 1980s painting moved back into the spotlight and many of the earlier arts-technology experiments were abandoned—but only until video art and new media became visible again in the 1990s.

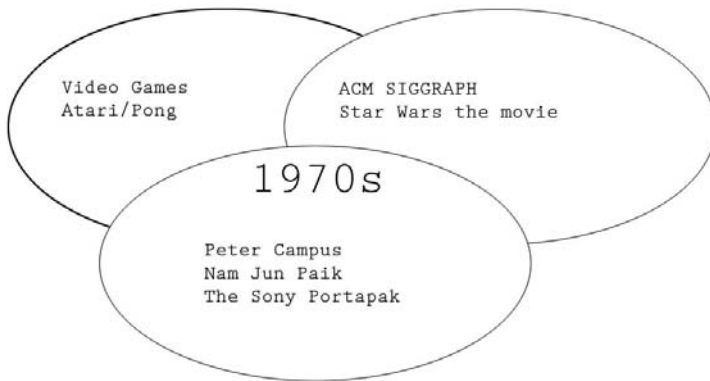


Figure 5. 1970s Spheres of Influence.

The writings of Youngblood and Enzensberger were concerned about the lack of interactivity in media consumption.<sup>9</sup> Enzensberger maintained that if the receiver is passive, they are not exercising political control over what is being projected upon them (see figure 5). They worried about the repressiveness of the media and its ability to wash over the masses and inhibit cybernetic feedback. Youngblood blamed the competition between the arts and entertainment for the death of the avant-garde.

The notion of experimental art, therefore, is meaningless. All art is experimental, or it isn't art. Art is research, whereas entertainment is a game or conflict. We have learned from cybernetics that in research one's work is governed by one's strongest points, whereas in conflicts or games one's work is governed by its weakest moments.<sup>10</sup>

Enzensberger objected to old media such as TV and radio because of its one-way transmission, but does power shift with interactivity in newer forms of media such as the Internet or multiuser games? While Enzensberger was not a McLuhan fan, he did admit to the effectiveness of his memes.<sup>11</sup> McLuhan, a slogan-driven technophile, resonates loudly in the age of globalism. Technology brought third-world cultures into conflict with first-world ones. The process of connecting everyone everywhere enabled "have nots" to gain a distorted view of what the "haves have." Internet networks have fostered xenophobia instead of projected reciprocity via connectivity.

Benjamin, who laid the groundwork for future media theorists in 1936, remains exalted in the stripping of the bride to make mass use of symbols in service to semiotic conditioning.<sup>12</sup> The promiscuity of ahistorical rerepresentation of iconography does not lead to critical digestion but to an emptying out, which enables propaganda through familiarity achieved through repetition and accessibility. Anything that disrupts this process subverts consumerism. Enzensberger's description of the *Consciousness Industry* has a sense of foreboding about new media but maintains hope that the receiver will participate as a manipulator and become subversive to the media.<sup>13</sup> Youngblood felt that the art world would sell out to the entertainment industry for survival and lose its opportunity for social agency.<sup>14</sup>

### **An Aesthetic Shift**

As these theorists set the stage for later forms of techno-entertainment, a larger market of consumption was being constructed. In the 1980s (see figure 6) virtual reality and simulations were available in entertainment parks. Movies such as *Jurassic Park* are examples of the type of computer graphics special effects that emerged. Compositing motion graphics in music videos showed the viewer a new range of possibilities within storytelling, as epitomized by Chris Cunningham's work in the 1990s, such as Björk's *All Is Full of Love*.<sup>15</sup> The key points in defining this era were the quest for realism, the development of simulated experience, and image manipulation in postproduction.

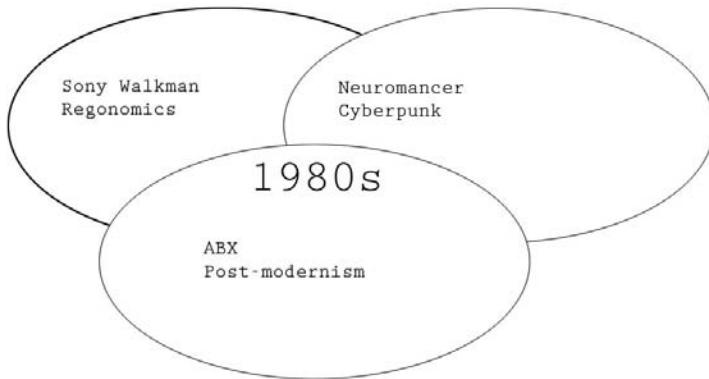


Figure 6. 1980s Spheres of Influence.

Image manipulation was made possible by programs such as Adobe PhotoShop™, which allows the end-user to change an original image. Image synthesis is best exhibited in 3D animation where the enduser simulates dimension and movement of a form through space. The development of these art forms was primarily funded and accomplished by movie companies such as Industrial Light and Magic (ILM, George Lucas), Digital Domain (lighting effects and fur textures), and Pixar (Disney, 3D animation division).

Interactivity, the cornerstone of computer games whose development began in MIT in the 1960s, indicates another paradigmatic shift. From *Pong* (1960s) to *Space Invaders* (1970s) there has been a massive consumption of computer games. By the early 1980s computer gaming reached private homes. The design of gaming interfaces has come a long way from the gobbling abstract forms of *PacMan*™ to levels-based gaming with 3D animation on X-box™. The level of real-time interactivity and kinesthetic simulation has advanced dramatically in multiuser games such as *Quake* (1996).

Darley postulated that a paradigmatic aesthetic shift that has taken place that coincides with the development of digital imaging.<sup>16</sup> The return of illusionism is accomplished by perceptual reality achieved through projected light and motion. Theater preceded the camera-still and then came film. Early film mimicked theatrical conventions, relying on representation and symbolism to yield storytelling. The direct stimulation of the senses was not as effective as relying on devices to convey emotion in the abstract. Conventions such as the death mask in theater were translated into the knife dripping with blood in film. Today we are able to simulate a kinesthetic experience that makes the viewer feel as if he is hurtling along the India-

napolis Speedway. Hollywood was born in the 1930s and boomed making film the dominant popular cultural form by the 1950s. Radio became outmoded, as *Video Killed the Radio Star* (The Buggles, 1979) and broadcast TV came into every home. TV in the 1950s and 1960s displaced radio and live performance and became the mass media form of entertainment. Today's spectator demands real-time, high-resolution, and simulated hyperreality within which she has control. Interactivity enables the viewer to make decisions to remodel his own virtual reality. These controls shift our notions of power and are more radical than the depthless surface play that Darley suggests.<sup>17</sup> The quest to depict space and illusionism has returned from the Renaissance. Singular point perspective and the flatland of modernist aesthetics have been surpassed.

There has been an explosion of exhibition venues that create new modes of spectatorship with the advent of the Internet, personal computer, cell phone, and Blackberry.<sup>TM</sup> These are new surfaces for display, and content for these venues is evolving. Privatization of spectatorship of radio, TV, and home video through computers is evident. The spectator is increasingly choosing a mono-to-monitor experience with audiovisual media. From the 1960s through the 1980s, the emergence of the rock concert and the moviegoer reinforced an idea that people desired a mass-collective experience. This human need has shifted toward a removed social network experience, such as MySpace, where people connect to other strangers interested in the same experience. The virtualization of spectacle has transformed aesthetics significantly.

### **What's New about New Media?**

What is new media art (see figure 7)? Manovich answers this question by defining it as the "digital material itself, its material and logical organization."<sup>18</sup> Manovich's argument is that the human-computer interface is a cultural interface and that software interfaces are mimetic and dependent upon earlier communication forms. The human-computer interface is expanding with portable digital assistants. The new media logic differs from the pan-distribution of mass media. The Internet enables the viewer to select, transmit, and receive information. The act of selection is a demonstration of power. The ability to communicate and socially organize in new ways subverts previous models of information distribution and social control. Manovich's language for decoding new media art is useful in a Greenbergian<sup>19</sup> sense. If it is made of pixels, variable in scale, and transmitted across the Internet, then it is new media. Manovich looks at the screen in Renaissance painting—an illusory static removed screen; the film projection—a dynamic screen; TV-real time; and the Internet—an interactive interface—to unravel its differences. Time is the distinguishing attribute in the aesthetics of new media; ideally, it

is a time-based, audiovisual, and networked medium.<sup>20</sup> Its other important aspect is that all other types of media, from sculpture and painting to the book and record, also have a relationship to it. Today integrated media is what is making cultural impact, not purity of form.

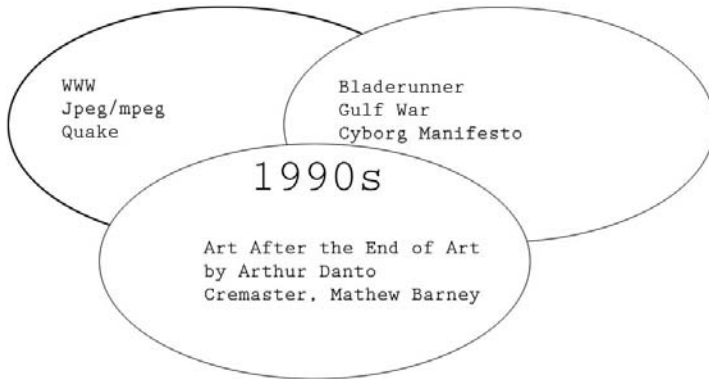


Figure 7. 1990s Spheres of Influence.

Magda Sawon, Postmasters Gallery codirector, stated that the gallery's curatorial premise is media neutral. She and her partner, Tamas Banovich, have been pioneers in showing new media artworks since the groundbreaking exhibition in 1996 entitled *Can You Digit?* In 1996 much of the art world shunned a gallery of twenty screen-based digital works. New media art was ghettoized into strictly new media spaces until recently. According to Sawon, "There are specific things to new media art, for instance you cannot make a nonlinear painting. It is very different when someone actually works with the parameters of a medium than simply outputting through a medium."<sup>21</sup>

*BitStreams*, a 2001 exhibition at the Whitney Museum curated by Larry Rinder, was dedicated to the digital impact on American contemporary art. Perhaps the most pertinent perceptual difference between the digital arts and earlier art forms is its nonlinearity. Painting serves as a big influence for many artists using computers in studio practice. The point was made that to be a digital artist is to be a hybrid. According to Rinder, the digital age is not just restricted to bits and bytes:

I looked for works that both used computers at some stage in their development, manufacture, or expression and which expressed, thematically, some perspective on life in our "Digital Age." By "digital age" I mean that we now live in a world saturated by digital practices and effects. One doesn't have to know how to use a computer, let alone know how one works, to be impacted by the effects of digital

media. It is omnipresent, in the images we see everyday, in the ways we communicate, in our medical practices, in the ways farmers plant their crops, etc. . . . In terms of visual imagery specifically, I believe that digital technologies have given artists extraordinary new powers of control of image production and expression both in 2 and 3 dimensions (as well as moving images, of course). *BitStreams* dealt very specifically with these issues.<sup>22</sup>

There was no pretense of purity, as Rinder defined the digital age. The tools of production are beside the point; it is the resultant art object that counts.

In *Data-Dynamics*, a separate exhibition shown simultaneously with *BitStreams*, were interactive works. It was a fully embedded visceral experience with technological-based works. The viewer could move around in space and was not tied to a monitor and mouse for point of access. Christiane Paul made use of five pieces of net-art that “were comprised of projection systems, multi-user interfaces, and robotics that created an installation based on ‘models that visualize data flow’ to allow viewers to immerse themselves.”<sup>23</sup> She broke down interactive work into the following four categories: gaming, 3D simulation, navigation, and point-of-view. These categories included artists who made games, such as Natalie Bookchin’s *Intruder and Metapet*, John Klima’s *ecosystem2*, Eric Zimmerman’s *Sissyfight*, and an immersive 3D experience, *Osmose*, by Char Davies.

The lessons of the video artists of the 1960s and 1970s have become so widespread that they no longer pertain solely to electronic media as such. The lessons of self-reflexivity, truth-to-materials, openness to media culture, and the “freedom not-to-paint” have become absorbed into virtually every dimension and media of art practice. Even in the realm of painting, artists today paint with “the freedom not-to-paint.”<sup>24</sup>

Beyond painting as a model, cross-disciplinary fertilization combined with new tools of manipulation have certainly prompted collaboration in developing these new media works. Collaboration and collectives happened well before the pixel. Similarly, the notion of interactivity is not novel to the Internet but was very much part of the language of earlier artistic expressions. What is new is the ability to integrate media and have global network access for distribution, collaboration, and research.

### The Body Politic

Stelarc, an Australian cybernetic artist, puts his own body in a cage. He explains that “Bodies are both Zombies and Cyborgs and we have never had a mind of our own and we often perform involuntarily—conditioned and externally prompted.”<sup>25</sup> Stelarc’s performance work surrounds the domination of the body by the machine and a giving up of control. While Kurzweil would support this exploration in machine control, another cybernetic theorist, Paul Virilio, would sharply disagree.<sup>26</sup>

To invent something is to invent an accident. To invent the ship is to invent the shipwreck; the space shuttle, the explosion. And to invent the electronic superhighway or the Internet is to invent a major risk which is not easily spotted because it does not produce fatalities like a shipwreck or a mid-air explosion. The information accident is, sadly, not very visible. It is immaterial like the waves that carry information.<sup>27</sup>

Virilio, a cyber resistance fighter, is fearful of our worship of the computer. He is concerned with the corporate and governmental controls through cybernetics and the near collapse of the distinction between the human body and technology. Haraway, a cyberfeminist, spins a utopian myth of the cyborg:

High-tech culture challenges these dualisms in intriguing ways. It is not clear who makes and who is made in the relation between human and machine. In so far as we know ourselves in both formal discourse (for example, biology) and in daily practice (for example, the homework economy in the integrated circuit), we find ourselves to be cyborgs, hybrids, mosaics, chimeras. Biological organisms have become biotic systems, communication devices like others. There is no fundamental, ontological separation in our formal knowledge of machine and organism, of technical and organic. The replicant Rachel in the Ridley Scott film *Blade Runner* stands as the image of a cyborg culture's fear, love, and confusion.<sup>28</sup>



Figure 8. Hannigan Cyborg, digital jpeg, 500 x 720 pixels, 2006, Redbull, UK, [www.dgimages.co.uk](http://www.dgimages.co.uk). Also available on [www.worth1000.com](http://www.worth1000.com).



Figure 9. Housewife in Kitchen, Victor Keppler, ca. 1940, color print, assembly (Carbro) process 46.0 x 36.3 cm, Rochester, NY.

In this new world order, homework economy equals technocracy; sex is genetic engineering; hygiene is maintained by psychotropics; and reproduction is accomplished by replication. Haraway sees the cyborg as a savior for a world beyond gender. In the case of *Blade Runner's* Rachel, she is questionably empowered as a cyborg since she is raped by Harrison Ford and has a preset termination date. Cyborgian visualizations, such as that in figure 8, repeatedly vandalize the female form for techno-erotic and violent ends. These cyberpunk fantasies have not shifted the poetic association of death and the maiden depicted throughout art history.<sup>29</sup> Sadly, the female cyborg is no more liberated than Keppler's 1940s glamour housewife (see figure 9).

The era of our cyborgs, ourselves, has arrived in the posthuman age. Hayles fears a prosthetic limbo version of a posthuman race, whereby humans disintegrate into information pattern versus interference.<sup>30</sup> Portable assistants, such as the cell phone, have developed new body-machine relationships that qualify us as cyborgs. SecondLife and MySpace are just two examples of numerous sites dedicated to social interaction in which you place your avatar representation into a database that distributes information to others. Today's screen is Narcissus's lake filled with mimetic pixels intimately projecting upon us from the computer. Whether painting, film, TV, or cyberspace, the act of psychologically projecting into new spatial relationships removes you from your visceral body and enables an alternate experience. As Turkle noted, the gap psychologically closed on talking to a virtual symbol of someone and being connected to that person.<sup>31</sup> It is this leap of faith that makes it possible for us to become cyborgs, not high-tech prosthetics.

The millennial body is left hovering below cyberspace. The hydremic lover, our flesh, somehow winces at the onset of our virtual lives. Burroughs describes a virtual reality achieved through drugs—ingestive technology—that leaves meat dangling helplessly behind in search of an ever-higher aesthetic experience.<sup>32</sup> This is analogous to the aesthetic shift caused by ephemeral media networks that have brought McLuhan's embedded tribal human back into vogue.<sup>33</sup> The aesthetic shift driven by digital technology has shaken our notions of reality, hierarchy, and power, as best illustrated in the toppling of the World Trade Towers in 2001—a global simulcast event that created a broadcast spectacular on September 11th. This tragedy engaged the entire world through TV and Internet broadcast. Individuals with cell phones and digital cameras recorded their own versions of September 11th and shared them. Enzensberger's aesthetic wish for receiver interaction has been achieved. But has it surpassed Youngblood's benchmark of experimentation, or is it mere entertainment by-product? Does receiver participation mark a true power shift and a democratization of the media?

### Requiem for the Consciousness Industry

In the practice of new media there exists a postproduction phase that distinguishes this group of artists as manipulators of the real, the unseen, and the subversive (see figure 10). The new media artists may not make the raw data themselves; they may sample it. The artist working in this setting is most powerful as an editor of mediation rather than as a producer of cultural objects. Enzensberger stated, “cutting, editing, dubbing—these are the techniques for conscious manipulation without which the use of the new media is inconceivable.”<sup>34</sup> These techniques have created aesthetic devices such as the sample and the loop. The artist incorporating the computer into his practice is a manipulator of data. The fusion of the artist and the engineer as the new “interfacers,” as Johnson suggested, provides society with new workers for cultural production as the human-computer interface evolves.<sup>35</sup>

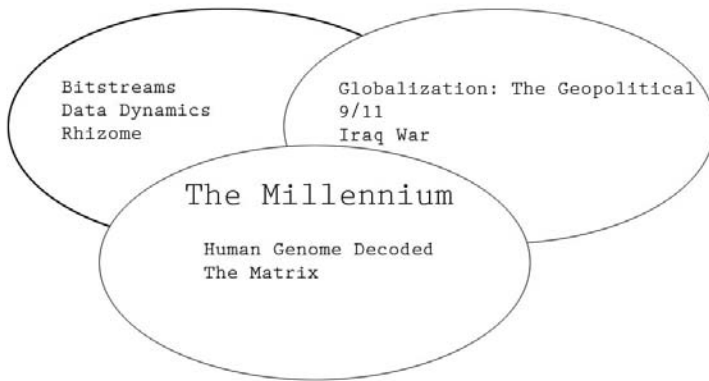


Figure 10. Millennial Spheres of Influence.

The medium is not simply the message but rather those who manipulate and control the vehicles for mediation dictate the message. Baudrillard states, “everyone has become a manipulator,” and thus everyone has the capability of an artist.<sup>36</sup> At this point the cacophony of postmodernist pastiche results in reproduction diluting context (making authenticity meaningless) and the annihilation of the individual. The modernization of the art object for mass consumption liberated it from function and ritual<sup>37</sup> and made it both democratic and capitalist propaganda. It allows the receiver to float in a miasma of decontextualized symbols where signification becomes crisscrossed, inversed, and reassociated. Virtual interface is powerful architecture signifying to the surfer throughout cyberspace where to point and click.

Lanier, a humanist technologist, critiques the “champions of cybernetic technology as culture,” in particular Kurzweil.<sup>38</sup> Lanier objects to “cybernetic totalism.”<sup>39</sup> Moore’s law,<sup>40</sup> which is the exponential doubling of computing speed over time, is Kurzweil’s point of contention. Kurzweil feels that the narrow definition of a human being will have to expand by 2020 to include machines that exceed our computing power.<sup>41</sup> “The slippery slope of including machines in ‘our circle of empathy,’ is to remove responsibility of human individuals that subjugate themselves to mighty technology.”<sup>42</sup>

The digestion of information in a cybernetic system is never complete. Instead, it continues on from surveillance of figures in space, to an upload of data that is translated and then transmitted back onto the receiver by projection. This process should not escape critical consciousness in which a mass collective sharing of an experience can deconstruct its own environment. However, with the vast amount of information and feedback out there, who can make sense of all this data? As Bell predicted, society will not be able to afford to regulate its technology.<sup>43</sup> The result is the requiem for the consciousness industry or the elusion of a critical feedback loop to an extent that people search for their own identity through what is projected onto them. The search for self and meaning, then, is subjugated to the machine.

### **Artist-Researcher Model**

Hickey’s disbelief in the sunset over the Vegas strip sums up art as being about magic, beauty, and illusionism.<sup>44</sup> If this were true, the new media artist would be nothing more than a magician whose works are puff, smoke, and mirrors. Instead, I argue that artists incorporating postproduction practices provide critiques of the technology they use and actively create new knowledge within their art making. Today the art market deals with digitally based works seamlessly. Artistic processes have been increasingly digitized but retain their ability to communicate with other media and diverse canons. As artists tackle new surfaces for display, they will continue to build new relationships with the viewer.

There exists advocacy for the artist as agent of social transformation and for art production as a form of research in Youngblood’s writings, which set solid precedence for Sullivan’s argument that artistic practice is indeed a form of research that should be actively excavated.<sup>45</sup> But it is the flirtation of art and entertainment that reinforces a historic barrier for the artist entering academia. The artist playing the role of court jester for the masses is nullified but no longer on the fringe of the market place. The entertainer-entrepreneur takes part in a global competition for cultural imperialism. Artists with valuable visual skills become a part of the cyberfactory. These facts aid academic skepticism of the artist inside the academy. In order to maintain that art education was more than a frill and could serve the demo-

cratic ideology needed in schools, art educators as early as 1942 disavowed self-expression as a pedagogical objective. Culture will not be saved by a retreat to Shangri-La, real or imagined; sheltered artists and escape art are neither sound culturally nor valuable as a social force.<sup>46</sup>



Figure 11. Facebook.com entry, retrieved June 11, 2007, courtesy of account holder.

The media space has engulfed all of us with computer access; reality has been fused again—making the virtual real. The aftermath of September 11th created paranoia propaganda such as “if you see something, say something” posters depicting diverse eyeballs staring at train passengers requesting information about their neighbors.<sup>47</sup> Google™ has new street views of any location you would like to stake out, adding to our sense of remote control. On the flipside, millennial youth have a fresh response to the private being public. Sixty-one percent of youth aged thirteen to seventeen have online profiles.<sup>48</sup> Their relationship to privacy has shifted with the onset of the digital age and their human need to connect to others, which is outweighing our culture of fear (see figure 11). Wolf asserts the need for cultural studies “to use those theories that seem to work when exploring the cultural formation of identity and to work with the bricolage of cultural events and moments through which the experience of culture is mediated and in which it is encapsulated.”<sup>49</sup> The amount of personal fragments available to the researcher through online social networks is tremendous. These archives provide the evidence of identity formation impacted by digital culture. The annotation, photo, or self-expression encapsulates cultural DNA that could provide the next meme of our time. What appears as diaristic folly or, worse, self-expressive exhibitionism is perhaps vital psychosocial and cultural data that needs to be mined for the benefit of a democratic future. It is this intersection of digital lifestyles, metaspaces for personal annotation, social networking, and cultural production that offers the artist a role as researcher and resurrects the avant-garde.

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