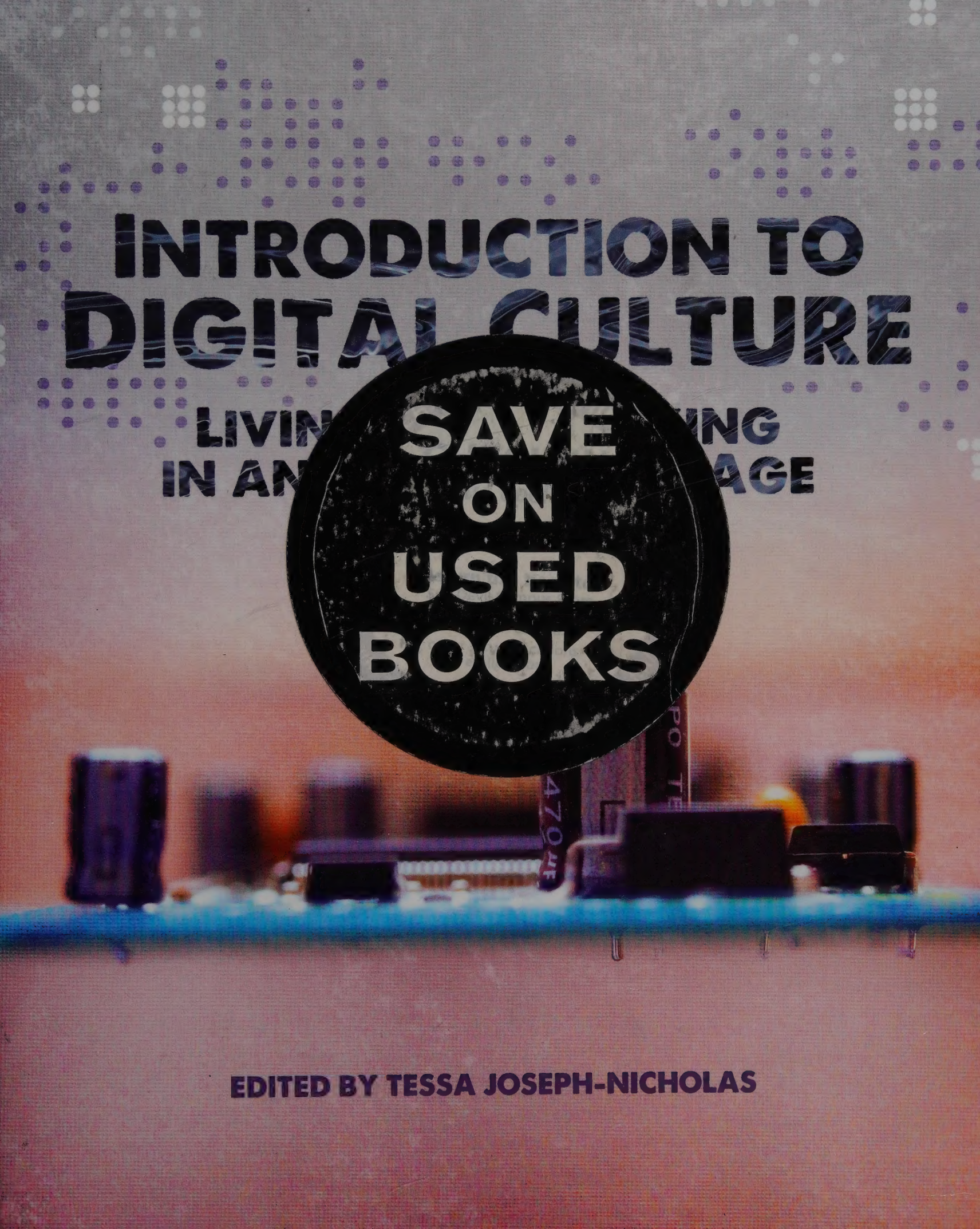
INTRODUCTION TO DIGITAL CULTURE

LIVIN ING IN AN AGE



EDITED BY TESSA JOSEPH-NICHOLAS

Introduction to Digital Culture

Living and Thinking in an Information Age

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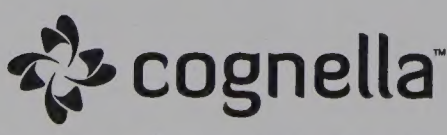
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Introduction

Tessa Joseph-Nicholas

A friend was telling me recently about his elderly mother's essential tremor. That's when a person, usually older, starts shaking uncontrollably when trying to perform what's called a "target-based" activity—putting a glass to one's lips, for instance, or simply bringing two fingertips together in front of one's face. A neurosurgeon and neuroscientist treat the tremor by zapping the faulty neurons with tiny electrical currents. To do this, they cut a hole in the skull, place a plastic cap over it, and insert wires through the cap directly into the brain tissue. A computer amplifies the sound each neuron makes as it fires, and the neuroscientist interprets these sounds and identifies which neurons need extra stimulation. He delivers each corrective jolt with the inhuman precision the technology makes possible.

My friend's mother's tremor returned only two days after her most recent treatment. Now her doctors are considering connecting her to a wearable device that will assess and deliver the appropriate current every two hours. She'll enjoy more continuous relief, but it means that she'll live, astoundingly, *with continuous electronic interventions into the function of her brain.* When early cyberneticists and computer scientists debated "man-machine symbiosis" and "intelligence augmentation," when Vernor Vinge predicted the "Technological Singularity"—the age of man-machine superintelligence—this is something like what they envisioned: a level of integration between human and machine so profound that it challenges the boundaries between the organic and the technological, not to mention our understanding of human selfhood, personality, and capability.

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Early versions of the cognitive-enhancement devices we know as "computers" may date back to around 100 BC, the date of construction of the Antikythera mechanism, a scientific calculator recovered from the wreck of an ancient Greek vessel. In 1671, the mathematician and philosopher Gottfried Wilhelm von Leibniz completed a functional calculating machine; elements of its design, including a type of binary code, have been profoundly influential on later generations. In the 19th century, the British mathematician and inventor Charles Babbage began work on his "difference engine," capable

of even more complex calculations. However, Babbage's designs for his "analytical engine" represent the real breakthrough: the concept of the general-purpose computer, complete with storage and programmable by punch cards. He was assisted in this project by Lord Byron's daughter and mathematical prodigy Ada, Countess of Lovelace, who is credited by many as the first computer programmer.

Most of today's computers are "digital": they speak a language of signals represented by numbers. Binary code, which uses only two digits—zero and one, or on and off—has become the norm for use with electronic computers, since its simplicity makes it extremely stable and flexible. The first computer to use such a system was probably the Atanasoff-Berry Computer in 1937, but since its functions were limited to calculation, we consider the 1946 ENIAC to have been the first general-purpose digital computer.

Early digital computers used the movement of electrons enclosed in vacuum tubes to create the on-off states that the machines recognized as zeroes and ones. Unfortunately, vacuum tubes were costly, fragile, large, and very, very hot, making extensive cooling systems and storage rooms the size of gymnasiums necessary for computers like the ENIAC. In 1948 a group of scientists at Bell Telephone Laboratories came up with a better option: the splinter-sized semiconductor we know as the transistor, which made smaller, faster, more efficient devices possible. That same year, American mathematician Claude Shannon argued that bits—the zeros and ones of binary code—could be used as a universal means of representing *and transmitting information down a channel*, such as a wire. Although we'd have to wait another 30 years for widespread adoption of the personal computer, and 50 for the Internet as we know it, Shannon's insights into the nature of information have led to his reputation as not only founder of information theory, but of the Information Age itself.

On October 29, 1969, a graduate student named Charley Kline and his supervisor, professor Leonard Kleinrock, sat down in front of an Interface Message Processor, or IMP, at the University of California at Los Angeles, and attempted to log in to another IMP located at the Stanford Research Institute, over 300 miles away. Kline successfully transmitted two letters of the planned "login" before the system crashed. History records those two letters, LO, as the first message ever sent over the Internet (known then as ARPANet). Forty years later, Kleinrock points out that the unintended drama of the transmission—lo and behold! —wasn't entirely inappropriate. As it turned out, something new, something *big*, had arrived.

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For contemporary culture, cognitive tools like general-purpose computers were only the beginning. Bridging the space *between* the computers was the real watershed, and making that space accessible to the general population has been nothing less than transformative. In the age of the always-on Internet, mobile devices and search engines, neuroscientists and their patients aren't the only ones whose brains are being enhanced and influenced. "I'm not thinking the way I used to think," muses Nicholas Carr in his 2008 article "Is Google Making Us Stupid?" As Carr himself notes, he's not the only one. Forty-five-year-olds in 2011 are old-timers, nostalgic for their pre-Internet childhoods. Forty-eight-year-olds probably didn't play video games as kids, much less own a home console. Fifty-year-olds were born in

1961, ten years before the first coin-operated video game, and *fifteen years* before home computers hit the market.

Some of these folks took courses in BASIC programming as kids or teenagers. They witnessed the tentative introduction of email to the intranets of college campuses and corporations and made use of the first electronic library databases. The very geeky among them may even have heard of the fledgling Internet and participated in Usenet or other early online bulletin boards. Their first cell phones were two-pound voice-only monstrosities they had to clip to their belts, or hard-wire in their cars. They made calls for the purpose of shouting: "I'm calling you from my car!" They were already adults when the World Wide Web opened to commercial traffic in 1991, forever changing the way we talk, listen, read, conduct research, produce, consume—and, probably, think.

Many of their children, on the other hand, were born between, say, 1980 and 1995. Even the eldest of this generation probably don't remember a time before video games and home computers—if they didn't own them themselves, they knew kids who did. They came of age with personal computers and pocket-sized mobile devices whose voice function is little more than an afterthought. Email is too cumbersome for them; texts and social media are quicker, more portable, more efficient. They know, importantly, not to believe everything they read online. They recognize cyberbullying and cyberstalking as significant dangers without having to ask whether we should consider such virtual behavior "real" crime. Many of them know at least a little something about HTML or programming languages. They are culture aficionados, with instant access to any song or piece of popular media that catches their fancy. Some of them have seen a *lot* of free pornography. They understand the Internet.

I may be generalizing, but I am not being facetious. These are actual skills, and those of us who hope to analyze the effects of digital culture on real-life culture would do well to recognize that the categories themselves—"digital" versus "real-life" —may no longer be useful. Only five years ago, my students could carefully delineate the differences between their ethical standards for online and offline behavior; actions conducted online didn't seem real to them. In 2011, these distinctions have all but vanished. Where, they ask me, are the two separate? Why bother discussing it?

I don't entirely disagree, but I do believe it's worth discussing. Computing and information technologies are, in many ways, Western culture's new Other. Many of us use digital technology every day without understanding a thing about how it works. Technology writer Scott Rosenberg calls the "art" of software a "dark mystery, even to the experts." This anxiety is a common theme in popular science fiction: consider The Machine, HAL 9000, Skynet, technological dystopia of all kinds. The scenario is familiar: the Machine, or the Network, grows smarter and more powerful than we are, recognizes its superiority, decides it has rights, that it wants what we have. There is a powerful fear, even an expectation, that the ability to mimic and amplify *human* intelligence will inevitably lead to the awakening of the technologies' *own* intelligence, self-consciousness, and most terrifyingly, desire.

The debates over the status of artificial intelligence, the possibility of artificial intelligence, and the very *definition* of artificial intelligence are far from any conclusion. But we do know this: from Simon, the "mechanical brain" of the 50s, to electronic augmentation of the human brain in 2011; from "LO" in 1969 to the iPad, Google, Facebook, Twitter and whatever else awaits us—*humans* created these things. There are human beings, human drama, human decisions behind every chip, every bit, every

line of code. That's what makes the story of information and computing technology a story, ultimately, about us. These technologies, in their function and use, offer insight into the very thing they were designed to support. They provide a window onto our capacious, deeply unpredictable minds. The story of computing and the Internet is a unique opportunity to examine our relationship with technology and, through the lens of that relationship, to consider what it is to be human.

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There are many excellent general textbooks available on digital technology and society, new media, cyberculture, computer ethics and digital-age ethics, as well as more specific texts on the subjects covered in this anthology: attention, distraction, privacy, ethics, anonymity, identity, gaming, and virtuality. I've used many of them in my college-level classes. Over the last few years, I've watched carefully as my students work with the materials. Which articles, essays, chapters provoked them to think, argue, or reconsider? Which were most relevant to students across levels and disciplines, from the senior computer science major to the sophomore English major? Which encouraged them to take a serious critical approach to the topic that wasn't reductive, Luddite, alarmist, intimidatingly theoretical, or blindly enthusiastic?

The authors and selections in this anthology reflect a range of approaches and positions to digital technologies' influence on individuals and culture. Instead of looking for a thematic through-line—ethics, for example, or the history of technology, or a disciplinary or theoretical focus—I identified the topics I felt were most immediately relevant to my audience (college students of all ages and disciplines), then chose those texts my students had enjoyed, that inspired the richest discussions, and that were most intriguing to me.

Each of these pieces, in its way, explores the relationship between information and computing technology and the humans who create and use it. Each considers the ways technology and media shape us—as we shape them, to address needs created by the way we use them—and debates the appropriate response. Each takes digital technologies, and the changes they inevitably bring about, as a matter of grave importance and great pleasure. Each is driven by aims philosophical, social, political, and intellectual, but also by a sense of genuine respect for, and fascination with, their subjects.

The readings may be taken in any order, but I've placed them in the order in which I use them. (I also offer exercises, discussion prompts, and recommendations for further reading and viewing throughout the text.) Section I opens with the accessible and engaging attention/distraction debate between Nicholas Carr and Jamais Cascio, as well as Sam Anderson's pithy counterpoint, to create a little controversy, to set out the stakes, and to urge readers to think about their everyday practices. Section II moves on to a discussion of the Internet itself: its history and materiality, as laid out by James Swedin and Eric Ferro, and Lawrence Lessig's introduction to the philosophical position inherent in Internet protocols. Section III turns to ethics, with Charles Ess' insights into why (or whether) the older ways of talking about ethics are relevant in a global, digital age, and Deborah Johnson's explanation of why the Internet changes things for ethicists.

Online identity construction—from the humble social media profile to the highly customized avatar—is a natural bridge between ethics and a discussion of virtual worlds and games. In section IV, material from *New Media: A Critical Introduction*, an extraordinary synthesis of new media theory by Martin Lister and others, serves as a sharp introduction to theories of selfhood and the posthuman. Sherry Turkle's now-classic essay "Who Am We?" provokes debate on social media, virtual worlds, online community, anonymity, and privacy.

A slight lateral shift leads to gaming and virtual worlds in Section V. Again, Lister and his co-authors offer theoretical tools, as well as background for additional focus on play, hacking, and violent games. An excerpt from William Sims Bainbridge's *Warcraft Civilization* is a personal and sociological look at the MMORPG phenomenon. Finally, Tom Bissell's wonderful essay on the art of contemporary video games provides a transition to our discussion of digital art and intellectual property in the next section.

Section VI opens with the oldest piece in this book, the critic Walter Benjamin's essay "The Work of Art in the Age of Mechanical Reproduction." I was, at first, nervous about including a World War II-era critic in the context of a class on Internet culture. But I couldn't think of any better way to introduce the class to the reason mass production of art and intellectual property is important, and I still can't. More importantly, it works. The second piece in this section is from Lawrence Lessig's groundbreaking book *Free Culture,* which invites students to consider the difference between piracy and creativity and points out the ways in which copyright law is unequal to the task of regulating digital content.

I think of Section VII—cyberculture theory—as a launching pad. I call this text an *Introduction to Digital Culture* instead of an *Introduction to Cyberculture* because academic usage of the term "cyberculture" has come to be associated with a level of contemporary theoretical analysis I don't use in an introductory class, with the exception of this final section. Cyberculture theory is heady material. We're back to cyborgs and the posthuman with Lister and friends, and David Bell introduces us to the very different research styles of Michael Benedikt, Maria Bakardjieva, and Sherry Turkle. But it's exciting as well—to think about "cyberspace" as conceived by William Gibson and others, to see the stuff of science fiction come to life in the dreams and predictions of serious thinkers.

Joining the still-emerging study of digital culture requires a deep commitment to the spirit of interdisciplinarity. It demands that we consider our everyday habits and pastimes as seriously as we do our textbooks, moving easily between academic and popular culture and discourse. It calls for imagination and enthusiasm—there's much to explore and to love in this world we're creating. Still, the history of technology demonstrates our knack for causing harm, so we must also remain vigilant, methodical as search engines, absorbing, recording and following connections. Which may lead nowhere. Or somewhere: the neverland of cyberspace, where culture is made and remade at unimaginable speeds. We may not be thinking the way we used to think, but we are by no means done thinking.

Section 1

Your Brain and the Internet: Attention and Distraction



Is Google Making Us Stupid?

What the Internet Is Doing to our Brains

Nicholas Carr

Dave, stop. Stop, will you? Stop, Dave. Will you stop, Dave?" So the supercomputer HAL pleads with the implacable astronaut Dave Bowman in a famous and weirdly poignant scene toward the end of Stanley Kubrick's *2001: A Space Odyssey*. Bowman, having nearly been sent to a deep-space death by the malfunctioning machine, is calmly, coldly disconnecting the memory circuits that control its artificial " brain." "Dave, my mind is going," HAL says, forlornly. "I can feel it. I can feel it."

I can feel it, too. Over the past few years I've had an uncomfortable sense that someone, or something, has been tinkering with my brain, remapping the neural circuitry, reprogramming the memory. My mind isn't going—so far as I can tell—but it's changing. I'm not thinking the way I used to think. I can feel it most strongly when I'm reading. Immersing myself in a book or a lengthy article used to be easy. My mind would get caught up in the narrative or the turns of the argument, and I'd spend hours strolling through long stretches of prose. That's rarely the case anymore. Now my concentration often starts to drift after two or three pages. I get fidgety, lose the thread, begin looking for something else to do. I feel as if I'm always dragging my wayward brain back to the text. The deep reading that used to come naturally has become a struggle.

I think I know what's going on. For more than a decade now, I've been spending a lot of time online, searching and surfing and sometimes adding to the great databases of the Internet. The Web has been a godsend to me as a writer. Research that once required days in the stacks or periodical rooms of libraries can now be done in minutes. A few Google searches, some quick clicks on hyperlinks, and I've got the telltale fact or pithy quote I was after. Even when I'm not working, I'm as likely as not to be foraging in the Web's info-thickets reading and writing e-mails, scanning headlines and blog posts, watching videos and listening to podcasts, or just tripping from link to link to link. (Unlike footnotes, to which they're sometimes likened, hyperlinks don't merely point to related works; they propel you toward them.)

For me, as for others, the Net is becoming a universal medium, the conduit for most of the information that flows through my eyes and ears and into my mind. The advantages of having immediate access

Nicholas Carr, "Is Google Making Us Stupid?," *The Atlantic*. Copyright © 2008 by The Atlantic Monthly Group. Reprinted with permission.

to such an incredibly rich store of information are many, and they've been widely described and duly applauded. "The perfect recall of silicon memory," *Wired*'s Clive Thompson has written, "can be an enormous boon to thinking." But that boon comes at a price. As the media theorist Marshall McLuhan pointed out in the 1960s, media are not just passive channels of information. They supply the stuff of thought, but they also shape the process of thought. And what the Net seems to be doing is chipping away my capacity for concentration and contemplation. My mind now expects to take in information the way the Net distributes it: in a swiftly moving stream of particles. Once I was a scuba diver in the sea of words. Now I zip along the surface like a guy on a Jet Ski.

I'm not the only one. When I mention my troubles with reading to friends and acquaintances—literary types, most of them—many say they're having similar experiences. The more they use the Web, the more they have to fight to stay focused on long pieces of writing. Some of the bloggers I follow have also begun mentioning the phenomenon. Scott Karp, who writes a blog about online media, recently confessed that he has stopped reading books altogether. "I was a lit major in college, and used to be [a] voracious book reader," he wrote. "What happened?" He speculates on the answer: "What if I do all my reading on the web not so much because the way I read has changed, i.e. I'm just seeking convenience, but because the way I THINK has changed?"

Bruce Friedman, who blogs regularly about the use of computers in medicine, also has described how the Internet has altered his mental habits. "I now have almost totally lost the ability to read and absorb a longish article on the web or in print," he wrote earlier this year. A pathologist who has long been on the faculty of the University of Michigan Medical School, Friedman elaborated on his comment in a telephone conversation with me. His thinking, he said, has taken on a "staccato" quality, reflecting the way he quickly scans short passages of text from many sources online. "I can't read *War and Peace* anymore," he admitted. "I've lost the ability to do that. Even a blog post of more than three or four paragraphs is too much to absorb. I skim it."

Anecdotes alone don't prove much. And we still await the long-term neurological and psychological experiments that will provide a definitive picture of how Internet use affects cognition. But a recently published study of online research habits, conducted by scholars from University College London, suggests that we may well be in the midst of a sea change in the way we read and think. As part of the five-year research program, the scholars examined computer logs documenting the behavior of visitors to two popular research sites, one operated by the British Library and one by a U.K. educational consortium, that provide access to journal articles, e-books, and other sources of written information. They found that people using the sites exhibited "a form of skimming activity," hopping from one source to another and rarely returning to any source they'd already visited. They typically read no more than one or two pages of an article or book before they would "bounce" out to another site. Sometimes they'd save a long article, but there's no evidence that they ever went back and actually read it. The authors of the study report:

> It is clear that users are not reading online in the traditional sense; indeed there are signs that new forms of "reading" are emerging as users "power browse" horizontally through titles,

contents pages and abstracts going for quick wins. It almost seems that they go online to avoid reading in the traditional sense.

Thanks to the ubiquity of text on the Internet, not to mention the popularity of text-messaging on cell phones, we may well be reading more today than we did in the 1970s or 1980s, when television was our medium of choice. But it's a different kind of reading, and behind it lies a different kind of thinking—perhaps even a new sense of the self. "We are not only what we read," says Maryanne Wolf, a developmental psychologist at Tufts University and the author of *Proust and the Squid: The Story and Science of the Reading Brain.* "We are how we read." Wolf worries that the style of reading promoted by the Net, a style that puts "efficiency" and "immediacy" above all else, may be weakening our capacity for the kind of deep reading that emerged when an earlier technology, the printing press, made long and complex works of prose commonplace. When we read online, she says, we tend to become "mere decoders of information." Our ability to interpret text, to make the rich mental connections that form when we read deeply and without distraction, remains largely disengaged.

Reading, explains Wolf, is not an instinctive skill for human beings. It's not etched into our genes the way speech is. We have to teach our minds how to translate the symbolic characters we see into the language we understand. And the media or other technologies we use in learning and practicing the craft of reading play an important part in shaping the neural circuits inside our brains. Experiments demonstrate that readers of ideograms, such as the Chinese, develop a mental circuitry for reading that is very different from the circuitry found in those of us whose written language employs an alphabet. The variations extend across many regions of the brain, including those that govern such essential cognitive functions as memory and the interpretation of visual and auditory stimuli. We can expect as well that the circuits woven by our use of the Net will be different from those woven by our reading of books and other printed works.

Sometime in 1882, Friedrich Nietzsche bought a typewriter—a Malling-Hansen Writing Ball, to be precise. His vision was failing, and keeping his eyes focused on a page had become exhausting and painful, often bringing on crushing headaches. He had been forced to curtail his writing, and he feared that he would soon have to give it up. The typewriter rescued him, at least for a time. Once he had mastered touch-typing, he was able to write with his eyes closed, using only the tips of his fingers. Words could once again flow from his mind to the page.

But the machine had a subtler effect on his work. One of Nietzsche's friends, a composer, noticed a change in the style of his writing. His already terse prose had become even tighter, more telegraphic. "Perhaps you will through this instrument even take to a new idiom," the friend wrote in a letter, noting that, in his own work, his "'thoughts' in music and language often depend on the quality of pen and paper."

Also see:

Living With a Computer (July 1982)

> "The process works this way. When I sit down to write a letter or start the first draft of an article, I simply type on the keyboard and the words appear on the screen ..." By James Fallows

"You are right," Nietzsche replied, "our writing equipment takes part in the forming of our thoughts." Under the sway of the machine, writes the German media scholar Friedrich A. Kittler, Nietzsche's prose "changed from arguments to aphorisms, from thoughts to puns, from rhetoric to telegram style."

The human brain is almost infinitely malleable. People used to think that our mental meshwork, the dense connections formed among the 100 billion or so neurons inside our skulls, was largely fixed by the time we reached adulthood. But brain researchers have discovered that that's not the case. James Olds, a professor of neuroscience who directs the Krasnow Institute for Advanced Study at George Mason University, says that even the adult mind "is very plastic." Nerve cells routinely break old connections and form new ones. "The brain," according to Olds, "has the ability to reprogram itself on the fly, altering the way it functions."

As we use what the sociologist Daniel Bell has called our "intellectual technologies"—the tools that extend our mental rather than our physical capacities—we inevitably begin to take on the qualities of those technologies. The mechanical clock, which came into common use in the 14th century, provides a compelling example. In *Technics and Civilization*, the historian and cultural critic Lewis Mumford described how the clock "disassociated time from human events and helped create the belief in an independent world of mathematically measurable sequences." The "abstract framework of divided time" became "the point of reference for both action and thought."

The clock's methodical ticking helped bring into being the scientific mind and the scientific man. But it also took something away. As the late MIT computer scientist Joseph Weizenbaum observed in his 1976 book, *Computer Power and Human Reason: From Judgment to Calculation*, the conception of the world that emerged from the widespread use of timekeeping instruments "remains an impoverished version of the older one, for it rests on a rejection of those direct experiences that formed the basis for, and indeed constituted, the old reality." In deciding when to eat, to work, to sleep, to rise, we stopped listening to our senses and started obeying the clock.

The process of adapting to new intellectual technologies is reflected in the changing metaphors we use to explain ourselves to ourselves. When the mechanical clock arrived, people began thinking of their brains as operating "like clockwork." Today, in the age of software, we have come to think of them as operating "like computers." But the changes, neuroscience tells us, go much deeper than metaphor. Thanks to our brain's plasticity, the adaptation occurs also at a biological level.

The Internet promises to have particularly far-reaching effects on cognition. In a paper published in 1936, the British mathematician Alan Turing proved that a digital computer, which at the time existed only as a theoretical machine, could be programmed to perform the function of any other information-processing device. And that's what we're seeing today. The Internet, an immeasurably powerful computing system, is subsuming most of our other intellectual technologies. It's becoming our map and our clock, our printing press and our typewriter, our calculator and our telephone, and our radio and TV.

When the Net absorbs a medium, that medium is re-created in the Net's image. It injects the medium's content with hyperlinks, blinking ads, and other digital gewgaws, and it surrounds the content with the content of all the other media it has absorbed. A new e-mail message, for instance, may announce its arrival as we're glancing over the latest headlines at a newspaper's site. The result is to scatter our attention and diffuse our concentration.

The Net's influence doesn't end at the edges of a computer screen, either. As people's minds become attuned to the crazy quilt of Internet media, traditional media have to adapt to the audience's new expectations. Television programs add text crawls and pop-up ads, and magazines and newspapers shorten their articles, introduce capsule summaries, and crowd their pages with easy-to-browse info-snippets. When, in March of this year, The New York Times decided to devote the second and third pages of every edition to article abstracts, its design director, Tom Bodkin, explained that the "shortcuts" would give harried readers a quick "taste" of the day's news, sparing them the "less efficient" method of actually turning the pages and reading the articles. Old media have little choice but to play by the new-media rules.

Never has a communications system played so many roles in our lives—or exerted such broad influence over our thoughts—as the Internet does today. Yet, for all that's been written about the Net, there's been little consideration of how, exactly, it's reprogramming us. The Net's intellectual ethic remains obscure.

About the same time that Nietzsche started using his typewriter, an earnest young man named Frederick Winslow Taylor carried a stopwatch into the Midvale Steel plant in Philadelphia and began a historic series of experiments aimed at improving the efficiency of the plant's machinists. With the approval of Midvale's owners, he recruited a group of factory hands, set them to work on various metalworking machines, and recorded and timed their every movement as well as the operations of the machines. By breaking down every job into a sequence of small, discrete steps and then testing different ways of performing each one, Taylor created a set of precise instructions—an "algorithm," we might say today—for how each worker should work. Midvale's employees grumbled about the strict new regime, claiming that it turned them into little more than automatons, but the factory's productivity soared.

More than a hundred years after the invention of the steam engine, the Industrial Revolution had at last found its philosophy and its philosopher. Taylor's tight industrial choreography—his "system," as he liked to call it—was embraced by manufacturers throughout the country and, in time, around the world. Seeking maximum speed, maximum efficiency, and maximum output, factory owners used time-and-motion studies to organize their work and configure the jobs of their workers. The goal, as Taylor defined it in his celebrated 1911 treatise, *The Principles of Scientific Management*, was to identify and adopt, for every job, the "one best method" of work and thereby to effect "the gradual substitution of science for rule of thumb throughout the mechanic arts." Once his system was applied to all acts of manual labor, Taylor assured his followers, it would bring about a restructuring not only of industry but of society, creating a utopia of perfect efficiency. "In the past the man has been first," he declared; "in the future the system must be first."

Taylor's system is still very much with us; it remains the ethic of industrial manufacturing. And now, thanks to the growing power that computer engineers and software coders wield over our intellectual

lives, Taylor's ethic is beginning to govern the realm of the mind as well. The Internet is a machine designed for the efficient and automated collection, transmission, and manipulation of information, and its legions of programmers are intent on finding the "one best method"—the perfect algorithm—to carry out every mental movement of what we've come to describe as "knowledge work."

Google's headquarters, in Mountain View, California—the Googleplex—is the Internet's high church, and the religion practiced inside its walls is Taylorism. Google, says its chief executive, Eric Schmidt, is "a company that's founded around the science of measurement," and it is striving to "systematize everything" it does. Drawing on the terabytes of behavioral data it collects through its search engine and other sites, it carries out thousands of experiments a day, according to the *Harvard Business Review*, and it uses the results to refine the algorithms that increasingly control how people find information and extract meaning from it. What Taylor did for the work of the hand, Google is doing for the work of the mind.

The company has declared that its mission is "to organize the world's information and make it universally accessible and useful." It seeks to develop "the perfect search engine," which it defines as something that "understands exactly what you mean and gives you back exactly what you want." In Google's view, information is a kind of commodity, a utilitarian resource that can be mined and processed with industrial efficiency. The more pieces of information we can "access" and the faster we can extract their gist, the more productive we become as thinkers.

Where does it end? Sergey Brin and Larry Page, the gifted young men who founded Google while pursuing doctoral degrees in computer science at Stanford, speak frequently of their desire to turn their search engine into an artificial intelligence, a HAL-like machine that might be connected directly to our brains. "The ultimate search engine is something as smart as people—or smarter," Page said in a speech a few years back. "For us, working on search is a way to work on artificial intelligence." In a 2004 interview with *Newsweek*, Brin said, "Certainly if you had all the world's information directly attached to your brain, or an artificial brain that was smarter than your brain, you'd be better off." Last year, Page told a convention of scientists that Google is "really trying to build artificial intelligence and to do it on a large scale."

Such an ambition is a natural one, even an admirable one, for a pair of math whizzes with vast quantities of cash at their disposal and a small army of computer scientists in their employ. A fundamentally scientific enterprise, Google is motivated by a desire to use technology, in Eric Schmidt's words, "to solve problems that have never been solved before," and artificial intelligence is the hardest problem out there. Why wouldn't Brin and Page want to be the ones to crack it?

Still, their easy assumption that we'd all "be better off" if our brains were supplemented, or even replaced, by an artificial intelligence is unsettling. It suggests a belief that intelligence is the output of a mechanical process, a series of discrete steps that can be isolated, measured, and optimized. In Google's world, the world we enter when we go online, there's little place for the fuzziness of contemplation. Ambiguity is not an opening for insight but a bug to be fixed. The human brain is just an outdated computer that needs a faster processor and a bigger hard drive.

The idea that our minds should operate as high-speed data-processing machines is not only built into the workings of the Internet, it is the network's reigning business model as well. The faster we

surf across the Web—the more links we click and pages we view—the more opportunities Google and other companies gain to collect information about us and to feed us advertisements. Most of the proprietors of the commercial Internet have a financial stake in collecting the crumbs of data we leave behind as we flit from link to link—the more crumbs, the better. The last thing these companies want is to encourage leisurely reading or slow, concentrated thought. It's in their economic interest to drive us to distraction.

Maybe I'm just a worrywart. Just as there's a tendency to glorify technological progress, there's a countertendency to expect the worst of every new tool or machine. In Plato's *Phaedrus*, Socrates bemoaned the development of writing. He feared that, as people came to rely on the written word as a substitute for the knowledge they used to carry inside their heads, they would, in the words of one of the dialogue's characters, "cease to exercise their memory and become forgetful." And because they would be able to "receive a quantity of information without proper instruction," they would "be thought very knowledgeable when they are for the most part quite ignorant." They would be "filled with the conceit of wisdom instead of real wisdom." Socrates wasn't wrong—the new technology did often have the effects he feared—but he was shortsighted. He couldn't foresee the many ways that writing and reading would serve to spread information, spur fresh ideas, and expand human knowledge (if not wisdom).

The arrival of Gutenberg's printing press, in the 15th century, set off another round of teeth gnashing. The Italian humanist Hieronimo Squarciafico worried that the easy availability of books would lead to intellectual laziness, making men "less studious" and weakening their minds. Others argued that cheaply printed books and broadsheets would undermine religious authority, demean the work of scholars and scribes, and spread sedition and debauchery. As New York University professor Clay Shirky notes, "Most of the arguments made against the printing press were correct, even prescient." But, again, the doomsayers were unable to imagine the myriad blessings that the printed word would deliver.

So, yes, you should be skeptical of my skepticism. Perhaps those who dismiss critics of the Internet as Luddites or nostalgists will be proved correct, and from our hyperactive, data-stoked minds will spring a golden age of intellectual discovery and universal wisdom. Then again, the Net isn't the alphabet, and although it may replace the printing press, it produces something altogether different. The kind of deep reading that a sequence of printed pages promotes is valuable not just for the knowledge we acquire from the author's words but for the intellectual vibrations those words set off within our own minds. In the quiet spaces opened up by the sustained, undistracted reading of a book, or by any other act of contemplation, for that matter, we make our own associations, draw our own inferences and analogies, foster our own ideas. Deep reading, as Maryanne Wolf argues, is indistinguishable from deep thinking.

If we lose those quiet spaces, or fill them up with "content," we will sacrifice something important not only in our selves but in our culture. In a recent essay, the playwright Richard Foreman eloquently described what's at stake:

> I come from a tradition of Western culture, in which the ideal (my ideal) was the complex, dense and "cathedral-like" structure of the highly educated and articulate personality—a man

> or woman who carried inside themselves a personally constructed and unique version of the entire heritage of the West. [But now] I see within us all (myself included) the replacement of complex inner density with a new kind of self—evolving under the pressure of information overload and the technology of the "instantly available."

As we are drained of our "inner repertory of dense cultural inheritance," Foreman concluded, we risk turning into "'pancake people'—spread wide and thin as we connect with that vast network of information accessed by the mere touch of a button."

I'm haunted by that scene in *2001*. What makes it so poignant, and so weird, is the computer's emotional response to the disassembly of its mind: its despair as one circuit after another goes dark, its childlike pleading with the astronaut—"I can feel it. I can feel it. I'm afraid"—and its final reversion to what can only be called a state of innocence. HAL's outpouring of feeling contrasts with the emotionlessness that characterizes the human figures in the film, who go about their business with an almost robotic efficiency. Their thoughts and actions feel scripted, as if they're following the steps of an algorithm. In the world of *2001*, people have become so machinelike that the most human character turns out to be a machine. That's the essence of Kubrick's dark prophecy: as we come to rely on computers to mediate our understanding of the world, it is our own intelligence that flattens into artificial intelligence.



Get Smarter

Jamais Cascio

Pandemics. Global warming. Food shortages. No more fossil fuels. What are humans to do? The same thing the species has done before: evolve to meet the challenge. But this time we don't have to rely on natural evolution to make us smart enough to survive. We can do it ourselves, right now, by harnessing technology and pharmacology to boost our intelligence. Is Google actually making us smarter?

Seventy-four thousand years ago, humanity nearly went extinct. A super-volcano at what's now Lake Toba, in Sumatra, erupted with a strength more than a thousand times that of Mount St. Helens in 1980. Some 800 cubic kilometers of ash filled the skies of the Northern Hemisphere, lowering global temperatures and pushing a climate already on the verge of an ice age over the edge. Some scientists speculate that as the Earth went into a deep freeze, the population of *Homo sapiens* may have dropped to as low as a few thousand families.

The Mount Toba incident, although unprecedented in magnitude, was part of a broad pattern. For a period of 2 million years, ending with the last ice age around 10,000 B.C., the Earth experienced a series of convulsive glacial events. This rapid-fire climate change meant that humans couldn't rely on consistent patterns to know which animals to hunt, which plants to gather, or even which predators might be waiting around the corner.

How did we cope? By getting smarter. The neurophysiologist William Calvin argues persuasively that modern human cognition—including sophisticated language and the capacity to plan ahead—evolved in response to the demands of this long age of turbulence. According to Calvin, the reason we survived is that our brains changed to meet the challenge: we transformed the ability to target a moving animal with a thrown rock into a capability for foresight and long-term planning. In the process, we may have developed syntax and formal structure from our simple language.

Our present century may not be quite as perilous for the human race as an ice age in the aftermath of a super-volcano eruption, but the next few decades will pose enormous hurdles that go beyond the climate crisis. The end of the fossil-fuel era, the fragility of the global food web, growing population density, and the spread of pandemics, as well as the emergence of radically transformative bio- and

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nanotechnologies—each of these threatens us with broad disruption or even devastation. And as good as our brains have become at planning ahead, we're still biased toward looking for near-term, simple threats. Subtle, long-term risks, particularly those involving complex, global processes, remain devilishly hard for us to manage.

But here's an optimistic scenario for you: if the next several decades are as bad as some of us fear they could be, we can respond, and survive, the way our species has done time and again: by getting smarter. But this time, we don't have to rely solely on natural evolutionary processes to boost our intelligence. We can do it ourselves.

Most people don't realize that this process is already under way. In fact, it's happening all around us, across the full spectrum of how we understand intelligence. It's visible in the hive mind of the Internet, in the powerful tools for simulation and visualization that are jump-starting new scientific disciplines, and in the development of drugs that some people (myself included) have discovered let them study harder, focus better, and stay awake longer with full clarity. So far, these augmentations have largely been outside of our bodies, but they're very much part of who we are today: they're physically separate from us, but we and they are becoming cognitively inseparable. And advances over the next few decades, driven by breakthroughs in genetic engineering and artificial intelligence, will make today's technologies seem primitive. The nascent jargon of the field describes this as " intelligence augmentation." I prefer to think of it as "You+."

Scientists refer to the 12,000 years or so since the last ice age as the Holocene epoch. It encompasses the rise of human civilization and our co-evolution with tools and technologies that allow us to grapple with our physical environment. But if intelligence augmentation has the kind of impact I expect, we may soon have to start thinking of ourselves as living in an entirely new era. The focus of our technological evolution would be less on how we manage and adapt to our physical world, and more on how we manage and adapt to the immense amount of knowledge we've created. We can call it the Nöocene epoch, from Pierre Teilhard de Chardin's concept of the Nöosphere, a collective consciousness created by the deepening interaction of human minds. As that epoch draws closer, the world is becoming a very different place.

Of course, we've been augmenting our ability to think for millennia. When we developed written language, we significantly increased our functional memory and our ability to share insights and knowledge across time and space. The same thing happened with the invention of the printing press, the telegraph, and the radio. The rise of urbanization allowed a fraction of the populace to focus on more-cerebral tasks—a fraction that grew inexorably as more-complex economic and social practices demanded more knowledge work, and industrial technology reduced the demand for manual labor. And caffeine and nicotine, of course, are both classic cognitive-enhancement drugs, primitive though they may be.

With every technological step forward, though, has come anxiety about the possibility that technology harms our natural ability to think. These anxieties were given eloquent expression in these pages by Nicholas Carr, whose essay "Is Google Making Us Stupid?" (July/August 2008 *Atlantic*) argued that

the information-dense, hyperlink-rich, spastically churning Internet medium is effectively rewiring our brains, making it harder for us to engage in deep, relaxed contemplation.

Carr's fears about the impact of wall-to-wall connectivity on the human intellect echo cyber-theorist Linda Stone's description of "continuous partial attention," the modern phenomenon of having multiple activities and connections under way simultaneously. We're becoming so accustomed to interruption that we're starting to find focusing difficult, even when we've achieved a bit of quiet. It's an induced form of ADD—a "continuous partial attention-deficit disorder," if you will.

There's also just more information out there—because unlike with previous information media, with the Internet, creating material is nearly as easy as consuming it. And it's easy to mistake more voices for more noise. In reality, though, the proliferation of diverse voices may actually improve our overall ability to think. In *Everything Bad Is Good for You*, Steven Johnson argues that the increasing complexity and range of media we engage with have, over the past century, made us smarter, rather than dumber, by providing a form of cognitive calisthenics. Even pulp-television shows and video games have become extraordinarily dense with detail, filled with subtle references to broader subjects, and more open to interactive engagement. They reward the capacity to make connections and to see patterns—precisely the kinds of skills we need for managing an information glut.

Scientists describe these skills as our "fluid intelligence"—the ability to find meaning in confusion and to solve new problems, independent of acquired knowledge. Fluid intelligence doesn't look much like the capacity to memorize and recite facts, the skills that people have traditionally associated with brainpower. But building it up may improve the capacity to think deeply that Carr and others fear we're losing for good. And we shouldn't let the stresses associated with a transition to a new era blind us to that era's astonishing potential. We swim in an ocean of data, accessible from nearly anywhere, generated by billions of devices. We're only beginning to explore what we can do with this knowledge-at-a-touch.

Moreover, the technology-induced ADD that's associated with this new world may be a short-term problem. The trouble isn't that we have too much information at our fingertips, but that our tools for managing it are still in their infancy. Worries about "information overload" predate the rise of the Web (Alvin Toffler coined the phrase in 1970), and many of the technologies that Carr worries about were developed precisely to help us get some control over a flood of data and ideas. Google isn't the problem; it's the beginning of a solution.

In any case, there's no going back. The information sea isn't going to dry up, and relying on cognitive habits evolved and perfected in an era of limited information flow—and limited information access—is futile. Strengthening our fluid intelligence is the only viable approach to navigating the age of constant connectivity.

When people hear the phrase intelligence augmentation, they tend to envision people with computer chips plugged into their brains, or a genetically engineered race of post-human super-geniuses. Neither of these visions is likely to be realized, for reasons familiar to any Best Buy shopper. In a world of ongoing technological acceleration, today's cutting-edge brain implant would be tomorrow's obsolete junk—and good luck if the protocols change or you're on the wrong side of a "format war" (anyone

want a Betamax implant?). And then there's the question of stability: Would you want a chip in your head made by the same folks that made your cell phone, or your PC?

Likewise, the safe modification of human genetics is still years away. And even after genetic modification of adult neurobiology becomes possible, the science will remain in flux; our understanding of how augmentation works, and what kinds of genetic modifications are possible, would still change rapidly. As with digital implants, the brain modification you might undergo one week could become obsolete the next. Who would want a 2025-vintage brain when you're competing against hotshots with Model 2026?

Yet in one sense, the age of the cyborg and the super-genius has already arrived. It just involves external information and communication devices instead of implants and genetic modification. The bioethicist James Hughes of Trinity College refers to all of this as "exocortical technology," but you can just think of it as "stuff you already own." Increasingly, we buttress our cognitive functions with our computing systems, no matter that the connections are mediated by simple typing and pointing. These tools enable our brains to do things that would once have been almost unimaginable:

- powerful simulations and massive data sets allow physicists to visualize, understand, and debate models of an 11-dimension universe;
- real-time data from satellites, global environmental databases, and high-resolution models allow geophysicists to recognize the subtle signs of long-term changes to the planet;
- cross-connected scheduling systems allow anyone to assemble, with a few clicks, a complex, multimodal travel itinerary that would have taken a human travel agent days to create.

If that last example sounds prosaic, it simply reflects how embedded these kinds of augmentation have become. Not much more than a decade ago, such a tool was outrageously impressive—and it destroyed the travel-agent industry.

That industry won't be the last one to go. Any occupation requiring pattern-matching and the ability to find obscure connections will quickly morph from the domain of experts to that of ordinary people whose intelligence has been augmented by cheap digital tools. Humans won't be taken out of the loop—in fact, many, many more humans will have the capacity to do something that was once limited to a hermetic priesthood. Intelligence augmentation decreases the need for specialization and increases participatory complexity.

As the digital systems we rely upon become faster, more sophisticated, and (with the usual hiccups) more capable, we're becoming more sophisticated and capable too. It's a form of co-evolution: we learn to adapt our thinking and expectations to these digital systems, even as the system designs become more complex and powerful to meet more of our needs—and eventually come to adapt to us.

Consider the Twitter phenomenon, which went from nearly invisible to nearly ubiquitous (at least among the online crowd) in early 2007. During busy periods, the user can easily be overwhelmed by the volume of incoming messages, most of which are of only passing interest. But there is a tiny minority of truly valuable posts. (Sometimes they have extreme value, as they did during the October 2007 wildfires in California and the November 2008 terrorist attacks in Mumbai.) At present, however,

finding the most-useful bits requires wading through messages like "My kitty sneezed!" and "I hate this taco!"

But imagine if social tools like Twitter had a way to learn what kinds of messages you pay attention to, and which ones you discard. Over time, the messages that you don't really care about might start to fade in the display, while the ones that you do want to see could get brighter. Such attention filters—or focus assistants—are likely to become important parts of how we handle our daily lives. We'll move from a world of "continuous partial attention" to one we might call "continuous augmented awareness."

As processor power increases, tools like Twitter may be able to draw on the complex simulations and massive data sets that have unleashed a revolution in science. They could become individualized systems that augment our capacity for planning and foresight, letting us play "what-if" with our life choices: where to live, what to study, maybe even where to go for dinner. Initially crude and clumsy, such a system would get better with more data and more experience; just as important, we'd get better at asking questions. These systems, perhaps linked to the cameras and microphones in our mobile devices, would eventually be able to pay attention to what we're doing, and to our habits and language quirks, and learn to interpret our sometimes ambiguous desires. With enough time and complexity, they would be able to make useful suggestions without explicit prompting.

And such systems won't be working for us alone. Intelligence has a strong social component; for example, we already provide crude cooperative information-filtering for each other. In time, our interactions through the use of such intimate technologies could dovetail with our use of collaborative knowledge systems (such as Wikipedia), to help us not just to build better data sets, but to filter them with greater precision. As our capacity to provide that filter gets faster and richer, it increasingly becomes something akin to collaborative intuition—in which everyone is effectively augmenting everyone else.

In pharmacology, too, the future is already here. One of the most prominent examples is a drug called modafinil. Developed in the 1970s, modafinil—sold in the U.S. under the brand name Provigil—appeared on the cultural radar in the late 1990s, when the American military began to test it for long-haul pilots. Extended use of modafinil can keep a person awake and alert for well over 32 hours on end, with only a full night's sleep required to get back to a normal schedule.

While it is FDA-approved only for a few sleep disorders, like narcolepsy and sleep apnea, doctors increasingly prescribe it to those suffering from depression, to "shift workers" fighting fatigue, and to frequent business travelers dealing with time-zone shifts. I'm part of the latter group: like more and more professionals, I have a prescription for modafinil in order to help me overcome jet lag when I travel internationally. When I started taking the drug, I expected it to keep me awake; I didn't expect it to make me feel smarter, but that's exactly what happened. The change was subtle but clear, once I recognized it: within an hour of taking a standard 200-mg tablet, I was much more alert, and thinking with considerably more clarity and focus than usual. This isn't just a subjective conclusion. A University of Cambridge study, published in 2003, concluded that modafinil confers a measurable cognitive-enhancement effect across a variety of mental tasks, including pattern recognition and spatial planning, and sharpens focus and alertness.

I'm not the only one who has taken advantage of this effect. The Silicon Valley insider webzine *Tech Crunch* reported in July 2008 that some entrepreneurs now see modafinil as an important competitive tool. The tone of the piece was judgmental, but the implication was clear: everybody's doing it, and if you're not, you're probably falling behind.

This is one way a world of intelligence augmentation emerges. Little by little, people who don't know about drugs like modafinil or don't want to use them will face stiffer competition from the people who do. From the perspective of a culture immersed in athletic doping wars, the use of such drugs may seem like cheating. From the perspective of those who find that they're much more productive using this form of enhancement, it's no more cheating than getting a faster computer or a better education.

Modafinil isn't the only example; on college campuses, the use of ADD drugs (such as Ritalin and Adderall) as study aids has become almost ubiquitous. But these enhancements are primitive. As the science improves, we could see other kinds of cognitive-modification drugs that boost recall, brain plasticity, even empathy and emotional intelligence. They would start as therapeutic treatments, but end up being used to make us "better than normal." Eventually, some of these may become over-the-counter products at your local pharmacy, or in the juice and snack aisles at the supermarket. Spam e-mail would be full of offers to make your brain bigger, and your idea production more powerful.

Such a future would bear little resemblance to *Brave New World* or similar narcomantic nightmares; we may fear the idea of a population kept doped and placated, but we're more likely to see a populace stuck in overdrive, searching out the last bits of competitive advantage, business insight, and radical innovation. No small amount of that innovation would be directed toward inventing the next, more powerful cognitive-enhancement technology.

This would be a different kind of nightmare, perhaps, and cause waves of moral panic and legislative restriction. Safety would be a huge issue. But as we've found with athletic doping, if there's a technique for beating out rivals (no matter how risky), shutting it down is nearly impossible. This would be yet another pharmacological arms race—and in this case, the competitors on one side would just keep getting smarter.

The most radical form of superhuman intelligence, of course, wouldn't be a mind augmented by drugs or exocortical technology; it would be a mind that isn't human at all. Here we move from the realm of extrapolation to the realm of speculation, since solid predictions about artificial intelligence are notoriously hard: our understanding of how the brain creates the mind remains far from good enough to tell us how to construct a mind in a machine.

But while the concept remains controversial, I see no good argument for why a mind running on a machine platform instead of a biological platform will forever be impossible; whether one might appear in five years or 50 or 500, however, is uncertain. I lean toward 50, myself. That's enough time to develop computing hardware able to run a high-speed neural network as sophisticated as that of a human brain, and enough time for the kids who will have grown up surrounded by virtual-world software and household robots—that is, the people who see this stuff not as "Technology," but as everyday tools—to come to dominate the field.

Many proponents of developing an artificial mind are sure that such a breakthrough will be the biggest change in human history. They believe that a machine mind would soon modify itself to get smarter—and with its new intelligence, then figure out how to make itself smarter still. They refer to this intelligence explosion as "the Singularity," a term applied by the computer scientist and science-fiction author Vernor Vinge. "Within thirty years, we will have the technological means to create superhuman intelligence," Vinge wrote in 1993. "Shortly after, the human era will be ended." The Singularity concept is a secular echo of Teilhard de Chardin's "Omega Point," the culmination of the Nöosphere at the end of history. Many believers in Singularity—which one wag has dubbed "the Rapture for nerds"—think that building the first real AI will be the last thing humans do. Some imagine this moment with terror, others with a bit of glee.

My own suspicion is that a stand-alone artificial mind will be more a tool of narrow utility than something especially apocalyptic. I don't think the theory of an explosively self-improving AI is convincing—it's based on too many assumptions about behavior and the nature of the mind. Moreover, AI researchers, after years of talking about this prospect, are already ultra-conscious of the risk of runaway systems.

More important, though, is that the same advances in processor and process that would produce a machine mind would also increase the power of our own cognitive-enhancement technologies. As intelligence augmentation allows us to make ourselves smarter, and then smarter still, AI may turn out to be just a sideshow: we could always be a step ahead.

So what's life like in a world of brain doping, intuition networks, and the occasional artificial mind?

Banal.

Not from our present perspective, of course. For us, now, looking a generation ahead might seem surreal and dizzying. But remember: people living in, say, 2030 will have lived every moment from now until then—we won't jump into the future. For someone going from 2009 to 2030 day by day, most of these changes wouldn't be jarring; instead, they'd be incremental, almost overdetermined, and the occasional surprises would quickly blend into the flow of inevitability.

By 2030, then, we'll likely have grown accustomed to (and perhaps even complacent about) a world where sophisticated foresight, detailed analysis and insight, and augmented awareness are commonplace. We'll have developed a better capacity to manage both partial attention and laser-like focus, and be able to slip between the two with ease—perhaps by popping the right pill, or eating the right snack. Sometimes, our augmentation assistants will handle basic interactions on our behalf; that's okay, though, because we'll increasingly see those assistants as extensions of ourselves.

The amount of data we'll have at our fingertips will be staggering, but we'll finally have gotten over the notion that accumulated information alone is a hallmark of intelligence. The power of all of this knowledge will come from its ability to inform difficult decisions, and to support complex analysis. Most professions will likely use simulation and modeling in their day-to-day work, from political decisions to hairstyle options. In a world of augmented intelligence, we will have a far greater appreciation of the consequences of our actions.

This doesn't mean we'll all come to the same conclusions. We'll still clash with each other's emotions, desires, and beliefs. If anything, our arguments will be more intense, buttressed not just by strongly held opinions but by intricate reasoning. People in 2030 will look back aghast at how ridiculously unsubtle the political and cultural disputes of our present were, just as we might today snicker at simplistic advertising from a generation ago.

Conversely, the debates of the 2030s would be remarkable for us to behold. Nuance and multiple layers will characterize even casual disputes; our digital assistants will be there to catch any references we might miss. And all of this will be everyday, banal reality. Today, it sounds mind-boggling; by then, it won't even merit comment.

What happens if such a complex system collapses? Disaster, of course. But don't forget that we already depend upon enormously complex systems that we no longer even think of as technological. Urbanization, agriculture, and trade were at one time huge innovations. Their collapse (and all of them are now at risk, in different ways, as we have seen in recent months) would be an even greater catastrophe than the collapse of our growing webs of interconnected intelligence.

A less apocalyptic but more likely danger derives from the observation made by the science-fiction author William Gibson: "The future is already here, it's just unevenly distributed." The rich, whether nations or individuals, will inevitably gain access to many augmentations before anyone else. We know from history, though, that a world of limited access wouldn't last forever, even as the technology improved: those who sought to impose limits would eventually face angry opponents with newer, better systems.

Even as competition provides access to these kinds of technologies, though, development paths won't be identical. Some societies may be especially welcoming to biotech boosts; others may prefer to use digital tools. Some may readily adopt collaborative approaches; others may focus on individual enhancement. And around the world, many societies will reject the use of intelligence-enhancement technology entirely, or adopt a cautious wait-and-see posture.

The bad news is that these divergent paths may exacerbate cultural divides created by already divergent languages and beliefs. National rivalries often emphasize cultural differences, but for now we're all still standard human beings. What happens when different groups quite literally think in very, very different ways?

The good news, though, is that this diversity of thought can also be a strength. Coping with the various world-historical dangers we face will require the greatest possible insight, creativity, and innovation. Our ability to build the future that we want—not just a future we can survive—depends on our capacity to understand the complex relationships of the world's systems, to take advantage of the diversity of knowledge and experience our civilization embodies, and to fully appreciate the implications of our choices. Such an ability is increasingly within our grasp. The Nöocene awaits.



In Defense of Distraction

Sam Anderson

Twitter, Adderall, lifehacking, mindful jogging, power browsing, Obama's BlackBerry, and the benefits of overstimulation.

I. The Poverty of Attention

I'm going to pause here, right at the beginning of my riveting article about attention, and ask you to please get all of your precious 21st-century distractions out of your system now. Check the score of the Mets game; text your sister that pun you just thought of about her roommate's new pet lizard ("iguana hold yr hand LOL get it like Beatles"); refresh your work e-mail, your home e-mail, your school e-mail; upload pictures of yourself reading this paragraph to your "me reading magazine articles" Flickr photostream; and alert the fellow citizens of whatever Twittertopia you happen to frequent that you will be suspending your digital presence for the next twenty minutes or so (I know that seems drastic: Tell them you're having an appendectomy or something and are about to lose consciousness). Good. Now: Count your breaths. Close your eyes. Do whatever it takes to get all of your neurons lined up in one direction. Above all, resist the urge to fixate on the picture, right over there, of that weird scrambled guy typing.

Do not speculate on his ethnicity (German-Venezuelan?) or his backstory (Witness Protection Program?) or the size of his monitor. Go ahead and cover him with your hand if you need to. There. Doesn't that feel better? Now it's just you and me, tucked like fourteenth-century Zen masters into this sweet little nook of pure mental focus. (Seriously, stop looking at him. I'm over here.)

Over the last several years, the problem of attention has migrated right into the center of our cultural attention. We hunt it in neurology labs, lament its decline on op-ed pages, fetishize it in grassroots quality-of-life movements, diagnose its absence in more and more of our children every year, cultivate it in yoga class twice a week, harness it as the engine of self-help empires, and pump it up to superhuman levels with drugs originally intended to treat Alzheimer's and narcolepsy. Everyone still

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pays some form of attention all the time, of course—it's basically impossible for humans not to—but the currency in which we pay it, and the goods we get in exchange, have changed dramatically.

Back in 1971, when the web was still twenty years off and the smallest computers were the size of delivery vans, before the founders of Google had even managed to get themselves born, the polymath economist Herbert A. Simon wrote maybe the most concise possible description of our modern struggle: "What information consumes is rather obvious: It consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it." As beneficiaries of the greatest information boom in the history of the world, we are suffering, by Simon's logic, a correspondingly serious poverty of attention.

If the pundits clogging my RSS reader can be trusted (the ones I check up on occasionally when I don't have any new e-mail), our attention crisis is already chewing its hyperactive way through the very foundations of Western civilization. Google is making us stupid, multitasking is draining our souls, and the "dumbest generation" is leading us into a "dark age" of bookless "power browsing." Adopting the Internet as the hub of our work, play, and commerce has been the intellectual equivalent of adopting corn syrup as the center of our national diet, and we've all become mentally obese. Formerly well-rounded adults are forced to MacGyver worldviews out of telegraphic blog posts, bits of YouTube videos, and the first nine words of *Times* editorials. Schoolkids spread their attention across 30 different programs at once and interact with each other mainly as sweatless avatars. (One recent study found that American teenagers spend an average of 6.5 hours a day focused on the electronic world, which strikes me as a little low; in South Korea, the most wired nation on earth, young adults have actually died from exhaustion after multi-day online-gaming marathons.) We are, in short, terminally distracted. And distracted, the alarmists will remind you, was once a synonym for insane. (Shakespeare: "poverty hath distracted her.")

This doomsaying strikes me as silly for two reasons. First, conservative social critics have been blowing the apocalyptic bugle at every large-scale tech-driven social change since Socrates' famous complaint about the memory-destroying properties of that newfangled technology called "writing." (A complaint we remember, not incidentally, because it was written down.) And, more practically, the virtual horse has already left the digital barn. It's too late to just retreat to a quieter time. Our jobs depend on connectivity. Our pleasure-cycles—no trivial matter—are increasingly tied to it. Information rains down faster and thicker every day, and there are plenty of non-moronic reasons for it to do so. The question, now, is how successfully we can adapt.

Although attention is often described as an organ system, it's not the sort of thing you can pull out and study like a spleen. It's a complex process that shows up all over the brain, mingling inextricably with other quasi-mystical processes like emotion, memory, identity, will, motivation, and mood. Psychologists have always had to track attention secondhand. Before the sixties, they measured it through easy-to-monitor senses like vision and hearing (if you listen to one voice in your right ear and another in your left, how much information can you absorb from either side?), then eventually graduated to PET scans and EEGs and electrodes and monkey brains. Only in the last ten years—thanks to neuroscientists and their functional MRIs—have we been able to watch the attending human brain

in action, with its coordinated storms of neural firing, rapid blood surges, and oxygen flows. This has yielded all kinds of fascinating insights—for instance, that when forced to multitask, the overloaded brain shifts its processing from the hippocampus (responsible for memory) to the striatum (responsible for rote tasks), making it hard to learn a task or even recall what you've been doing once you're done.

When I reach David Meyer, one of the world's reigning experts on multitasking, he is feeling alert against all reasonable odds. He has just returned from India, where he was discussing the nature of attention at a conference with the Dalai Lama (Meyer gave a keynote speech arguing that Buddhist monks multitask during meditation), and his trip home was hellish: a canceled flight, an overnight taxi on roads so rough it took thirteen hours to go 200 miles. This is his first full day back in his office at the University of Michigan, where he directs the Brain, Cognition, and Action Laboratory—a basement space in which finger-tapping, card-memorizing, tone-identifying subjects help Meyer pinpoint exactly how much information the human brain can handle at once. He's been up since 3 a.m. and has by now goosed his attention several times with liquid stimulants: a couple of cups of coffee, some tea. "It does wonders," he says.

My interaction with Meyer takes place entirely via the technology of distraction. We scheduled and rescheduled our appointment, several times, by e-mail. His voice is now projecting, tinnily, out of my cell phone's speaker and into the microphone of my digital recorder, from which I will download it, as soon as we're done, onto my laptop, which I currently have open on my desk in front of me, with several windows spread across the screen, each bearing nested tabs, on one of which I've been reading, before Meyer even had a chance to tell me about it, a blog all about his conference with the Dalai Lama, complete with RSS feed and audio commentary and embedded YouTube videos and pictures of His Holiness. As Meyer and I talk, the universe tests us with a small battery of distractions. A maximum-volume fleet of emergency vehicles passes just outside my window; my phone chirps to tell us that my mother is calling on the other line, then beeps again to let us know she's left a message. There is, occasionally, a slight delay in the connection. Meyer ignores it all, speaking deliberately and at length, managing to coordinate tricky subject-verb agreements over the course of multi-clause sentences. I begin, a little sheepishly, with a question that strikes me as sensationalistic, nonscientific, and probably unanswerable by someone who's been professionally trained in the discipline of cautious objectivity: Are we living through a crisis of attention?

Before I even have a chance to apologize, Meyer responds with the air of an Old Testament prophet. "Yes," he says. "And I think it's going to get a lot worse than people expect." He sees our distraction as a full-blown epidemic—a cognitive plague that has the potential to wipe out an entire generation of focused and productive thought. He compares it, in fact, to smoking. "People aren't aware what's happening to their mental processes," he says, "in the same way that people years ago couldn't look into their lungs and see the residual deposits."

I ask him if, as the world's foremost expert on multitasking and distraction, he has found his own life negatively affected by the new world order of multitasking and distraction.

"Yep," he says immediately, then adds, with admirable (although slightly hurtful) bluntness: "I get calls all the time from people like you. Because of the way the Internet works, once you become visible, you're approached from left and right by people wanting to have interactions in ways that are extremely

time-consuming. I could spend my whole day, my whole night, just answering e-mails. I just can't deal with it all. None of this happened even ten years ago. It was a lot calmer. There was a lot of opportunity for getting steady work done."

Over the last twenty years, Meyer and a host of other researchers have proved again and again that multitasking, at least as our culture has come to know and love and institutionalize it, is a myth. When you think you're doing two things at once, you're almost always just switching rapidly between them, leaking a little mental efficiency with every switch. Meyer says that this is because, to put it simply, the brain processes different kinds of information on a variety of separate "channels"—a language channel, a visual channel, an auditory channel, and so on—each of which can process only one stream of information at a time. If you overburden a channel, the brain becomes inefficient and mistake-prone. The classic example is driving while talking on a cell phone, two tasks that conflict across a range of obvious channels: Steering and dialing are both manual tasks, looking out the windshield and reading a phone screen are both visual, etc. Even talking on a hands-free phone can be dangerous, Meyer says. If the person on the other end of the phone is describing a visual scene—say, the layout of a room full of furniture—that conversation can actually occupy your visual channel enough to impair your ability to see what's around you on the road.

The only time multitasking does work efficiently, Meyer says, is when multiple simple tasks operate on entirely separate channels—for example, folding laundry (a visual-manual task) while listening to a stock report (a verbal task). But real-world scenarios that fit those specifications are very rare.

This is troubling news, obviously, for a culture of BlackBerrys and news crawls and Firefox tabs—tools that, critics argue, force us all into a kind of elective ADHD. The tech theorist Linda Stone famously coined the phrase "continuous partial attention"' to describe our newly frazzled state of mind. American office workers don't stick with any single task for more than a few minutes at a time; if left uninterrupted, they will most likely interrupt themselves. Since every interruption costs around 25 minutes of productivity, we spend nearly a third of our day recovering from them. We keep an average of eight windows open on our computer screens at one time and skip between them every twenty seconds. When we read online, we hardly even read at all—our eyes run down the page in an F pattern, scanning for keywords. When you add up all the leaks from these constant little switches, soon you're hemorrhaging a dangerous amount of mental power. People who frequently check their e-mail have tested as less intelligent than people who are actually high on marijuana. Meyer guesses that the damage will take decades to understand, let alone fix. If Einstein were alive today, he says, he'd probably be forced to multitask so relentlessly in the Swiss patent office that he'd never get a chance to work out the theory of relativity.

II. The War on the Poverty of Attention

For Winifred Gallagher, the author of *Rapt*, a new book about the power of attention, it all comes down to the problem of jackhammers. A few minutes before I called, she tells me, a construction crew started jackhammering outside her apartment window. The noise immediately captured what's called

her bottom-up attention—the broad involuntary awareness that roams the world constantly looking for danger and rewards: shiny objects, sudden movements, pungent smells. Instead of letting this distract her, however, she made a conscious choice to go into the next room and summon her top-down attention—the narrow, voluntary focus that allows us to isolate and enhance some little slice of the world while ruthlessly suppressing everything else.

This attentional self-control, which psychologists call executive function, is at the very center of our struggle with attention. It's what allows us to invest our focus wisely or poorly. Some of us, of course, have an easier time with it than others.

Gallagher admits that she's been blessed with a naturally strong executive function. "It sounds funny," she tells me, "but I've always thought of paying attention as a kind of sexy, visceral activity. Even as a kid, I enjoyed focusing. I could feel it in almost a mentally muscular way. I took a lot of pleasure in concentrating on things. I'm the sort of irritating person who can sit down to work at nine o'clock and look up at two o'clock and say, 'Oh, I thought it was around 10:30.'"

Gallagher became obsessed with the problem of attention five years ago, when she was diagnosed with advanced and aggressive breast cancer. She was devastated, naturally, but then realized, on her way out of the hospital, that even the cancer could be seen largely as a problem of focus—a terrifying, deadly, internal jackhammer. It made her realize, she says, that attention was "not just a latent ability, it was something you could marshal and use as a tool." By the time she reached her subway station, Gallagher had come up with a strategy: She would make all the big pressing cancer-related decisions as quickly as possible, then, in order to maximize whatever time she had left, consciously shift her attention to more positive, productive things.

One of the projects Gallagher worked on during her recovery (she is now cancer free) was *Rapt*, which is both a survey of recent attention research and a testimonial to the power of top-down focus. The ability to positively wield your attention comes off, in the book, as something of a panacea; Gallagher describes it as "the sine qua non of the quality of life and the key to improving virtually every aspect of your experience." It is, in other words, the Holy Grail of self-help: the key to relationships and parenting and mood disorders and weight problems. (You can apparently lose seven pounds in a year through the sheer force of paying attention to your food.)

"You can't be happy all the time," Gallagher tells me, "but you can pretty much focus all the time. That's about as good as it gets."

The most promising solution to our attention problem, in Gallagher's mind, is also the most ancient: meditation. Neuroscientists have become obsessed, in recent years, with Buddhists, whose attentional discipline can apparently confer all kinds of benefits even on non-Buddhists. (Some psychologists predict that, in the same way we go out for a jog now, in the future we'll all do daily 20- to 30-minute "secular attentional workouts.") Meditation can make your attention less "sticky," able to notice images flashing by in such quick succession that regular brains would miss them. It has also been shown to elevate your mood, which can then recursively stoke your attention: Research shows that positive emotions cause your visual field to expand. The brains of Buddhist monks asked to meditate on "unconditional loving-kindness and compassion" show instant and remarkable changes: Their left prefrontal cortices (responsible for positive emotions) go into overdrive, they produce gamma waves

30 times more powerful than novice meditators, and their wave activity is coordinated in a way often seen in patients under anesthesia.

Gallagher stresses that because attention is a limited resource—one psychologist has calculated that we can attend to only 110 bits of information per second, or 173 billion bits in an average lifetime—our moment-by-moment choice of attentional targets determines, in a very real sense, the shape of our lives. *Rapt*'s epigraph comes from the psychologist and philosopher William James: "My experience is what I agree to attend to." For Gallagher, everything comes down to that one big choice: investing your attention wisely or not. The jackhammers are everywhere—iPhones, e-mail, cancer—and Western culture's attentional crisis is mainly a widespread failure to ignore them.

"Once you understand how attention works and how you can make the most productive use of it," she says, "if you continue to just jump in the air every time your phone rings or pounce on those buttons every time you get an instant message, that's not the machine's fault. That's your fault."

Making the responsible attention choice, however, is not always easy. Here is a partial list, because a complete one would fill the entire magazine, of the things I've been distracted by in the course of writing this article: my texting wife, a very loud seagull, my mother calling from Mexico to leave voice mails in terrible Spanish, a man shouting "Your weed-whacker fell off! Your weed-whacker fell off!" at a truck full of lawn equipment, my Lost-watching wife, another man singing some kind of Spanish ballad on the sidewalk under my window, streaming video of the NBA playoffs, dissertation-length blog breakdowns of the NBA playoffs, my toenail spontaneously detaching, my ice-cream-eating wife, the subtly shifting landscapes of my three different e-mail in-boxes, my Facebooking wife, infinite YouTube videos (a puffin attacking someone wearing a rubber boot, Paul McCartney talking about the death of John Lennon, a chimpanzee playing Pac-Man), and even more infinite, if that is possible, Wikipedia entries: puffins, MacGyver, Taylorism, the phrase "bleeding edge," the Boston Molasses Disaster. (If I were going to excuse you from reading this article for any single distraction, which I am not, it would be to read about the Boston Molasses Disaster.)

When the jackhammers fire up outside my window, in other words, I rarely ignore them—I throw the window open, watch for a while, bring the crew sandwiches on their lunch break, talk with them about the ins and outs of jackhammering, and then spend an hour or two trying to break up a little of the sidewalk myself. Some of my distractions were unavoidable. Some were necessary work-related evils that got out of hand. Others were pretty clearly inexcusable. (I consider it a victory for the integrity of pre-web human consciousness that I was able to successfully resist clicking on the first "related video" after the chimp, the evocatively titled "Guy shits himself in a judo exhibition.") In today's attentional landscape, it's hard to draw neat borders.

I'm not ready to blame my restless attention entirely on a faulty willpower. Some of it is pure impersonal behaviorism. The Internet is basically a Skinner box engineered to tap right into our deepest mechanisms of addiction. As B. F. Skinner's army of lever-pressing rats and pigeons taught us, the most irresistible reward schedule is not, counterintuitively, the one in which we're rewarded constantly but something called "variable ratio schedule," in which the rewards arrive at random. And that randomness is practically the Internet's defining feature: It dispenses its never-ending little shots of positivity—a life-changing e-mail here, a funny YouTube video there—in gloriously unpredictable

cycles. It seems unrealistic to expect people to spend all day clicking reward bars—searching the web, scanning the relevant blogs, checking e-mail to see if a co-worker has updated a project—and then just leave those distractions behind, as soon as they're not strictly required, to engage in "healthy" things like books and ab crunches and undistracted deep conversations with neighbors. It would be like requiring employees to take a few hits of opium throughout the day, then being surprised when it becomes a problem. Last year, an editorial in the *American Journal of Psychiatry* raised the prospect of adding "Internet addiction" to the DSM, which would make it a disorder to be taken as seriously as schizophrenia.

A quintessentially Western solution to the attention problem—one that neatly circumvents the issue of willpower—is to simply dope our brains into focus. We've done so, over the centuries, with substances ranging from tea to tobacco to NoDoz to Benzedrine, and these days the tradition seems to be approaching some kind of zenith with the rise of neuroenhancers: drugs designed to treat ADHD (Ritalin, Adderall), Alzheimer's (Aricept), and narcolepsy (Provigil) that can produce, in healthy people, superhuman states of attention. A grad-school friend tells me that Adderall allowed him to squeeze his mind "like a muscle." Joshua Foer, writing in *Slate* after a weeklong experiment with Adderall, said the drug made him feel like he'd "been bitten by a radioactive spider"—he beat his unbeatable brother at Ping-Pong, solved anagrams, devoured dense books. "The part of my brain that makes me curious about whether I have new e-mails in my in-box apparently shut down," he wrote.

Although neuroenhancers are currently illegal to use without a prescription, they're popular among college students (on some campuses, up to 25 percent of students admitted to taking them) and—if endless anecdotes can be believed—among a wide spectrum of other professional focusers: journalists on deadline, doctors performing high-stakes surgeries, competitors in poker tournaments, researchers suffering through the grind of grant-writing. There has been controversy in the chess world recently about drug testing at tournaments.

In December, a group of scientists published a paper in *Nature* that argued for the legalization and mainstream acceptance of neuroenhancers, suggesting that the drugs are really no different from more traditional "cognitive enhancers" such as laptops, exercise, nutrition, private tutoring, reading, and sleep. It's not quite that simple, of course. Adderall users frequently complain that the drug stifles their creativity—that it's best for doing ultrarational, structured tasks. (As Foer put it, "I had a nagging suspicion that I was thinking with blinders on.") One risk the scientists do acknowledge is the fascinating, horrifying prospect of "raising cognitive abilities beyond their species-typical upper bound." Ultimately, one might argue, neuroenhancers spring from the same source as the problem they're designed to correct: our lust for achievement in defiance of natural constraints. It's easy to imagine an endless attentional arms race in which new technologies colonize ever-bigger zones of our attention, new drugs expand the limits of that attention, and so on.

One of the most exciting—and confounding—solutions to the problem of attention lies right at the intersection of our willpower and our willpower-sapping technologies: the grassroots Internet movement known as "lifehacking." It began in 2003 when the British tech writer Danny O'Brien, frustrated by his own lack of focus, polled 70 of his most productive friends to see how they managed to get so much done; he found that they'd invented all kinds of clever little tricks—some high-tech, some

very low-tech—to help shepherd their attention from moment to moment: ingenious script codes for to-do lists, software hacks for managing e-mail, rituals to avoid sinister time-wasting traps such as "yak shaving," the tendency to lose yourself in endless trivial tasks tangentially related to the one you really need to do. (O'Brien wrote a program that prompts him every ten minutes, when he's online, to ask if he's procrastinating.) Since then, lifehacking has snowballed into a massive self-help program, written and revised constantly by the online global hive mind, that seeks to help you allocate your attention efficiently. Tips range from time-management habits (the 90-second shower) to note-taking techniques (mind mapping) to software shortcuts (how to turn your Gmail into a to-do list) to delightfully retro tech solutions (turning an index card into a portable dry-erase board by covering it with packing tape).

When I call Merlin Mann, one of lifehacking's early adopters and breakout stars, he is running late, rushing back to his office, and yet he seems somehow to have attention to spare. He is by far the fastest-talking human I've ever interviewed, and it crosses my mind that this too might be a question of productivity—that maybe he's adopted a time-saving verbal lifehack from auctioneers. He talks in the snappy aphorisms of a professional speaker ("Priorities are like arms: If you have more than two of them, they're probably make-believe") and is always breaking ideas down into their atomic parts and reassessing the way they fit together: "What does it come down to?" "Here's the thing." "So why am I telling you this, and what does it have to do with lifehacks?"

Mann says he got into lifehacking at a moment of crisis, when he was "feeling really overwhelmed by the number of inputs in my life and managing it very badly." He founded one of the original lifehacking websites, 43folders.com (the name is a reference to David Allen's Getting Things Done, the legendarily complex productivity program in which Allen describes, among other things, how to build a kind of "three-dimensional calendar" out of 43 folders) and went on to invent such illustrious hacks as "in-box zero" (an e-mail-management technique) and the "hipster PDA" (a stack of three-by-five cards filled with jotted phone numbers and to-do lists, clipped together and tucked into your back pocket). Mann now makes a living speaking to companies as a kind of productivity guru. He Twitters, podcasts, and runs more than half a dozen websites.

Despite his robust web presence, Mann is skeptical about technology's impact on our lives. "Is it clear to you that the last fifteen years represent an enormous improvement in how everything operates?" he asks. "Picasso was somehow able to finish the Demoiselles of Avignon even though he didn't have an application that let him tag his to-dos. If John Lennon had a BlackBerry, do you think he would have done everything he did with the Beatles in less than ten years?"

One of the weaknesses of lifehacking as a weapon in the war against distraction, Mann admits, is that it tends to become extremely distracting. You can spend solid days reading reviews of filing techniques and organizational software. "On the web, there's a certain kind of encouragement to never ask yourself how much information you really need," he says. "But when I get to the point where I'm seeking advice twelve hours a day on how to take a nap, or what kind of notebook to buy, I'm so far off the idea of lifehacks that it's indistinguishable from where we started. There are a lot of people out there that find this a very sticky idea, and there's very little advice right now to tell them that the only thing to do is action, and everything else is horseshit. My wife reminds me sometimes: 'You have all the information you need to do something right now.'"

For Mann, many of our attention problems are symptoms of larger existential issues: motivation, happiness, neurochemistry. "I'm not a physician or a psychiatrist, but I'll tell you, I think a lot of it is some form of untreated ADHD or depression," he says. "Your mind is not getting the dopamine or the hugs that it needs to keep you focused on what you're doing. And any time your work gets a little bit too hard or a little bit too boring, you allow it to catch on to something that's more interesting to you." (Mann himself started getting treated for ADD a year ago; he says it's helped his focus quite a lot.)

Mann's advice can shade, occasionally, into Buddhist territory. "There's no shell script, there's no fancy pen, there's no notebook or nap or Firefox extension or hack that's gonna help you figure out why the fuck you're here," he tells me. "That's on you. This makes me sound like one of those people who swindled the Beatles, but if you are having attention problems, the best way to deal with it is by admitting it and then saying, 'From now on, I'm gonna be in the moment and more cognizant.' I said not long ago, I think on Twitter—God, I quote myself a lot, what an asshole—that really all self-help is Buddhism with a service mark.

"Where you allow your attention to go ultimately says more about you as a human being than anything that you put in your mission statement," he continues. "It's an indisputable receipt for your existence. And if you allow that to be squandered by other people who are as bored as you are, it's gonna say a lot about who you are as a person."

III. Embracing the Poverty of Attention

Sometimes I wonder if the time I'm wasting is actually being wasted. Isn't blowing a couple of hours on the Internet, in the end, just another way of following your attention? My life would be immeasurably poorer if I hadn't stumbled a few weeks ago across the Boston Molasses Disaster. (Okay, seriously, forget it: I hereby release you to go look up the Boston Molasses Disaster. A giant wave of molasses destroyed an entire Boston neighborhood 90 years ago, swallowing horses and throwing an elevated train off its track. It took months to scrub all the molasses out of the cobblestones! The harbor was brown until summer! The world is a stranger place than we will ever know.)

The prophets of total attentional meltdown sometimes invoke, as an example of the great culture we're going to lose as we succumb to e-thinking, the canonical French juggernaut Marcel Proust. And indeed, at seven volumes, several thousand pages, and 1.5 million words, *À la Recherche du Temps Perdu* is in many ways the anti-Twitter. (It would take, by the way, exactly 68,636 tweets to reproduce.) It's important to remember, however, that the most famous moment in all of Proust, the moment that launches the entire monumental project, is a moment of pure distraction: when the narrator, Marcel, eats a spoonful of tea-soaked madeleine and finds himself instantly transported back to the world of his childhood. Proust makes it clear that conscious focus could never have yielded such profound magic: Marcel has to abandon the constraints of what he calls "voluntary memory"—the kind of narrow, purpose-driven attention that Adderall, say, might have allowed him to harness—in order to get to the deeper truths available only by distraction. That famous cookie is a kind of hyperlink: a little blip that launches an associative cascade of a million other subjects. This sort of free-associative wandering

is essential to the creative process; one moment of judicious unmindfulness can inspire thousands of hours of mindfulness.

My favorite focusing exercise comes from William James: Draw a dot on a piece of paper, then pay attention to it for as long as you can. (Sitting in my office one afternoon, with my monkey mind swinging busily across the lush rain forest of online distractions, I tried this with the closest dot in the vicinity: the bright-red mouse-nipple at the center of my laptop's keyboard. I managed to stare at it for 30 minutes, with mixed results.) James argued that the human mind can't actually focus on the dot, or any unchanging object, for more than a few seconds at a time: It's too hungry for variety, surprise, the adventure of the unknown. It has to refresh its attention by continually finding new aspects of the dot to focus on: subtleties of its shape, its relationship to the edges of the paper, metaphorical associations (a fly, an eye, a hole). The exercise becomes a question less of pure unwavering focus than of your ability to organize distractions around a central point. The dot, in other words, becomes only the hub of your total dot-related distraction.

This is what the web-threatened punditry often fails to recognize: Focus is a paradox—it has distraction built into it. The two are symbiotic; they're the systole and diastole of consciousness. Attention comes from the Latin "to stretch out" or "reach toward," distraction from "to pull apart." We need both. In their extreme forms, focus and attention may even circle back around and bleed into one other. Meyer says there's a subset of Buddhists who believe that the most advanced monks become essentially "world-class multitaskers"—that all those years of meditation might actually speed up their mental processes enough to handle the kind of information overload the rest of us find crippling.

The truly wise mind will harness, rather than abandon, the power of distraction. Unwavering focus—the inability to be distracted—can actually be just as problematic as ADHD. Trouble with "attentional shift" is a feature common to a handful of mental illnesses, including schizophrenia and OCD. It's been hypothesized that ADHD might even be an advantage in certain change-rich environments. Researchers have discovered, for instance, that a brain receptor associated with ADHD is unusually common among certain nomads in Kenya, and that members who have the receptor are the best nourished in the group. It's possible that we're all evolving toward a new techno-cognitive nomadism, a rapidly shifting environment in which restlessness will be an advantage again. The deep focusers might even be hampered by having too much attention: Attention Surfeit Hypoactivity Disorder.

I keep returning to the parable of Einstein and Lennon—the great historical geniuses hypothetically ruined by modern distraction. What made both men's achievements so groundbreaking, though, was that they did something modern technology is getting increasingly better at allowing us to do: They very powerfully linked and synthesized things that had previously been unlinked—Newtonian gravity and particle physics, rock and blues and folk and doo-wop and bubblegum pop and psychedelia. If Einstein and Lennon were growing up today, their natural genius might be so pumped up on the possibilities of the new technology they'd be doing even more dazzling things. Surely Lennon would find a way to manipulate his BlackBerry to his own ends, just like he did with all the new technology of the sixties—he'd harvest spam and text messages and web snippets and build them into a new kind of absurd poetry. The Beatles would make the best viral videos of all time, simultaneously addictive and artful, disposable and forever. All of those canonical songs, let's remember, were created entirely within

a newfangled mass genre that was widely considered to be an assault on civilization and the sanctity of deep human thought. Standards change. They change because of great creations in formerly suspect media.

Which brings me, finally, to the next generation of attendees, the so-called "net-gen" or "digital natives," kids who've grown up with the Internet and other time-slicing technologies. There's been lots of hand-wringing about all the skills they might lack, mainly the ability to concentrate on a complex task from beginning to end, but surely they can already do things their elders can't—like conduct 34 conversations simultaneously across six different media, or pay attention to switching between attentional targets in a way that's been considered impossible. More than any other organ, the brain is designed to change based on experience, a feature called neuroplasticity. London taxi drivers, for instance, have enlarged hippocampi (the brain region for memory and spatial processing)—a neural reward for paying attention to the tangle of the city's streets. As we become more skilled at the 21st-century task Meyer calls "flitting," the wiring of the brain will inevitably change to deal more efficiently with more information. The neuroscientist Gary Small speculates that the human brain might be changing faster today than it has since the prehistoric discovery of tools. Research suggests we're already picking up new skills: better peripheral vision, the ability to sift information rapidly. We recently elected the first-ever BlackBerry president, able to flit between sixteen national crises while focusing at a world-class level. Kids growing up now might have an associative genius we don't—a sense of the way ten projects all dovetail into something totally new. They might be able to engage in seeming contradictions: mindful web-surfing, mindful Twittering. Maybe, in flights of irresponsible responsibility, they'll even manage to attain the paradoxical, Zenlike state of focused distraction.



Discussion Questions and Recommended Reading

Discussion Questions

1. Nicholas Carr believes that his attention span has diminished since he has been using the Internet. He cites his inability to read or concentrate at length as evidence of this problem. What do you think about this assertion? How does this compare to your own experience? What and how do you read?
2. Nicholas Carr's argument in "Is Google Making Us Stupid?" is motivated, in many ways, by his vision of the history of Western intellectual tradition and culture. Describe Carr's view of the learned mind as a "cathedral." Whose tradition is this? Why does the Internet threaten this tradition?
3. What does it mean when Frederick Nietzsche says, "Our writing equipment takes part in the forming of our thoughts"? Do you agree? What are some examples of this phenomenon in the Internet age?
4. In response to Carr, Jamais Cascio says, "The technology-induced ADD that's associated with this new world may be a short-term problem." Why does he think so? Why isn't he worried?
5. What is Cascio's vision of the future, as opposed to Carr's? Describe and discuss his predictions, as well as the problems that may potentially arise.
6. Define and discuss the term "intelligence augmentation." What is it? What form does Cascio believe it's likely to take? Why is the concept of intelligence so significant in Cascio's argument?
7. Sam Anderson says that "focus is a paradox." What does he mean? Why doesn't he believe that complete focus is necessarily a positive thing?
8. Anderson calls the Internet "a Skinner box engineered to tap right into our deepest mechanisms of addiction." What does he mean? Research the controversy around Internet Addiction Disorder, or IAD. What do you think?

Recommended Reading

Carr, Nicholas. *The Shallows: What the Internet Is Doing to Our Brains*. New York: W. W. Norton & Company, 2010.

Shirky, Clay. *Cognitive Surplus: Creativity and Generosity in a Connected Age*. New York: Penguin Press, 2010.

Watkins, S. Craig. *The Young and the Digital: What the Migration to Social-Network Sites, Games, and Anytime, Anywhere Media Means for Our Future*. Boston: Beacon Press, 2009.

Section 2

The Internet: History and Development



Connections

Networking Computers Together

Eric G. Swedin and David L. Ferro

The Cold War

In 1957, the rocket engineers of the Soviet Union embarrassed the United States by launching Sputnik 1, the first artificial satellite. This event provoked a strong political and cultural reaction in the United States—funding for education, especially science and engineering, increased, and federal funds for research and development in science and technology also rose. A space race rapidly emerged. As a struggle of competing ideologies, the Cold War conflict between the superpowers depended as much on prestige as military power, and the United States wanted to regain its prestige as the preeminent scientific and technological power on the planet.

The Advanced Research Projects Agency (ARPA) was formed in 1958 in response to Sputnik and the emerging space race. Because ARPA was an agency of the Pentagon, its researchers were given a generous mandate to develop innovative technologies. Though ARPA scientists and engineers did conduct their own research, much of the effort came through funding research at universities and private corporations.

In 1962, a psychologist from the Massachusetts Institute of Technology's Lincoln Laboratory, J.C.R. Licklider (1915–1990), joined ARPA to take charge of the Information Processing Techniques Office (IPTO). Licklider's intense interest in cybernetics and "man-computer symbiosis" was driven by his belief that computers could significantly enhance the ability of humans to think and solve problems. Licklider created a social network of like-minded scientists and engineers and wrote a famous 1963 memorandum to these friends and colleagues, called "Memorandum for Members and Affiliates of the Intergalactic Computer Network," in which he described some of his ideas for time sharing and computer networking. His IPTO office funded research efforts in time sharing, graphics, artificial intelligence, and communications, laying the conceptual and technical groundwork for computer networking.

Eric G. Swedin and David L. Ferro, "Connections: Networking Computers Together," *Computers: The Life Story of a Technology*, pp. 111–130. Copyright © 2007 by ABC-CLIO Inc. Reprinted with permission.

Telephones

Networking already existed in the form of telegraphs and telephones. Samuel F. B. Morse (1791–1872) invented the telegraph in 1844, allowing communications over a copper wire via electrical impulses that operators sent as dots and dashes. Alexander Graham Bell (1847–1922) invented the telephone in 1877, using an analog electrical signal to send voice transmissions over wires. Teletype systems were first patented in 1904 and allowed an automatic typewriter to receive telegraph signals and print out the message without a human operator.

In the 1950s, the U.S. military wanted their new SAGE computers to communicate with remote terminals, so engineers developed a teletype to send an analog electrical signal to a distant computer. In 1958, researchers at Bell Telephone Laboratories took the next step and invented the modem, which stood for modulator-demodulator. Modems converted digital data from a computer to an analog signal to be transmitted across phone lines, then converted that signal back into digital bits for the receiving computer to understand. In 1962, the Bell 103, the first commercial modem, was introduced to the market by American Telephone and Telegraph (AT&T), the parent company of Bell Labs, running at 300 baud, which transmitted 300 bits per second. Modem speed steadily increased, eventually reaching 56K in the mid-1990s.

Each computer manufacturer tended to define their own character set for both letters and numbers, even changing them from model to model, forcing programmers to convert data when transferring their files from one computer to another. The American National Standards Institute (ANSI) defined the American Standard Code for Information Interchange (ASCII) in 1963. This meant that the binary sequence for the letter "A" would be the same on all computers. While the rest of the industry turned to ASCII, especially when networking and personal computers became more common in the 1970s, IBM maintained its own standard, Extended Binary-Coded Decimal Interchange Code (EBCDIC), for decades.

Packet Switching

In the early 1960s, the Polish-born electrical engineer Paul Baran (1926–), who worked for the RAND corporation, a think tank funded by the American military, faced a problem. Simulations of an attack with nuclear weapons by the Soviet Union showed that even minor damage to the longdistance phone system maintained by the telephone monopoly AT&T would cripple national communications. The telephone system that had developed during the twentieth century was based on analog transmissions over lines connected to switches. When a person made a long-distance telephone call, an actual electrical circuit was created via numerous switches in a scheme called "circuit switching."

Baran had considerable experience with computers, including working on the original UNIVAC, and appreciated the value of digital electronics over analog electronics. Baran devised a scheme of breaking signals into blocks of data to be reassembled after reaching their destination. These blocks of data traveled through a "distributed network" where each "node," or communication point, could

independently decide which path the block of information took to the next node. This allowed data to automatically flow around potential blockages in the network, and to be reassembled into a complete message at the destination. Baran called his scheme "hot potato" routing, because each network node would toss the message to another node rather than hold onto it.

The Pentagon and AT&T were not interested in Baran's scheme of distributed communications because it required completely revamping the technology of the national telephone system. A British team under the direction of Donald Davies (1924–), at the British National Physical Laboratory (NPL), also independently developed a similar scheme to Baran's, which they called "packet switching." Davies and his team went further than Baran and actually implemented their ideas, and by 1970 had a local area network running at the NPL that used packet switching.

ARPAnet

In 1966, Robert Taylor (1932–), then head of the IPTO, noted that in his terminal room at the Pentagon he needed three different computer terminals to connect to three different machines in different locations around the nation. Taylor also recognized that universities working with the IPTO needed more computing resources. Instead of the government buying machines for each university, why not share machines? Taylor revitalized Licklider's ideas, secured $1 million in funding, and hired Larry Roberts (1937–), a twenty-nine-year-old computer scientist, to direct the creation of ARPAnet.

In 1965, Roberts, while working at MIT's Lincoln Laboratory, had supervised an ARPA-funded pilot project to have two computers communicate over a long distance. Two computers, one in Boston and the other in Santa Monica, California, sent messages to each other over a set of leased Western Union telephone lines. The connection ran slowly and unreliably, but offered a direction for the future. ARPAnet was the next logical step. Roberts drew on the work of Baran and Davies to create a packet-switched networking scheme. While Baran was interested in a communications system that could continue to function during a nuclear war, ARPAnet was purely a research tool, not a command and control system as is often reported in contemporary media accounts.

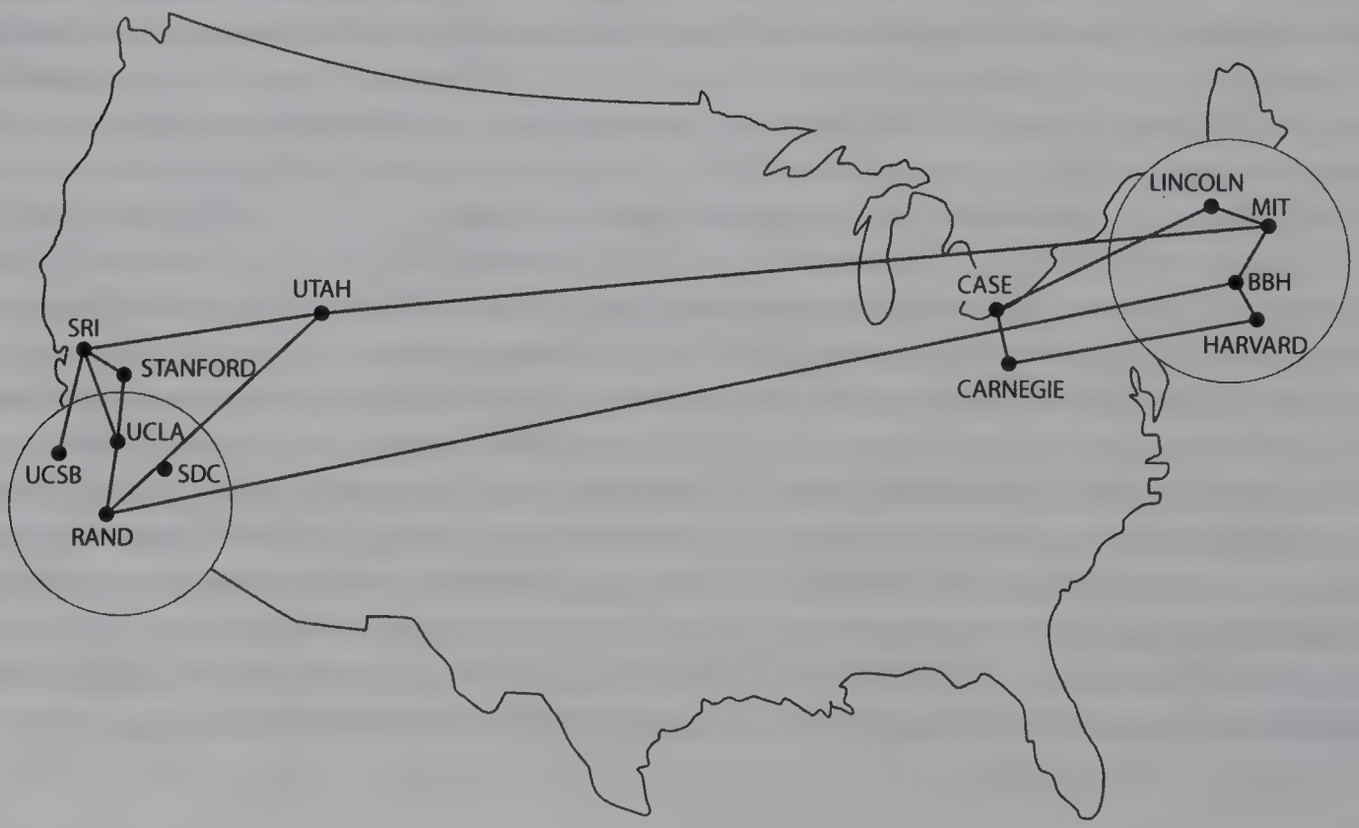
Universities were reluctant to share their precious computing resources and concerned about the processing load of a network on their systems. Wesley Clark (1927–), computer lab director at Washington University of St. Louis, proposed an Interface Message Processor (IMP), a separate smaller computer for each main computer on the network that would handle the network communication.

A small consulting firm in Cambridge, Massachusetts, Bolt Beranek and Newman (BBN), got the contract to construct the needed IMPs in December 1968. They decided that the IMP would only handle the routing, not the transmitted data content. As an analogy, the IMP looked only at the addresses on the envelope, not at the letter inside. Faculty and graduate students at the host universities created host-to-host protocols and software to enable the computers to understand each other. Because the machines did not know how to talk to each other as peers, the researchers wrote programs that fooled the computers into thinking they were talking to preexisting dumb terminals.

ARPAnet began with the installation of the first 900-pound IMP, which cost about $100,000 to build, in the fall of 1969 at the University of California, Los Angeles (UCLA), followed by three more nodes at the Stanford Research Institute (SRI); the University of California, Santa Barbara; and the University of Utah. Fifty kilobit per second (kbps) communication lines connected each node to each other. The first message transmitted between UCLA and SRI was "L," "O," "G," the first three letters of "LOGIN," then the system crashed. Initial bugs were overcome, and ARPAnet added an extra node every month in 1970. BBN continued to run ARPAnet for the government, keeping the network running through round-the-clock monitoring at their network operations center.

With a network in place, ARPAnet scientists and engineers turned to using the network to get useful work done. Transferring files and remote login were obvious and useful applications. In 1971, file-transfer protocol (FTP) was developed. The protocol originally required a user to authenticate themselves with a username and password, but a system of using anonymous FTP later allowed any user to download those files that had been made available for everyone. Remote login was achieved through a variety of programs, though telnet, developed in 1971, eventually became the standard.

Also in 1971, Ray Tomlinson (1941–), an engineer at BBN supporting ARPAnet, found himself working on a program called CPYNET (for "copynet"), designed to transfer files between computers. He realized that CPYNET could be combined with SNDMSG (for "send message"), a program designed to send messages to a user on the same computer, and send messages from one computer to another. Tomlinson did so, and e-mail (electronic mail) was born. Tomlinson also developed the address format user@computer that used the @ symbol and later became ubiquitous. Electronic mail became what later pundits would call the "killer application" of ARPAnet, its most useful feature and its most commonly used application.



From the beginning of networking, programs had been designed to run across the network. As time went by, many of these programs used the same design structure, which became known as client-server systems. A server program provided some service, such as a file, or e-mail, or connection to a printer, while a client program communicated with the server program so that the user could use the service.

Roberts succeeded Taylor as head of the ITPO, and in 1972 Roberts arranged for a large live demonstration of ARPAnet at the International Conference on Computer Communications in Washington, D.C. None of the work on ARPAnet was classified, and the technical advances from the project were freely shared. The vision of what was possible with networking rapidly caught the imagination of scientists and engineers in the rest of the computer field. IBM announced their Systems Network Architecture (SNA) in 1974, which grew more complex and capable with each passing year. Digital Equipment Corporation released their DECnet in 1975, implementing their Digital Network Architecture (DNA). Other large computer manufacturers also created their own proprietary networking schemes.

The Beginning of Wireless Networking

The Advanced Research Projects Agency also funded the effort by Norman Abramson (1932–) of the University of Hawaii to build AlohaNet in 1970. In addition to being one of the earliest packet-switching networks, AlohaNet broke new ground as the first wireless network. AlohaNet transmitted radio signals between terminals, the computer taking over a role similar to ham-radio enthusiasts sharing the same frequency. One of the first technical hurdles to such a scheme was, how did the network program on a terminal know when it could send a radio signal? If two terminals sent a signal at the same time, the signals would interfere with each other, becoming garbled, and neither would be received by other terminals. The conventional answer was time-division multiple access (TDMA), where terminals coordinated their activity and only transmitted during their allocated time. For instance, perhaps each terminal would each get a fraction of a second and no two terminals could use the same fraction. The problem with this scheme was how to actually divide up the time slices and account for some terminals being used while others were offline TDMA tended to become more difficult to maintain as more terminals were added to the conversation.

AlohaNet had so many terminals that TDMA was impractical and a new scheme was developed, carrier sense multiple access with collision detection (CDMA/CD). Under this scheme, any terminal could transmit whenever it wanted, but then listened to see if its transmission was garbled by another transmission. If the message went through, then everything was fine and the bandwidth was now free for any other terminal to use; if the signal became garbled, then the sending terminal recognized that it had failed and waited tor a random amount of time before trying to send the same message again. This scheme, seemingly chaotic, worked well in practice as long as there were not too many terminals and as long as traffic was low enough so that there were not too many collisions. The scheme also allowed terminals to readily be added to and removed from the network without needing in any way to inform the other terminals about their existence.

Robert Metcalfe (1946–), a researcher at the innovative Xerox Palo Alto Research Center, visited Hawaii in 1972 and studied AlohaNet for his doctoral dissertation. Returning to Xerox, Metcalfe then developed Ethernet, using the CDMA/CD scheme running over local wire networks. Metcalfe left Xerox to cofound 3Com in 1979, a company that successfully made Ethernet the dominant networking standard on the hardware level in the 1980s and 1990s.

TCP/IP and RFCs

ARPAnet originally used a set of technical communications rules called the network control protocol (NCP). NCP assumed that every main computer on the ARPAnet had identical IMP computers in front of them to take care of the networking. All the IMP machines were built by the same people, using the same designs, minimizing the risk of incompatibilities. This worked well, but NCP was not the only networking protocol available. Other companies developing their own networking schemes also developed their own set of proprietary protocols. Engineers at both BBN and the Xerox Palo Alto Research Center wanted to create a new set of network protocols that would easily enable different networks, each running their own set of unique protocols (such as NCP or SNA), to communicate with each other. This idea, called internetworking, would allow the creation of a network of networks.

Vint Cerf (1943–) is often called the "father of the Internet." As a graduate student, he worked on the first IMP at UCLA and served as a member for the first Network Working Group that designed the software for the ARPAnet. Bob Kahn (1938–) and Cerf first proposed Transport Control Protocol (TCP) in 1974 to solve the problem of internetworking, and Cerf drove the further development of protocols in the 1970s. The internetworking protocol eventually split into two parts: TCP and Internet Protocol (IP). TCP/IP was an open protocol, publicly available to everyone, with no restrictive patents or royalty fees attached to it, and ARPAnet switched to using TCP/IP in the late 1970s.

The philosophy behind Metcalfe's Ethernet heavily influenced TCP/IP. The NCP scheme had little error correction, because it expected the IMP machines to communicate reliably. TCP/IP could not make this assumption, and included the ability to verify that each packet had been transmitted correctly. In order for TCP/IP to work correctly, each machine must have a unique IP address, which comes in the form of four groups of numbers, for instance, 168.192.54.213. TCP/IP also made it simple to add and remove computers to the network, just as Ethernet could. In July 1977, an experiment with a TCP system successfully transmitted packets via the three types of physical networks that made up ARPAnet: radio, satellite, and ground connections. The packets began in a moving van in San Francisco, were transmitted via radio, crossed the Atlantic Ocean to Norway via satellite, bounced to London, then returned to the University of Southern California, a total of 94,000 miles in transit. This proof of concept became the norm as the ARPAnet matured.

The original team working on ARPAnet was called the Network Working Group, which evolved into the Internet Engineering Task Force (IETF) and the Internet Engineering Steering Group (IESG). These groups used the unique process of "requests for comments" (RFC) to facilitate and document their decisions. The first RFC was published in 1969. By 1989, with some 30,000 hosts connected

to the Internet, 1,000 RFCs had been issued. Ten years later, millions of hosts used the Internet and over 3,000 RFCs had been reached. The RFC process created a foundation for sustaining the open architecture of the ARPAnet/Internet, where multiple layers of protocols provided different services. Jon Postel (1943–1998), a computer scientist with long hair and a long beard, edited the RFCs for almost thirty years before his death in 1998, a labor of love that provided a consistency to the evolution of the Internet. The actual work of the IETF is still performed in working groups, and anyone can join a working group and contribute their observations and work to the group, which will result in a new RFC.

Internet

In the 1960s, after introducing the modem, AT&T began to develop the technology for direct digital transmission of data, avoiding the need for modems and the inefficiency that came from converting to and from analog.

A lawsuit led to the Carterphone Decision in 1968, which allowed non-AT&T data communications equipment to be attached to AT&T phone lines, prompting other companies to develop non-AT&T modem and data communications equipment. In the 1970s, leased lines providing the digital transmission of data became available, including X.25 lines based on packet-switching technology. The availability of these digital lines laid the foundation for the further spread of wide area networks (WANs).

ARPAnet was not the only large network, only the first that paved the way. International Business Machines (IBM) funded the founding of Bitnet in 1984 as a way for large universities with IBM mainframes to network together. Within five years, almost 500 organizations had 3,000 nodes connected to Bitnet, yet only a few years later the network had disappeared into the growing Internet. The Listserv program first appeared on Bitnet to manage e-mail lists, allowing people to set up, in effect, private discussion groups. These e-mail lists could be either moderated or unmoderated. Unmoderated lists allowed anyone who wanted to join and send messages; moderated lists set up a person or persons as moderators, who controlled who could join the list and checked every e-mail that went through the list before passing them on to the general membership of the list. Moderated lists became more popular because they prevented a flood of superfluous e-mails from dominating the list and driving away members.

In 1981 the National Science Foundation (NSF) created the Computer Science Network (CSNET) to provide universities that did not have access to ARPAnet with their own network. In 1986, the NSF sponsored the NSFNET "backbone" to connect five supercomputing centers together. The backbone also connected ARPAnet and CSNET. The idea of the Internet, a network of networks, became firmly entrenched. The open technical architecture of the Internet allowed numerous innovations to easily be grafted onto the whole, and proprietary networking protocols were abandoned in the 1990s as everyone moved to using TCP/IP.

As mentioned before, TCP/IP only recognizes different computers' hosts by their unique IP number, such as 192.168.34.2. People are not very good at remembering arbitrary numbers, so a system of giving computers names quickly evolved. Each computer using TCP/IP had a file on it called "hosts" that contained entries matching the known names of other computers to their IP addresses. These files were each maintained individually, and the increasing number of computers connected to the ARPAnet/Internet created confusion. In 1983, a domain name system (DNS) was created, where DNS servers kept master lists matching computer names to IP addresses. A hierarchical naming system was also created, with computer names being attached to domain names and ending with the type of domain. Six extensions were created:

- .com: commercial
- .edu: educational
- .net: network
- .gov: government
- .mil: military
- .org: organization

When ARPAnet was dismantled in 1990, the Internet was thriving at universities and technology-oriented companies. In 1991, the federal government lifted the restriction on the use of the Internet for commercial use. The NSF backbone was later dismantled in 1995 when the NSF realized that commercial entities could .keep the Internet running and growing on their own. The NSF backbone had cost only $30 million in federal money during its 9-year life, with donations and help from IBM and MCI (a telecommunications company). What began with four nodes in 1969 as a creation of the Cold War became a worldwide network of networks, forming a single whole. In early 2001, an estimated 120 million computers were connected to the Internet in every country of the world. As a global computer network interconnecting other computer networks, the Internet provided a means of communication unprecedented in human history.

Bulletin Board Systems and Dial-Up Providers

In January 1978, when a severe snowstorm shut down the city of Chicago, two friends, Ward Christensen and Randy Suess, decided to develop a system to exchange messages. Christensen wrote the software and Suess put together the hardware, based on a homemade computer, using a S-100 bus and hand-soldered connections, running the CP/M operating system. They finished their effort in a month and called their system the Computer Bulletin Board Systems (CBBS), which allowed people to call in, post messages, and read messages. Modems at the time were rare, but the subsequent development of cheaper modems allowed computer hobbyists to set up their own Bulletin Board Systems (BBSs) and dial into other BBSs. Later enhancements allowed users to upload and download files, enter chat areas, or play games. Hundreds of thousands of BBSs eventually came and went, serving as a popular

communications mechanism in the 1980s and early 1990s. A separate network connecting BBSs even emerged in the mid-1980s, called FidoNet, exchanging e-mail and discussion messages. At its height in 1995, FidoNet connected some 50,000 BBS nodes to each other. The coming of the public Internet in the 1990s doomed the BBS as a technology, though the social and special interest communities that had grown up around various BBSs transferred their communities to the Internet.

In 1969, CompuServe began as a time-sharing service in Columbus, Ohio. A decade later, in 1979, the company expanded to offer e-mail and simple services to home users of personal computers. In 1980, CompuServe offered the first real-time chat service with a program called CB Simulator that allowed users to simultaneously type in messages and have the results appear on each other's screens. From this humble beginning, what later became instant messaging was born. In the 1980s, CompuServe built its own countrywide network, which customers could use by dialing in with a modem to connect to large banks of modems that CompuServe maintained. CompuServe also offered the use of its network to corporations as a wide area network and expanded into Japan and Europe. CompuServe continually expanded the offerings that its customers paid to access, such as discussion groups, content from established national newspapers and magazines, stock quotes, and even a stock-trading service.

Sears and IBM created Prodigy, their own online service provider, in the 1980s, and it soon had over a million subscribers. In 1985, Steve Case (1958–), a computer enthusiast with a taste for business and filled with entrepreneurial zeal, founded Quantum Computer Services, a BBS for users of Commodore 64 personal computers. When Case wanted to expand and compete with the other online services, like CompuServe and Prodigy, he renamed his company America Online (AOL) in 1989.

In 1991, after the federal government lifted the restriction on the use of the Internet for commercial use, numerous Internet service providers (ISPs) sprang up immediately, offering access to the Internet for a monthly fee. In 1992, the Internet included a million hosts. CompuServe, AOL, and Prodigy began to provide access to the Internet to their customers, thus transforming these companies into instant ISPs. CompuServe became the largest ISP in Europe. Fueled by an aggressive marketing campaign, which included flooding the nation's mail with sign-up disks, AOL grew quickly. America Online (AOL) reached 1 million subscribers in August 1994, passed 2 million in February 1995, and peaked at 25 million subscribers in 2000. Over 1 million of those subscribers were in Germany, and AOL had over 5 million subscribers outside the United States in 2001. AOL grew so large that in 1997 they purchased CompuServe. Prodigy failed to successfully make the transition to being an ISP and faded away

Local Area Networks

The APRAnet and its successor, the Internet, were examples of WANs, where computers communicated across the street, across the nation, and even around the world. In the 1970s, research at the Xerox PARC, which had led to many innovations, also led to the creation of local area networks (LANs). A LAN is usually defined as a network for a room or a building. Ethernet provided one of the early standards for LAN computing, though other network card technologies, such as ARCNET, also appeared.

In the early 1980s, with easy new availability of large numbers of personal computers, various companies developed network operating systems (NOS), mainly to provide an easy way for users to share files and share printers. Later, LAN-based applications based on the NOS became available. The most successful of these network operating systems came from Novell. The company, founded in 1979 as Novell Data Systems, originally made computer hardware, but after the company was sold in 1983, the new president of the company, Raymond J. Noorda (1924–), turned them toward concentrating on software. That same year, the first version of NetWare came out. Novell ruled the LAN NOS market, achieving almost a 70 percent share and adding ever more sophisticated features to each version of NetWare. Novell created their own networking protocols, called IPX (Internet Packet eXchange) and SPX (Sequenced Packet eXchange), drawing on open networking standards that Xerox had published. Eventually, in the 1990s, as the Internet became ever more pervasive, Novell also turned to supporting TCP/IP as a basic protocol in NetWare. The dominance of NetWare rapidly declined in the late 1990s when Microsoft provided networking as a basic part of their Windows operating systems.

Usenet

In 1979, graduate students at Duke University and the University of North Carolina wrote some simple programs to exchange messages between UNIX-based computers. This collection of programs, called news, allowed users to post messages to a newsgroup and read messages that other users had posted to that same newsgroup. The news program collected all the postings and then regularly exchanged them with other news programs via homemade 300-baud modems. The students brought their project to a 1980 Usenix conference. At that time, ARPAnet was only available to universities and research organizations who had defense-related contracts, so most universities were excluded from the network. Because so many universities had UNIX machines, Usenix conferences allowed users to meet and exchange programs and enhancements to the UNIX operating system itself. The students proposed that a "poor man's ARPAnet" be created, called Usenet, based on distributing the news program and using modems to dial up other UNIX sites. To join Usenet, one had to just find the owner of a Usenet site who would allow you to download a daily news feed.

Usenet grew quickly, reaching 150 sites in 1981, 1,300 sites by 1985, and 11,000 sites in 1988. A protocol was eventually developed in the early 1980s, the network news transmission protocol (NNTP), so that news reader clients could connect to news servers. ARPAnet sites even joined Usenet because they liked the Usenet newsgroups. An entire culture and community grew up around Usenet, where people posted technical questions on many aspects of programming or computing and received answers within a day from other generous users. Usenet news discussion groups originally concentrated on technical issues, then expanded into other areas of interest. Anyone who wanted to could create a new newsgroup, though if it did not attract any postings, the newsgroup eventually expired. Programmers developed a way to encode binary pictures into ASCII, which could then be decoded at the other end, and picture newsgroups, including an enormous number of pornographic pictures, became a major part of the daily Usenet news feed.

As part of the culture of Usenet, a social standard of net etiquette evolved, eventually partially codified in 1995 in RFC1855, "Netiquette Guidelines." One such rule is that words in all-capital letters are the equivalent of shouting. A set of acronyms evolved also, such as IMO for "in my opinion" or LOL for "lots of laughs," as well as some symbols, such as :-) for a smile and :-(for a frown. Excessive and personal criticism of another person in a newsgroup came to be called "flaming," and "flame wars" sometimes erupted, the equivalent of an online shouting match, with reasoned discourse abandoned in favor of name-calling.

The number of Usenet messages exploded in the 1990s, especially after AOL created a method for its millions of subscribers to access Usenet, but the usefulness of Usenet declined in proportion to the number of people using it. The flooding of news groups with advertising messages also drove away many people, who found refuge in e-mail list servers, interactive web sites, and private chat rooms. A major component of the success of Usenet came from the fact that most people did not have access to the Internet; when that access became more common, Usenet no longer offered any serious advantages. The etiquette standards created for Usenet have continued, being applied to BBS chat rooms, web-based chat rooms, and informal e-mail.

Gopher

As the Internet grew ever larger in the 1980s, various schemes were advanced to make finding information content on the Internet easier. The problem of finding content even existed on individual university campuses, and in the 1980s, various efforts were made to solve the problem on a smaller scale through campuswide information systems (CWIS). Cornell University created their CUinfo, Iowa State created their Cynet, and Princeton created their PNN, all early efforts to organize information.

Programmers at the University of Minnesota released the Gopher system in April 1991 to solve this problem. Gopher consisted of Gopher servers holding documents and Gopher clients to access the documents. The system interface was entirely based on simple ASCII text and used a hierarchy of menus to access documents. The creators of Gopher thought of their creation as a way to create a massive online library. Anyone who wanted to could download the server software, organize their content into menus and submenus, and set up their own Gopher server. Pictures and other multimedia files could be found and downloaded through Gopher, but not displayed within the client. Gopher's virtues included a lean interface and a transmission protocol that did not strain the limited network bandwidth that most users suffered from.

Gopher grew rapidly in popularity, as people on the Internet downloaded the free software and set up their own Gopher servers. Gopher software was rapidly ported to different computer models and operating systems. Even the Clinton-Gore administration in the White House, enthusiastic to promote what they called the "information highway," announced their own Gopher server in 1993. Gopher was the first application on the Internet that was easy to use and did not require learning a series of esoteric commands. Users found themselves enjoying "browsing," going up and down menus to find what gems of text a new Gopher server might offer.

The problem of how to find content reemerged. All these different Gopher servers were not connected in any way, though the Mother Gopher server at the University of Minnesota may or may not have links in its menus to other Gopher servers. Late in 1992, a pair of programmers at the University of Nevada at Reno introduced Veronica. The name came from the Archie comic book series, but in order to make the word into an acronym, they came up with Very Easy Rodent-Oriented Netwide Index to Computerized Archives. Veronica searched the Internet for Gopher files, indexed them, and allowed users to search those indexes through a simple command-line interface. An alternate indexing program from the University of Utah was called Jughead, again drawing on the Archie comic books.

The number of known Gopher servers grew from 258 in November 1992 to over 2,000 in July 1993 and almost 7,000 in April 1994. In the spring of 1993, the administration of the University of Minnesota, having financially supported the creation of Gopher, decided to recover some of their costs by introducing licensing. The license kept Gopher software free for individual use, but charged a fee for commercial users based on the size of their company. Considerable confusion surrounded this effort, and it sent a chill over the expansion of the protocol. Meanwhile, another protocol, based on hypertext documents, had been introduced to solve the same problem as Gopher.

World Wide Web

Tim Berners-Lee (1955–) was born in London to parents who were both mathematicians, and both had worked as programmers on one of the earliest computers, the Mark I at Manchester University. He graduated with honors and a bachelor's degree in physics from Oxford University in 1976. In 1980, he went to work at the Conseil Européen pour la Recherche Nucléaire (CERN), a nuclear research facility on the French-Swiss border, as a software developer.

The physics community at CERN used computers extensively, with data and documents scattered across a variety of different computer models, often created by different manufacturers. Communication between the different computer systems was difficult. A lifelong ambition to make computers easier to use encouraged Berners-Lee to create a system to allow easy access to information. He built his system on two existing technologies: computer networking and hypertext. Hypertext was developed in the 1960s by the development team at Stanford Research Institute led by the computer scientist Doug Engelbart (1925–) and others, based on the idea that documents should have hyperlinks in them connecting to other relevant documents, allowing a user to navigate nonsequentially through content. The actual word "hypertext" was coined by Ted Nelson (1937–) in the mid-1960s.

Using a new NeXT personal computer, with its powerful state-of-the-art programming tools, Berners-Lee created a system that delivered hypertext over a computer network using the hypertext transfer protocol (HTTP). He simplified the technology of hypertext to create a display language that he called hypertext markup language (HTML). The final innovation was to create a method of uniquely identifying any particular document in the world. He used the term "universal resource identifier" (URI), which became "universal resource location" (URL). In March 1991,Berners-Lee gave copies of his new WorldWideWeb programs, a web server and text-based web browser, to colleagues

at CERN. By that time, Internet connections at universities around the world were common, and the World Wide Web (WWW) caught on quickly as other people readily converted the necessary programs to different computer systems.

The WWW proved to be more powerful than Gopher in that hypertext systems are more flexible than hierarchical systems and more closely emulate how people think. Initially, Gopher had an advantage in that its documents were simple to create: they were just plain ASCII text files. Creating web page files required users to learn HTML and manually embed formatting commands into their pages. Berners-Lee also included Gopher as one of the protocols that web browsers could access, by using gopher:// instead of http://, thus effectively incorporating Gopher in the emerging WWW.

A team of staff and students at the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign released a graphical web browser called Mosaic in February 1993, making the WWW even easier to use. For a time, character-mode web browsers, like Lynx, were popular, but the increasing availability of bitmapped graphics monitors on personal computers and workstations soon moved most users to the more colorful and user-friendly graphical browsers. The WWW made it easy to transfer text, pictures, and multimedia content from computer to computer. The creation of HTML authoring tools made it easier for users to create web pages without fully understanding HTML syntax or commands. This became more important as HTML underwent rapid evolution, adding new features and turning what had been relatively simple markup code into complex-looking programming code supporting tables, frames, style sheets, and Javascript. Berners-Lee's original vision of the WWW included the ability for consumers to interactively modify the information that they received, though this proved technically difficult and has never been fully implemented.

The World Wide Web became the technology that made the Internet accessible to the masses, becoming so successful that the two terms became interchangeable in the minds of nontechnical users. Even technical users, who knew that the Internet was the infrastructure and the WWW was only a single protocol among many protocols on the Internet, often used the two terms interchangeably. Because of slow network speed, graphics-intensive web pages could take a long time to load in the web browser, leading many to complain that WWW stood for "world wide wait."

A major key to the success of the WWW came from generosity on the part of CERN and Berners-Lee to not claim any financial royalties for the invention, unlike the misguided efforts of the University of Minnesota with their Gopher technology. Berners-Lee moved to the Massachusetts Institute of Technology in 1994, where he became director of the World Wide Web Consortium. This organization, under the guidance of Berners-Lee, continues to coordinate the creation of new technical standards to enable the WWW to grow in ability and power. Several times a year, new programming standards for web pages are proposed and adopted, using the RFC system.

An Internet economy based on the WWW emerged in the mid-1990s, dramatically changing many categories of industries within a matter of only a few years. Members of the original Mosaic team, including Marc Andreessen (1971–), moved to Silicon Valley in California to found Netscape Communications in April 1994 with Jim Clark (1944–). Clark had already made a fortune from founding Silicon Graphics (SGI) in 1982, a high-end maker of UNIX computers and software used

in 3-D graphics-intensive processing. Netscape brought out one the first commercial web browsers, rapidly developing the technology by adding new features, and became the dominant web browser.

Bill Gates (1951–) at Microsoft recognized that the web browser had the potential to add features and grow so big as to actually take over the role of operating system. This threatened the foundation of Microsoft's success, and Gates reacted by turning his company around from being focused on just personal computer software to an Internet-centric vision. Before this time, Microsoft had concentrated on creating their own online service to compete with AOL and CompuServe, called Microsoft Network. Microsoft was so tardy in understanding the Internet that their first Internet site, a file repository for customer support, was not created until early 1993. Microsoft happened to own their own domain name, microsoft.com, only because an enterprising employee had registered it during the course of writing a TCP/IP networking program.

As part of Gates's strategy, Microsoft released their own web browser, Internet Explorer (IE), offering it for free. Early Microsoft browsers were not technically on par with Netscape, but after several years, IE became a more solid product and Microsoft made strong efforts to integrate IE into their operating system. Doing so allowed them to leverage their monopoly in personal computer operating systems and force Netscape from the marketplace. Netscape was sold to AOL in 1998, mostly for the value of its high-traffic web portal, Netscape.com, rather than the declining market share of its browser. Microsoft's tactics also led to a famous antitrust lawsuit by the federal government, which dragged on from 1997 to 2004, ending with minor sanctions on Microsoft.

Netscape's initial public offering in August 1995 turned the small company into a concern valued at several billion dollars. This symbolized the emerging "dot-com" boom in technology stocks. Billions of dollars of investment poured into Internet-based startups, based on the belief that the Internet was the new telegraph or railroad and that those companies that established themselves first would be the ones that grew the largest. Many young computer technologists found themselves suddenly worth millions, or even billions, of dollars. In such an exuberant time, with speculation driving up stock prices around the world, some pundits even predicted that traditional rules of business had evolved and no longer applied. One of the best examples of dot-com exuberance came in January 2001 when AOL completed their merger with the venerable Time-Warner media company, a deal based entirely on AOL's high stock valuation, which quickly became a financial disaster after AOL's stock value crashed. Alas, in the end, a company must eventually turn a profit. The dot-com boom ended in late 2000, a bursting of the stock market bubble, which caused an economic contraction and depression within the computer industry, and contributed to an economic recession in the United States.

Amidst the litter of self-destructing dot-coms, fleeing venture capitalists, and the shattered dreams of business plans, some dot-com companies did flourish. Amazon.com established itself as the premier online book store, fundamentally changing how book-buying occurred. eBay.com found a successful niche offering online auctions. PayPal provided a secure mechanism to make large and small payments on the web. DoubleClick succeeded by providing software tools to obtain marketing data on consumers who used the WWW, and by also collecting those data themselves. The end of the dot-com boom also dried up a lot of the money that had flowed into web-based advertising. After the dot-com crash,

the WWW and Internet continued to grow, but commerce on the web, dubbed e-commerce, grew at a slower rate dictated by prudent business planning.

Web Search Engines

Just as Gopher became really useful when Veronica and Jughead were created as search programs, the WWW became more useful as web-crawling programs were used to create web search engines. These programs prowled the Internet, trying to divine the purpose of web pages by using the titles of the pages, keywords inside HTML metatags embedded within the web page itself, and the frequency of uncommon words in the page to determine what the page was about. When users used a search engine, such as the early www.webcrawler.com and www.altavista.com, a database of results from relentless webcrawling software, sometimes called spiders, returned a list of suggested web sites, ranked by probable matches to the user's search words. Early search engines became notorious for at times returning the oddest results, but they were better results than having nothing.

The other approach to indexing the web was by hand, using humans to decide what a web page was really about. A pair of Ph.D. candidates in electrical engineering at Stanford University, David Filo (1966–) and Taiwanese-born Jerry Yang (1968–), created a web site called Jerry's Guide to the World Wide Web. This list of links grew into a large farm of web links, divided into categories like a library. In March 1995, Filo and Yang founded Yahoo! and solicited venture capital to fund the growth of their company. Thirteen months later, having risen to forty-nine employees, their initial offering of stock earned them a fortune. Yahoo! continued to grow, relying on a mix of links categorized by hand and automated webcrawling.

The web search engine business became extremely competitive in the late 1990s, and many of the larger search engines latched onto the idea of web portals. Web portals wanted to be the jumping-off point for users, a place that they always returned to (often setting up the portal as the default home page of their web browser) in search of information. Web portals offered a search engine, free web-based e-mail, news of all types, and chat-based communities. By attracting users to their web portals, the web portal companies were able to sell more web-based advertising at higher rates.

Larry Page (1971–) and the Moscow-born Sergey Brin (1973–), another pair of Stanford graduate students, collaborated on a research project called Backrub, which ranked web pages by how many other web pages on the same topic pointed to them, using the ability of the WWW to self-organize. They also developed technologies to use a network of inexpensive personal computers running a variant of UNIX to host their search engine, an example of massively distributed computing. In September 1998, Page and Brin founded Google, Inc. The word "google" is based on the word "googol," which is the number 1 followed by 100 zeros. Google concentrated on being the best search engine in the world, and did not initially distract itself with the other services that web portals offered. In this, Google succeeded, quickly becoming the search engine of choice among web-savvy users because its results were so accurate. By the end of 2000, Google received more than 100 million search requests a day.

In 2001, Google purchased the company Dejanews, which owned a copy of the content posted to Usenet since 1995, some 650 million messages in total. This became one of the many new Google services, Google Groups. The success of Google became apparent as a new meaning to the word rapidly emerged, its use as a transitive verb, as in "she googled the information."



Code Is Law

Lawrence Lessig

Every age has its potential regulator, its threat to liberty. Our founders feared a newly empowered federal government; the Constitution is written against that fear. John Stuart Mill worried about the regulation by social norms in nineteenth-century England; his book *On Liberty* is written against that regulation. Many of the progressives in the twentieth century worried about the injustices of the market. The reforms of the market, and the safety nets that surround it, were erected in response.

Ours is the age of cyberspace. It, too, has a regulator. This regulator, too, threatens liberty. But so obsessed are we with the idea that liberty means "freedom from government" that we don't even see the regulation in this new space. We therefore don't see the threat to liberty that this regulation presents.

This regulator is code—the software and hardware that make cyberspace as it is. This code, or architecture, sets the terms on which life in cyberspace is experienced. It determines how easy it is to protect privacy, or how easy it is to censor speech. It determines whether access to information is general or whether information is zoned. It affects who sees what, or what is monitored. In a host of ways that one cannot begin to see unless one begins to understand the nature of this code, the code of cyberspace regulates.

This regulation is changing. The code of cyberspace is changing. And as this code changes, the character of cyberspace will change as well. Cyberspace will change from a place that protects anonymity, free speech, and individual control, to a place that makes anonymity harder, speech less free, and individual control the province of individual experts only.

My aim in this short essay is to give a sense of this regulation, and a sense of how it is changing. For unless we understand how cyberspace can embed, or displace, values from our constitutional tradition, we will lose control over those values. The law in cyberspace—code—will displace them.

The Regulations of Code

The basic code of the Internet implements a set of protocols called TCP/IP. These protocols enable the exchange of data among interconnected networks. This exchange occurs without the networks

Lawrence Lessig, "Code Is Law: On Liberty in Cyberspace," *Harvard Magazine*. Copyright © 2000 by Harvard Magazine. Reprinted with permission.

knowing the content of the data, or without any true idea of who in real life the sender of a given bit of data is. This code is neutral about the data, and ignorant about the user.

These features of TCP/IP have consequences for the "regulability" of behavior on the Internet. They make regulating behavior difficult. To the extent that it is hard to identify who people are, it is harder to trace behavior back to a particular individual. And to the extent it is hard to identify what kind of data is being sent, it is harder to regulate the use of particular kinds of data. These architectural features of the Internet mean that governments are relatively disabled in their ability to regulate behavior on the Net.

In some contexts, for some, this unregulability is a virtue. This feature of the Net, for example, protects free speech. It codes a First Amendment into the architecture of cyberspace, because it makes it relatively hard for governments, or powerful institutions, to control who says what when. Information from Bosnia or East Timor can flow freely to the world because the Net makes it hard for governments in those countries to control how information flows. The Net makes it hard because its architecture makes it hard.

But in other contexts, in the view of others, this unregulability is not a virtue—take the German government confronted by Nazi speech, for example, or the U.S. government faced with child pornography. In these contexts, the architecture disables regulation as well. But in these contexts, unregulability is viewed as a vice.

And not just with Nazi speech and child porn. The most important contexts of regulation in the future will affect Internet commerce: where the architecture does not enable secure transactions; where it makes it very easy to hide the source of interference; where it facilitates the distribution of illegal copies of software and music. In these contexts, commerce at least will not view unregulability as a virtue; unregulability here will interfere with the ability of commerce to flourish.

So what can be done?

There are many who think that nothing can be done: that the unregulability of the Internet is fixed; that there is nothing we can do to change it; that it will, so long as it is the Internet, remain unregulable space. That its "nature" makes it so.

But no thought is more dangerous to the future of liberty in cyberspace than this faith in freedom guaranteed by the code. For the code is not fixed. The architecture of cyberspace is not given. Unregulability is a function of code, but the code can change. Other architectures can be layered onto the basic TCP/IP protocols, and these other architectures can make behavior on the Net fundamentally regulable. Commerce is building these other architectures; the government can help; the two together can transform the character of the Net. They can and they are.

Other Architectures

What makes the net unregulable is that it is hard to tell who someone is, and hard to know the character of the content being delivered. Both of these features are now changing. Architectures for facilitating identification—or, more generally, for certifying facts about the user (that he is over 18; that

he is a he; that he is an American; that he is a lawyer)—are emerging. Architectures for rating content (porn, hate speech, violent speech, political speech) have been described and are being implemented. Each is being developed without the mandate of government, and the two together could facilitate an extraordinary degree of control over behavior on the Net. The two together, that is, could flip the unregulability of the Net.

Could—depending upon how they are designed. Architectures are not binary. There is not simply a choice about implementing an identification architecture, or a rating architecture, or not. What the architecture enables, and how it limits its control, are choices. And depending upon these choices, much more than regulability will be at stake.

Consider identification, or certification, architectures first. We have many certification architectures in real space. The driver's license is a simple example. When the police stop you and demand your license, they are asking for a certain certification that you are licensed to drive. That certification includes your name, your sex, your age, where you live. It must include all that because there is no other simple way to link the license to the person. You must give up all these facts about yourself to certify that in fact you are the proper holder of the license.

But certification in cyberspace could be much more narrowly tailored. If a site required that only adults enter, you could—using certification technologies—certify that you were an adult, without also revealing who you were or where you came from. The technology could make it possible to selectively certify facts about you, while withholding other facts about you. The technology could function under a "least-revealing-means" test in cyberspace even if it can't in real space.

Could—depending upon how it was designed. But there is no necessity that it will develop like this. There are other architectures developing—we could call them "one-card-shows-all." In these architectures, there is no simple way to limit what gets revealed by a certificate. If a certificate holds your name, address, age, citizenship, and whether you are a lawyer, and if you need to certify that you are a lawyer, this architecture would certify not only that you are a lawyer—but also all the other facts about you that the certificate holds. Under this architecture, more is better. Nothing enables the individual to steer for less.

The difference between these designs is that one enables privacy in a way that the other does not. One codes privacy into an identification architecture by giving the user a simple choice about how much is revealed; the other is oblivious to that value.

Thus whether the certification architecture that emerges protects privacy depends upon the choices of those who code. Their choices depend upon the incentives they face. If protecting privacy is not an incentive—if the market has not sufficiently demanded it and if law has not, either—then this code will not provide it.

The example about identification is just one among many. Consider another, involving information privacy. RealJukebox is a technology for copying music from a CD to a computer, as well as for downloading music from the Net to store on a computer's hard drive. In October it was revealed that the system was a bit nosy—that it snooped the hard disk of the user and reported back to the company what it found. It did this secretly, of course; RealNetworks didn't tell anyone its product was collecting and reporting personal data. It just did. When this snooping was discovered, the company at first

defended the practice (saying no data about individuals were actually stored). But it quickly came to its senses, and promised not to collect such data.

This "problem" is caused, again, by the architecture. You can't easily tell in cyberspace who's snooping what. And while the problem might be corrected by an architecture (a technology called P3P would help), here's a case where law would do well. If these data were deemed the property of the individual, then taking them without express permission would be theft.

In these contexts, and others, architectures will enable values from our tradition—or not. In each, there will be decisions about how best to build out the Internet's architecture consistent with those values, and how to integrate those architectures with law. The choice about code and law will be a choice about values.

Making Choices About Values

So should we have a role in choosing this code, if this code will choose our values? Should we care about how values emerge here?

In another time, this would have been an odd question. Self-government is all about tracking and modifying influences that affect fundamental values—or, as I described them at the start, regulations that affect liberty. In another time we would have said, "Obviously we should care. Obviously we should have a role."

But we live in an era fundamentally skeptical about self-government. Our age is obsessed with leaving things alone. Let the Internet develop as the coders would develop it, the common view has it. Keep government out.

This is an understandable view, given the character of our government's regulation. Given its flaws, it no doubt seems best simply to keep government away. But this is an indulgence that is dangerous at any time. It is particularly dangerous now.

Our choice is not between "regulation" and "no regulation." The code regulates. It implements values, or not. It enables freedoms, or disables them. It protects privacy, or promotes monitoring. People choose how the code does these things. People write the code. Thus the choice is not whether people will decide how cyberspace regulates. People—coders—will. The only choice is whether we collectively will have a role in their choice—and thus in determining how these values regulate—or whether collectively we will allow the coders to select our values for us.

For here's the obvious point: when government steps aside, it's not as if nothing takes its place. It's not as if private interests have no interests; as if private interests don't have ends that they will then pursue. To push the antigovernment button is not to teleport us to Eden. When the interests of government are gone, other interests take their place. Do we know what those interests are? And are we so certain they are anything better?

Our first response should be hesitation. It is proper to let the market develop first. But as the Constitution checks and limits what Congress does, so too should constitutional values check and limit

what a market does. We should test both the laws of Congress and the product of a market against these values. We should interrogate the architecture of cyberspace as we interrogate the code of Congress.

Unless we do, or unless we learn how, the relevance of our constitutional tradition will fade. The importance of our commitment to fundamental values, through a self-consciously enacted constitution, will fade. We will miss the threat that this age presents to the liberties and values that we have inherited. The law of cyberspace will be how cyberspace codes it, but we will have lost our role in setting that law.



Discussion Questions and Recommended Reading/Viewing

Discussion Questions

1. What is packet switching? Why was it important in the development of the Internet as we know it?
2. Choose and research one of the following computing and Internet pioneers: John Atanasoff, Charles Babbage and Ada Byron, J. C. R. Licklider, Claude Shannon, Leonard Kleinrock. Prepare a presentation to present their contributions to the class.
3. What is TCP/IP? Why does Lawrence Lessig believe it is philosophically significant to the development of the Internet?
4. What does Lessig believe is the Internet's "threat to liberty"? How does he believe we should proceed with the question of Internet regulation?

Recommended Reading

Gleick, James. *The Information: A History, a Theory, a Flood.* James Gleick. New York: Pantheon Books, 2011.

Petzold, Charles. *Code: The Hidden Language of Computer Hardware and Software.* Redmond, WA: Microsoft Press, 2000.

Smiley, Jane. *The Man Who Invented the Computer: The Biography of John Atanasoff,* Digital Pioneer. New York: Doubleday, 2010.

Recommended Viewing

The Secret History of Hacking. Discovery Channel. 2001. This hour-long Discovery Channel documentary links the origins of personal computing to the innovations of phone phreaks and hackers like Captain Crunch, Kevin Mitnick, and Apple co-founder Steve Wozniak.

Section 3

Ethics Online: Thinking Globally

Central Issues in the Ethics of Digital Media

Charles Ess

Introduction

It is now commonplace to observe that in the industrialized world, we—especially young people—are thoroughly interconnected through, and thereby saturated with, what are sometimes called "New Media" or digital media. (We will explore the meaning of these terms more carefully in a bit.) Certainly, if we pay attention to contemporary media reports about digital media, these reports shout out important, often frightening, ethical issues.

So, for example, my local newspaper recently reported on a local pastor—and mayor of a small town—who was captured in an online sting operation. An "Internet detective" posing as a young girl in a chat room enticed the 62-year-old man, hoping to meet up with the "girl" for sex, into revealing his identity (O'Dell 2008).

Somewhat more subtly, the Danish tabloid newspaper *Nyhedsavisen* (which enjoys one of the largest circulations in Denmark) recently reported that two new words have been added to the dictionaries of mobile phones—*fråderen* ("foaming," slang for "hungry") and *luder* (slut). The sub-headline to the story read: 'An expert wonders whether this means in the long run that young people's language will develop in a negative direction' (Mainz 2007:14). (To be sure, an additional expert quoted in the story comments that this development is simply another reflection of how all languages change—and that such changes are not necessarily reasons for panic.)

What these examples illustrate is the tendency of popular media to call our attention to important ethical issues involved with digital media—but in ways that run the risk of fostering what are called "moral panics." That is, in order to attract our attention, such media stories focus unduly on the sensational (if not the sexual). But thereby, they tend to appeal to a deep-seated fear that our new technologies are somehow getting out of control (a fear that has been expressed in the modern West since Mary Shelley's *Frankenstein* ([1818] 1933)—in part, as these new technologies apparently threaten to corrupt our ethical and social sensibilities.

As we will see in subsequent chapters, this media approach is most pronounced (understandably enough) with regard to sex and violence—specifically, concerns about pornography online and violence

Charles Ess, "Central Issues in the Ethics of Digital Media," *Digital Media Ethics*, pp. 6–27. Copyright © 2009 by Polity Press. Reprinted with permission.

in digital games (chapter 5). But here we can start to see how such a "moral panic" style of reporting both furthers and frustrates careful ethical reflection on digital media.

On the one hand, to be sure, such reporting succeeds in getting our attention—and thereby provides a useful service by catalyzing more careful reflection on important ethical issues evoked by digital media. On the other hand, by highlighting especially the potentially *negative* effects of digital media, such reporting fosters a polarized way of thinking—an approach that could be characterized as "technology good" (because it brings us important benefits) vs. "technology bad" (because it threatens the moral foundations of society, most especially the morality of young people). The problem is that such an approach to thinking about important ethical issues is simply misleading. As we will see—and as most of us probably already know full well—whatever truths may be discerned about the ethics of digital media often lie somewhere in the middle between these two extremes. But if we are only presented with the simple choice between "technology good" and "technology bad," we may be tempted to think that these are indeed our only choices and get stuck in trying to choose between two compelling alternatives. Getting stuck in this way short-circuits what we need to do if we are to move beyond such either/or thinking—a movement that requires more careful and extensive reflection.

One way to see how to move beyond such polarities is first to examine more carefully some of the important characteristics of digital media, along with the specific sorts of ethical issues that these characteristics often raise for us.

(Ethical) Life in the Digital Age?

"Digital media" are the subject of an extensive range of analyses in a number of disciplines (e.g., Lievrouw and Livingstone 2006). This book, however, takes the standpoint of an interest in digital media ethics; thereby, at least at the beginning, we are interested in seeing the distinctive features of digital media—what sets them apart from earlier media—that make them ethically challenging and interesting.

To be sure, digital media represent strong *continuities* with earlier forms of communication and information media such as printed books, journals, and newspapers, what we now call "hardcopy" letters, and, for example, traditional forms of mass media that include not only newspapers but also "one-to-many" broadcast media such as radio and TV. We will note and explore these continuities more fully in our efforts to evaluate one of the larger ethical questions we will confront—namely, do digital media present us with radically *new* kinds of ethical problems that thereby require absolutely new ethical approaches? (See *Preliminary Exercise*, below.) For now, we can note that these questions are driven in good measure by rather emphasizing the important *differences* between earlier media and digital media. (Such an emphasis, by the way, also drives the "either/or" approach underlying much popular media reporting.) In particular, these differences often are part of why new ethical issues come up in conjunction with digital media. Exploring these differences at the outset thus seems like a good starting point.

Here, then, we will consider three distinguishing characteristics of digital media (though others are important): how digital media (in contrast with analogue media) foster *convergence*; digital information as "greased"; and digital media as (global) *communication* media.

1. Digital Media, Analogue Media, and Convergence

To begin with, digital media work by transforming extant information (e.g., voices over a phone, texts written on a wordprocessor, pictures of an impressive landscape, videos recorded and broadcast, etc., etc.) into the basic informational elements of electronic computers and networks, including binary code (1's and 0's—bits on and off) and the definition of how such code is to be manipulated within a given application. Digital media contrast in this way with analogue media—such as an old-fashioned vinyl record—that capture, store, and make information accessible by producing specific artifacts that are *like* the original. In the case of music, recording equipment, beginning with microphones and concluding with a storage medium such as audiotape, translates the vibrations of an original sound into magnetically stored information, corresponding to specific sound pitches and volumes, which is then "written" onto a tape that passes by a recording head at a specific speed. These *analogues* of an original sound are then in turn transformed into further analogues, as they are mechanically carved onto the grooves of a vinyl record in the form of bumps and valleys that correspond to (i.e., are analogues of) the high and low frequencies and volumes of the original sound. These physical variations are further translated by a phonograph needle into electronic impulses that likewise mimic the original variations of a sound. Finally, these impulses are transformed into sound by an amplifier and speaker(s)—again, as an analogue or copy of the original that, if all goes well, is as close to the original as possible.

One way to think about analogue media is that they work by capturing, recording, and replaying information as a smooth, continuously variable content. That is, there are comparatively continuous variations as a series of musical notes, first low and soft and then high and loud, are captured and replayed as moving evenly from the one to the other. In this sense, the contents of analogue media are more or less infinitely variable. By contrast, *digital* media capture, store, and make accessible their contents based entirely on a binary code of 1's and 0's.

More importantly, analogue media always involve some loss of information across the various processes of collecting, recording, and storing it. This means—and this is particularly critical to the ethical discussions of copying—that each analogue copy of an original is always less true to the original; and the more copies made—e.g., a tape copy of a record as a copy of a tape of an original performance—the less faithful (and satisfying) the resulting copy will be. By contrast, once information is transcribed into digital form, each copy of the digital original will be (more or less) a perfect replica of the original. Copy an MP3 version of your favorite song a thousand times, and if your equipment is working properly, there will be no difference between the first copy and the thousandth copy.

Even more importantly, *analogue* media are strongly distinct systems: how information is captured and replayed in a vinyl record is not immediately compatible with—and thereby, easily exchangeable with—how information is captured and replayed in a newspaper or printed book. By contrast, once information is translated into *digital* form, such information—whether destined for an MP3 player

as an audio recording, or a wordprocessor as text—can be stored on and transmitted through a shared medium. Hence the same computer, PDA, or even smartphone, for example, can hold digital photos and music, along with wordprocessing files, spreadsheet files, etc.

As once distinct forms of information are thus translated into a commonly shared digital form, it makes possible one of the most important distinguishing characteristics of digital media, namely, *convergence* (e.g., Briggs and Burke 2005: ch. 7; Jenkins 2006; Storsul and Stuedahl 2007). Such convergence can be (literally) seen in a rich webpage that contains text, video, and audio sources, as well as possibilities for sending email, remotely posting a comment, etc. These once distinct forms of information and communication are now conjoined in digital form, so that they can be transmitted entirely in the form of 1's and 0's via the Internet. Similarly, a contemporary cellphone further exemplifies such convergence: it is capable of not simply handling phone conversations, but also handling digital information used for a built-in camera (still and/or moving video), MP3 player, web browser capable of capturing text and other sorts of information, etc.

This means, then, that digital media bring together both traditional and sometimes new sorts of information sources. In particular, what were once distinct kinds of information in the analogue world (e.g., photographs, texts, music) are now no longer strongly distinct; rather, they share the same basic *form* of information. What does this mean, finally, for ethics? Here's the key point: what were once distinct sets of ethical issues now likewise converge—sometimes creating new combinations of ethical challenges that we haven't had to face before.

For example, societies have developed relatively stable codes and laws for the issue of *consent* as to whether or not someone can be photographed in public. (In the U.S., generally, one can photograph people in public without asking for their consent, while in Norway, consent is required.) Transmitting that photo to a larger public—e.g., through a newspaper or a book—would then require a different information system, and one whose ethical and legal dimensions are addressed (however well or poorly) in copyright law. But as many people have experienced to their regret, a contemporary cellphone can not only record their status and actions, but further (more or less immediately) transmit the photographic record to a distribution medium such as a Facebook profile or even more public website. The *ethics* of both *consent* in photography and *copyright* in publication are now conjoined in new ways that we simply have not had to think through before.

Preliminary Exercise: Do We Really Need a (New) Digital Media Ethics?

In response to these sorts of new ethical challenges brought about by digital media (and new technologies more generally), two sorts of arguments have emerged:

1. The new possibilities of photographing people in both public and more intimate situations, coupled with more or less immediately posting such photographs and/or videos to a forum such as a social networking site or more public webpage, means that people are now *more vulnerable* to violations of privacy.

That is, where privacy can be minimally defined as the capacity to control information about oneself, the new ability of others to record and quickly distribute potentially embarrassing information about oneself thereby decreases one's control over such information (e.g., in the form of permission to take a photograph, much less permission to distribute the photograph in a semi-public or public forum).

A general guideline in many ethical systems, as we will see, is that *increased vulnerability* requires *increased responsibility*. So, for example, parents have increased responsibilities for their children as infants that they do not have for their children as young adults, because children as infants are vulnerable in many ways that young adults are not.

On this line of thinking, the fact that others around me are *more vulnerable* in the presence of my cellphone argues that I as the owner/operator of the device need to be *more responsible* for how I use it. This might mean, for example, paying increased attention to whether or not what I'm recording and distributing might harm the person in some way; increased attention to the need for others to have and maintain control of information about themselves, etc.

More generally, this line of argument suggests that we now face a pressing need for careful and systematic ethical reflection, so as to develop the sorts of guidelines, codes, and laws that can help us work through especially the new sorts of ethical issues that digital media evoke.

2. Alternatively (but not necessarily to the exclusion of the first line of argument above), the history of technology is in part a history of people learning how to use new technologies in ethically appropriate ways—though often only after sometimes terrifically damaging (perhaps even fatal) experiences with them. On this view, we "muddle through" as a species, learning more from our experience than from careful reflection on how to utilize new technologies in ways that minimize harm, protect rights, etc.

From this perspective, there is no real need to undertake ethical reflection on the new situations confronting us as new technologies enter our individual and social lives. Rather, we can generally rely on people's common sense and previous ethical experiences and judgment to help forge the new ethical guidelines that will become generally known and respected. For example, if I post an embarrassing photograph or video of a friend on the Web, thinking it's all in good fun, but thereby manage only to make my friend really angry and upset with me, I'll eventually figure out that I shouldn't do such things.

While, with the advantage of hindsight, I may well look back on such an act as a mistake—at least I'll avoid such errors in the future. There's no need for extensive ethical reflection ahead of time; rather, we will simply learn from our mistakes.

Questions for Reflection/Discussion/Writing

1. Of the two positions outlined above, which better describes your approach to the ethical dilemmas that arise as you take up new technologies in your life? Provide an example of this if you can.

2. Do you have a reason or sense for why your approach might be better than the alternative? Explain your view here as fully as you can.
3. Can you think of an instance or example—whether in relation to digital media technologies or to other new technologies—where your approach might *not* work as well as the alternative?
4. Do you have other thoughts and suggestions for how we—both individually and as a society and species—might best approach the ethical dimensions of digital media (and/or other new technologies)?

2. Digital Media and "Greased Information"

A second characteristic of digital media is that the information they capture, record, and transmit is "greased." That is, as James Moor has observed, "When information is computerized, it is greased to slide easily and quickly to many ports of call" (Moor 1997: 27). As anyone who has hit the "send" button on an email too quickly knows all too well, information in digital form can spread more or less instantaneously *and* globally, whether we always want it to or not.

As the example of uploading potentially embarrassing photos or videos from a cellphone suggests, the capacity of digital information to move quickly from one place to another raises especially serious ethical issues surrounding *privacy*. That is, where it was once comparatively difficult to capture and then transmit information about a person that s/he might consider private, the advent of digital media, beginning with computer systems that can store and make easily accessible a wide range of information about persons, has resulted in a wide range of new threats to what was once clearly personal and private information. Moreover, digital information as "greased" likewise makes it easy to copy and distribute, say, one's favorite songs, movies, or texts. To be sure, it has always been possible to copy and distribute copies of a given text—or, in the days of analogue media, of a given song or film. But the *ease* with which we can do so by way of digital media appears to be one factor that makes such copying and distribution an even more pressing ethical problem these days.

(We will examine the issues of privacy more fully in chapter 2, and the issues of copyright in chapter 3.)

3. Digital Media as Communication Media: Global Scope and Interactivity

The emergence of digital media—along with the Internet and the Web as ways of quickly transporting digitized information—thus gives rise to strikingly new ways of communicating with one another at every level. Emails, social networking sites (Facebook, MySpace, etc.), photo and video distribution sites (Flickr, YouTube, etc.), and personal blogs provide ways for people—especially in the developed world but also increasingly in developing countries—to substantially enhance existing relationships and to develop new ones with persons often far removed from their own geographical/cultural/linguistic communities. Especially as the Internet and the Web now connect more than one-sixth of the world's population, they thereby make possible *cross-cultural encounters online* at a scope, speed, and scale unimaginable even just a few decades ago.

Along these lines, two additional features of digital media become crucial. To begin with, digital media enjoy what Phil Mullins (1996) has characterized as a kind of fluidity: specifically, a biblical text in digital form—either on one's PDA or as stored on a website—becomes, in his phrase, "the fluid Word." In contrast with a biblical text as *fixed* in a strong way when inscribed on parchment (the Torah) and/or printed on paper, a biblical text encoded on a flash memory or server hard drive in the form of 1's and 0's can be changed quickly and easily. This fluidity is highlighted by a second characteristic of digital communication media—namely, *interactivity*. Both a printed Bible and the daily newspaper are produced and distributed along the lines of a "top-down" and "one-to-many" broadcast model. While readers may have their own responses and ideas, they can (largely) do nothing to change the printed texts they encounter. By contrast, I can change the biblical text on my PDA if I care to (e.g., if I think a different translation of a specific word or phrase might be more precise or illuminating)—and, by the same token, a community of readers can easily amend and modify an online text; they might also be able to post comments and respond to a given text in other ways that are in turn then "broadcast" back out to others. To put it differently, digital communication media provide us with new possibilities of "talking back": posting comments, or even a blog, in response to a newspaper story, now reproduced online; voting for a favorite in a TV-broadcast contest by way of SMS messaging; organizing "smart mobs" via the Internet and cellphones (as well as older media such as fax machines) to protest—and, in some cases, successfully depose—corrupt politicians, etc.

Especially as fluid and interactive digital media simultaneously enjoy a global scope, they evoke a host of important ethical issues: because our communications can quickly and easily reach very large numbers of people around the globe, our use of digital communication technologies thus makes us *cosmopolitans* (citizens of the world) in striking new ways. In this new context, we are forced to take into account the various and often very diverse *cultural* perspectives on the ethical issues that emerge in our use of digital media. So I will stress throughout this book how the assumptions and ethical norms of different cultures shape specific ways of reflecting on such matters as privacy (chapter 2), copyright (chapter 3), and pornography and violence (chapter 5). In addition, in chapter 4, we will will look specifically at the ethics of cross-cultural communication online, beginning with the example of the so-called "Muhammad cartoons," published by a relatively small-circulation Danish newspaper, *Jyllands-Postm*, in 2006. Had these cartoons been restricted to print media, they would have likely had little impact outside of Denmark. But as made immediately available online, they sparked world-wide diplomatic furor and violent protest, resulting in dozens of deaths and considerable property damage. This example makes very clear how a globally distributed digital media thus amplifies the consequences of our communicative acts far beyond the boundaries familiar to us with traditional media. Again, digital media thus bring before us new considerations that are ethically relevant to familiar ethical issues—and perhaps confront us with distinctively new sorts of ethical issues as such.

Digital Media Ethics: How to Proceed?

At first glance, it might seem that developing such an ethics is an impossible task. For one thing, especially because digital media present us with often strikingly new sorts of interactions with one another, it is not at all clear whether—and if so, then how—the ethical guidelines and approaches that are already in place (and comparatively well-established) for traditional media would apply.

In addition, digital media as global media thus force us to confront culturally variable views—not simply regarding basic ethical norms and practices, but, more fundamentally, regarding how ethics is to be done. In particular, we will see that non-Western views—represented in this volume by Confucian, Buddhist, and African perspectives—challenge traditional Western notions of the primary importance of the *individual*, and thereby Western understandings of *ethical responsibility* as primarily *individual* responsibility. That is, while we in the West recognize that multiple factors can come into play in influencing an individual's decision—e.g., to tell the truth in the face of strong pressures to lie, to violate another's rights in some way, etc.—we generally hold *individuals* responsible for their actions, as the *individual agent* who both makes decisions and acts independently of others. But these days, our interactions with one another increasingly take place via digital media and networks. This means, more specifically, that multiple actors and agents—not only multiple humans (including software designers as well as users), but also multiple computers, networks, 'bots, etc.—must work together to make specific acts (both beneficent and harmful) possible. So it appears that, in parallel with the distribution of information via networks, our *ethical responsibility* may be more accurately understood in terms of a *distributed responsibility*. That is, in contrast with a single person taking all the responsibility for his or her actions, ethical responsibility for the various actions we are able to undertake via digital media and networks may be shared, so to speak, across the network. We will see that this understanding of distributed responsibility is, in fact, not a new idea; rather, it is one shared with both pre-modern Western philosophies and religions and multiple philosophies and religions around the globe.

On the one hand, this is a Very Good Thing, as it may point towards important ethical norms and practices that can be shared among the multiple cultures and peoples now brought into communication with one another through the Internet and the Web. But, on the other hand, it represents a major challenge especially to Western thinkers used to understanding ethical responsibility in primarily individualistic terms.

Is Digital Media Ethics *Possible*? Grounds for Hope

These challenges are certainly daunting; indeed, when we first begin to grapple with digital media ethics, especially with a view towards incorporating a range of global perspectives, the tasks before us may seem to be overwhelming and, we may be tempted to think, futile.

But both our collective experience with earlier technological developments and more recent experience in the domain of Information and Computing Ethics (ICE) suggest, despite the considerable challenges of developing new ethical frameworks for new technologies, we are nonetheless able to do

so. Indeed, this experience provides us with a number of examples of ethical resolutions that "work" both globally (as they involve discerning shared norms and understandings) and locally (as they further involve developing ways of interpreting and applying shared norms in specific cultural contexts—and thereby preserving the distinctive ethical differences that define diverse cultural identities).

Two examples may be useful here. To begin with, as the Internet and Web first emerged in the 1990s, more and more researchers from a range of disciplines and cultures/countries sought to study the rapidly expanding ways in which humans interacted with one another online. Internet research thus developed and expanded—leading, for example, to the founding of the International Association of Internet Researchers (AoIR) in 1999. Along the way, however, more and more researchers were forced to wrestle with often new ethical issues concerning, for example, whether or not they were obliged to protect the identity and privacy of their subjects, whether or not their subjects enjoyed the right to informed consent, and so forth. These ethical demands were familiar to researchers in medicine and the social sciences, but as they were developed and applied to embodied subjects in real-world experiments and research. Some argued that insofar as researchers only examined what happened online in so-called "virtual" environments and communities, no "real" human subjects were involved—and hence the ethics of traditional human subjects protections did not apply. Others argued—supported by growing evidence that, in fact, our online behaviors and expressions are closely tied to our offline lives and selves—that some version of human subjects' protections should apply to online research as well.

In 2000, the AoIR began a two-year project to develop ethical guidelines for Internet researchers. Briefly, in this project we (I was chair of the committee, 2000–5) faced the range of difficulties that confront similar efforts to develop ethics for digital media, beginning with the need to determine how far traditional ethical frameworks may—and may not—successfully resolve the issues evoked by digital media and their new possibilities for communication, human interaction, and so forth. In addition, research on Internet-based phenomena is undertaken by researchers from around the globe; this means that when these researchers encounter ethical difficulties, they thus bring to bear on their ethical reflections a wide range of culturally variable ethical traditions and frameworks, along with often diverse laws (e.g., concerning privacy and data privacy protection).

In the face of such disciplinary and cultural diversity, how on earth could anyone imagine developing a single set of ethical guidelines that could be endorsed by researchers from around the globe?

Within two years, however, an interdisciplinary and international committee (representing 11 countries both East and West) developed a set of ethical guidelines for Internet research that were in fact endorsed by the AoIR membership (AoIR Ethics Working Group 2002). The AoIR guidelines have subsequently found significant use by students and researchers across a range of countries and cultures, suggesting that they are recognized as useful in resolving a number of ethical issues evoked in Internet research, even though these may arise in widely diverse cultural and national domains.

More recently, an emerging global dialogue among philosophers and ethicists regarding privacy and data privacy protection rights has highlighted, as we might expect, considerable differences between diverse cultures regarding our understandings and expectations surrounding individual and collective privacy. But as we will see in more detail in chapter 2, this global dialogue appears to be converging on a set of shared norms and agreements regarding the nature of privacy. Importantly, these shared norms

and agreements are understood, interpreted, and applied in different ways in different cultures and nations. That is, privacy in Thailand, China, and Japan is understood in ways that reflect the basic cultural assumptions and national norms of these countries—and thereby preserve the distinctive identities and traditions of these cultures. Again, these understandings of privacy differ considerably from their counterparts in Western countries, such as the United States and the European Union—where, as we would expect, prevailing understandings of privacy reflect the underlying cultural assumptions and norms of these nations. Nonetheless, insofar as these Eastern and Western understandings derive from *shared* norms and conceptions of privacy, the result is an *ethical pluralism* that thereby conjoins shared ethical norms alongside important (indeed, defining) cultural differences. (See chapter 2 for further discussion of privacy; and chapter 6 for further discussion of ethical pluralism.)

How to Do Ethics in the New Mediascape: Dialogical Approaches, Difference, and Pluralism

These examples of the AoIR guidelines and an emerging pluralism regarding privacy suggest that we can undertake the enterprise of digital media ethics with some hope of success. As well, I think that we can further draw from these examples important suggestions for how to proceed. Both examples, in fact, share two elements in common. To begin with, they each incorporated what we can think of as *dialogical approaches*—approaches that emphasize the importance of listening for and respecting *differences* between our diverse ethical views.

Ordinarily—especially if our thinking is shaped by a polarized "either/or" common in popular media reporting—we tend to understand the *difference* between two views in only one possible way: if the two views are *different*, one must be right and the other wrong. As we will explore more carefully in chapter 6, such an approach is called ethical *absolutism* or ethical *monism*. Such absolutism or monism may work well in certain contexts and with regard to some ethical matters. But especially in a global context, a frequent, limiting consequence of such ethical monism is to force us into thinking that one and only one particular ethical framework and set of norms and values (usually, those of the culture(s) in which we grew up) are *right*, and those that are *different* can only be *wrong*.

Oftentimes, in the face of such monism and its intolerance of different views, we are tempted to take a second position—one called ethical *relativism*. Ethical relativism argues that beliefs, norms, practices, frameworks, etc., are legitimate in relation to a specific culture; in this way, ethical relativism allows us to avoid the intolerance of ethical monism, and to accept all views as legitimate. Such an approach is especially attractive as it prevents us from having to judge among diverse views and cultures: we can endorse all of them as legitimate, in at least a relative way (i.e., relative to a specific culture, time, and/or place).

But the examples we have seen of ethical *pluralism* in both Internet research ethics and emerging understandings of privacy and data privacy protection make clear that such pluralism stands as a third possibility—one that is something of a middle ground between absolutism and relativism. That is, to begin with, such pluralism avoids the either/or of ethical monism—an either/or that forces us to

choose between two different views, endorsing one as right and the other as wrong. Rather, it is possible to see that different views may emerge as diverse interpretations or applications of *shared* norms, beliefs, practices, etc. Insofar as we can discern that this is so, the differences between two (or more) views thus do *not* force us to accept only one view as right and all the others as wrong. Rather, we can thereby see that many (but not necessarily all) different views may be right, insofar as they function as diverse interpretations and applications of shared norms and values.

In addition (though this may be a little confusing at this stage), ethical pluralism thereby overcomes a second "either/or"—namely, the apparent polarity between ethical *monism* and ethical *relativism* themselves. That is, when we first encounter these two positions—and, again, especially if our thinking has been shaped by prevailing dualities in the thinking of those around us, including popular media reports—our initial response may again be either/or: either *monism* is right or *relativism* is right, but not both. In important ways, ethical pluralism says that both are right, and both are wrong. From a pluralist perspective, monism is correct in its presuming that universally valid norms exist, but mistaken in its insistence that the differences we observe between diverse cultures in terms of their practices and behaviors must mean that only one is right, and the rest wrong. Similarly, from a pluralist perspective, ethical relativism is correct in its attempt to endorse a wide range of different cultural norms and practices as legitimate, but mistaken, first of all, in its denial of universally valid norms.

Again, we will explore these theories of absolutism, relativism, and pluralism in much more detail in chapter 6. Here it suffices simply to introduce these possibilities of thinking in an initial way as we seek to move beyond the either/or thinking that tends to prevail in popular media and thereby tends to shape our own thinking.

Given this first introduction, perhaps we can now see more clearly why the "either/or" underlying much of popular media report works *against* our best thinking. Ethical pluralism requires us to think in a "both/and" sort of way, as it conjoins both shared norms and their diverse interpretations and applications in different cultures, times, and places. But if the only way we are able to think about ethical matters is in terms of the "either/or" of ethical monism, then we literally cannot conceive of how to move beyond the right/wrong dualisms it often confronts us with. That is, we will find it difficult conceptually to move towards pluralism and other forms of middle grounds, because our either/or thinking insists that we can only have either unity (shared norms) or difference (in interpretation/application), but not both.

Stated differently: in dialogical processes we emphasize learning to listen for and accept *differences*—rather than reject them from the outset because different views must thereby be wrong (ethical monism). But neither do we come to endorse all possible views as correct (ethical relativism), because not every view can be understood as a legitimate interpretation or application of a shared norm. Rather, dialogical processes help us sort through which views may stand as diverse interpretations of shared norms in a pluralism, and those views (e.g., endorsing genocide, racism, violence against women as inferior, etc.) that cannot be justified as interpretations of shared norms.

Doing Ethics: Further Considerations

Another difficulty with the "moral panics" approach to ethical issues in the new mediascape is that it suggests that "ethics" works like this:

1. There are clear, universally valid norms of right and wrong that we can take as our ethical starting points—as *premises* in an ethical *argument.**
2. All that "ethics" really involves is applying these initial premises to the particulars of the current case in front of us—in a straightforward deduction that concludes the right thing to do, as based on our first premises.
3. Once we have our ethical answers in this way, we can be confident that our answers are right; those who disagree with us must be wrong.

This approach to ethics, I would suggest, is not necessarily mistaken; on the contrary, it seems to me that much of the time, most of us in fact do not perceive an ethical problem or difficulty in the situation we're facing—because our ethical frameworks already provide us with reasonably clear and straightforward answers along just these lines. Most of us, for example, do not routinely lie, steal, or kill—despite sometimes what may be considerable temptations to do so—because we accept the general norms and principles that forbid such acts.

At the same time, however, this initial understanding of ethics obscures a number of important dimensions of ethical reflection. Among other things, this initial approach runs counter to what seems to actually happen when we encounter genuine ethical problems and puzzles. Take, for example, the notorious problem of downloading music illegally from the Internet. More or less everybody knows that this is illegal, but we are also pulled and influenced in our thinking by other considerations, e.g.:

> I'm not likely to get caught, so there's virtually no possibility that this will actually hurt me in some way.
>
> The internationally famous musicians—and the multinational companies that sell their music as product for profit—are certainly wealthy enough. They won't feel the loss of the 2 cents profit they would otherwise enjoy if I paid for the music.

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*. Here I use the terms "premise," "argument," "conclusion," etc., in their logical sense. An understanding of the basic element of logic is essential for undertaking ethics—and many ethics texts include an introduction to logic (e.g., Boss 2005; Tavani 2007: ch. 3, etc.). For the sake of brevity I have chosen instead to introduce and discuss a minimal number of logical elements: *analogy* and *questionable analogy* in chapter 3; the distinction between *exclusive* and *inclusive* 'or's in chapter 5; and the basic fallacy of *affirming the consequent* in chapter 6. Otherwise, in addition to any preferred resources of instructors, I would further recommend some of the excellent introductions to logic that already exist (e.g., Weston 2000; Bowell and Kemp 2005; Possin 2005).

> Copyright laws are unfair in principle: they are written for the advantage of the big and already wealthy countries. Thus I think illegal downloading by a struggling student in a developing country is a justified form of protest against multinational capitalism and its exploitation of the poor.
>
> Whatever the law says, the law is the law: I think it should be respected so far as possible—not only in order to avoid punishment, but in order to thereby contribute to good social order.
>
> Even if the chances of getting caught are vanishingly small, if I do get caught, the negative consequences would be enormous (fines, possibly problems at work, maybe even jail time). It's not worth breaking the law to save a few bucks on music.
>
> While internationally famous artists may not miss my contribution to their royalties, local and/or new artists certainly will. I'll not rip them off by illegally copying their music—I'll just order the song online or buy the CD instead.

The point here is not only that we are often pulled in competing directions by values and principles that appear to contradict one another; the more fundamental problem is:

> given the specific details of our particular situations, how do we know *which* principle, value, norm, rule, etc., is in fact relevant to our decision?

This is to say, in direct contrast with the "top-down" *deductive* model of ethical reasoning—i.e., one that moves from given general principles to the specifics of our particular case—this second ethical experience begins with the specifics of our particular case, in order to then try to determine ("bottom-up") which general principles, values, norms, etc., in fact apply.

This second maneuver is thereby far more difficult, as it first requires us to *judge*—based on the particulars of our case—which general principles, norms, values, etc., apply to our case. Clearly, without such general principles, we cannot make a reasoned decision. But the great difficulty is this:

> there is no general rule/procedure/algorithm for discerning which values, principles, norms, approaches *apply*; rather, these must be discerned and *judged* to be relevant in the first place, *before* we can proceed to any inferences/conclusions about what to do.

Aristotle referred to the kind of judgment that comes into play here as *phronesis*—a term often translated as "practical judgment." For Aristotle (and for many ethicists in multiple traditions around the world), the development of this sort of practical judgment—i.e., one that can help us discern in the first place just which norms and values do apply to the particulars of a specific case—is an ongoing project that goes on throughout one's whole life. This is in part because it requires *experience*—both of successes and failures—as these help us learn (oftentimes, the hard way) what "works" (is relevant) ethically and

what doesn't. The first time we try to learn a new skill or ability—say, ice-skating—we are certain to stumble and fail, perhaps catastrophically, and almost certainly more than once. Analogously, our first efforts to grapple with difficult ethical issues that require *phronesis* do not always go well: we are caught in the ethical "bootstrapping" problem of needing precisely the ability to judge that is robust enough to help only after it has been developed and honed through many years of (sometimes hard) experience.

But as we also say: we have to start somewhere …

Overview of the Book, Including Suggestions for Use

By now, I hope readers have a reasonably clear idea of the features of digital media that lead to specific sorts of ethical issues that we will explore more fully in subsequent chapters. I also hope that you are beginning to have a sense that as we do so, especially with regard to digital media that interconnect us globally, it is important to do so in ways that go beyond the either/or polarities that tend to dominate popular media reporting.

At this stage, it may also be helpful to understand why the chapters of the book are arranged as they are. The book is organized in a somewhat unusual way, but one that I hope will be more effective and useful. I follow here what I think of as a "circle" approach to exploring and teaching ethics, one that intentionally moves back and forth between (a) specific, real-world examples from how we actually use digital media and thereby encounter specific ethical problems and (on a good day) legitimate resolutions, and (b) a number of relevant *theories* precisely about how we are to resolve such ethical challenges and difficulties. Ethics texts often begin with a rather complete listing and discussion of the important theories, on the very sensible view that students can come to grips with specific ethical difficulties only if they are first familiar with a complete range of ethical theories. Here, I've done the reverse, and placed the resources on ethical theory at the end of the text (chapter 6). The idea is to encourage students and instructors to take up just two or three of these theories at the beginning, and then apply them to the specific cases taken up in each of the chapters. After students are thereby comfortable with how two or three theories work in their application to real-world cases, they can then return with their instructor to take up additional theories—and then apply these theories to additional cases. While I offer a specific reading plan in this direction (below), by placing the theory/meta-theory chapter at the end of the text, I hope to provide students and their instructors with more flexibility in determining for themselves as they go along just how much theory they wish to absorb vis-a-vis specific issues and problems.

This organization reflects my own teaching experience. I have learned (over several decades) that my students are more likely to learn both an extensive range of theories and how to apply them if we rather begin with just two or three theoretical frameworks, and then apply these to specific cases. To be sure, our grappling with specific cases early in the course will thus be hampered in the sense that my students will not have a more complete range of theory at their disposal. But at the same time, it often happens that they will discover that the theories they initially bring to bear on a given case are *not* adequate—i.e., the initial theories do not allow them to resolve the problems in ways that better fit their own ethical intuitions and sensibilities. In short: from here, they see on their own the need for

further theory/theories, and so as we return from specific cases to more theories (making the circle from *praxis* to theory), they are characteristically more interested in and open to learning about new theories than they would be if we simply worked through all of them from the outset.

By the same token, nothing prevents us from going back to reconsider earlier cases in light of more recently acquired theories—and thereby seeing these cases in a new light (making the circle from theory to *praxis*). Indeed, when things work well, our doing so helps us come to resolutions of the ethical problems involved in more satisfying ways than previously—thereby enhancing our appreciation not only for how a specific theory may offer distinctive advantages vis-a-vis a specific case, but also for how a now greater range of theories work in their application to real-world issues and problems.



Ethics Online

Shaping Social Behavior Online Takes More Than New Laws and Modified Edicts

Deborah G. Johnson

Nations around the world are in the process of making fundamental decisions about the future of their systems of online communication. The public discussions taking place are revealed in the visions of the future that are being put forth. in the U.S., we have Vice President Al Gore using the metaphor of "electronic superhighways of the future" and seeing a national and global information infrastructure as the means by which the U.S. will emerge triumphant in global economic competition. We have John Barlow, Mitch Kapor, and the Electronic Frontier Foundation using a highly gendered metaphor of the new frontier—cyberspace—in which thugs, overzealous sheriffs, and the pioneers of the 21st century are fighting it out. We have visions of a new form of democracy emerging online as political alliances are formed and social movements gather force without mediation from mass media.* We have visions of this evolving technology bringing into our homes the ultimate in entertainment choice together with the efficiency of being able to carry on all of our daily interactions with keystrokes and screens, such as shopping, working, job searching, and banking, among so many others.

The visions sometime include the possibility of escape into Disney-like virtual worlds. These are all highly value-laden and interest-laden visions competing for our attention. While they are all possible, none of them is inevitable. Rather, they work as self-fulling prophecies: The vision we embrace will shape what we make of online communication.

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*One documented example is the protest against Lotus Development Corp.'s product Lotus Marketplace: Households. It was a CD-ROM marketing database containing information on 120 million U.S. citizens. The announcement of the product eventually led to Lotus's receiving thousands of letters from people requesting their names be removed from the database. Much of this was done via email directly to Lotus [4, 11].

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Online communication has been evolving and growing at an unprecedented pace, and there is every indication the demand for it will continue. Its evolution, however, has not been without problems and the most disturbing of these involves human behavior. Disturbing and disruptive behavior ranges from unauthorized access, theft of electronic property [8], launching of destructive worms and viruses [1], racism, defamation [2], and harassment to an incident involving a form of online rape [3]. Our responses to this behavior will shape the future of online communication and will determine to what extent and in what ways the promise of electronic networking technology is realized in the future.

Our primary responses to behavioral problems online have so far been legal and technological. As problems have been identified and defined, laws have been extended or created, and law enforcement has entered this new domain [1]. We have new technologies for virus detection and for encryption and decryption of information. Our knowledge of how to secure our systems and detect or trace transactions has improved.

These approaches alone, however, will never be adequate to control online behavior. Our only hope is for individuals to internalize norms of behavior. That is how most behavior is controlled offline. Individuals implicitly understand that certain behavior is unacceptable, undesirable, or inappropriate, and they act accordingly. To achieve this, it is important that we discuss the character of online behavior and reveal its underlying meaning and the reasons for declaring it acceptable or unacceptable, desirable or undesirable, right or wrong, legal or illegal. Users must become aware of the meaning and consequences of their actions.

The issues and problems in electronic networks are the problems of the world around them. They have to do with who we are and what we do offline. The problems are the problems of modern, highly industrialized, democratic societies. Computer technology did not come into being in a vacuum. It was created and shaped in response to pushes and pulls in our way of life—culture, politics, and social institutions.

The ethical issues surrounding computers are new species of generic moral problems [5]. This is as true when it comes to online communication as it is in any other area of computing. The generic problems involve privacy, property, drawing the line between individual freedom and (public and private) authority, respect, ascribing responsibility, and so on. When activities are mediated or implemented by computers, they have new features. The issues have a new twist that make them unusual, even though the core issue is not. For example, before computers, we never had to think through property rights in terms of lines of code that could be implemented by a machine, but throughout history new discoveries have repeatedly challenged traditional notions of property. We have never confronted a threat to privacy of the kind or scale that computers make possible, but other technologies, such as cameras and telephones, have threatened privacy in the past. It is the same when it comes to electronic networks. Activities in networks have special features, though the activities themselves do not fall into new categories of human behavior. We send messages, exchange information, use language, play, work, and so on. With computer networks we have new versions of activities that take place offline and new species of problems that have arisen before.

In this article I identify three special features of online communication and briefly discuss the moral implications of each. I focus on anonymity and uncover its benefits and dangers.

Special Characteristics of Communication in Networks

Communication in computer networks has several characteristics that make it different from face-to-face communication and other forms of technology-mediated communication, such as telephone, fax, and mass media. These features may make a moral difference in the sense they may make behavior in an electronic network morally different from offline behavior.

Scope

Individuals communicating in electronic networks have a much broader reach than they do offline. A message sent by one individual can reach vast numbers of individuals around the world and may do so very quickly. The combination of factors—number of individuals reached, speed, and availability to individuals—makes the scope special. The speed/immediacy of online communication is not unusual in itself, for it is available in face-to-face and telephone communication. Also, the vastness of the reach is not unusual in itself in that radio, television, and telephones have the same reach. With radio and television, however, communication is one way and with telephone communication, it is typically restricted to only two or a few individuals at a given time. Moreover, interactivity is not unusual itself, since it is a given in face-to-face communication. It seems to be the combination of vastness of reach, immediacy, and availability to individuals for interactivity that makes for something unusual here. I use scope to refer to all three of these factors together.

We might think of scope as power. An action—a communication or transfer of information—in a network can have much greater power than an action in ordinary space. When I say something to someone standing next to me or publish an article in a journal, my action has a certain reach which is a function of the physical world. In a network, the impact of a comparable act is magnified many times over. I post an idea to an electronic bulletin board, and it reaches thousands of people around the world in a very short time. Moreover, it may exist, in the sense of being available to others, virtually forever. Similarly, I write some computer code offline, and my action brings about some changes in the way my computer works; I write some computer code online (say, a worm), send it out, and it brings down systems across the world.

One way scope or power has moral implications is that we generally expect those engaged in powerful activities to take greater care. We restrict who can use powerful technologies, for example, by licensing their use. We license automobile drivers, pilots, and those who perform surgery, and we regulate many types of businesses that involve dangerous industrial processes. We expect and require those who use more powerful, especially dangerous, technologies to take more precautions and exercise greater care than those who use less powerful technologies, like a megaphone, or a camera. Indeed, we often hold individuals legally liable for the effects of their actions when they use powerful technologies recklessly.

Anonymity

In networks, individuals can communicate without identity, using pseudonyms and taking on different personas. Moreover, someone may grab someone else's words and alter them or grab someone else's identity and distribute words as if they were the words of the other. In face to face, telephone, and media communication, individuals can wear disguises and lie about who they are and what they want; voices can be altered through the telephone; reporters can fabricate video material; and FBI agents can go undercover. The distinction is that offline anonymity requires effort on the part of the individual seeking anonymity whereas online, anonymity is often the natural state; at least, it is in those environments where an individual is given a generic user ID. The individual must make an effort in order to establish his or her real identity. In this sense, anonymity may be said to be favored in online communication.† Furthermore, the ultimate test of identity offline is seeing the person face to face. The fact that this test is not available online also seems to favor anonymity.‡

Anonymity creates problems of integrity. The anonymity disconnects the words from the person. It is possible for my words to be taken by someone and distributed as his or her words; for my words to be taken, altered, and then distributed as my words; and for words to be created entirely by someone else and attributed to me. Again, comparable disconnections can and do happen in ordinary space, but they require quite different physical behaviors.

The moral significance of these characteristics will be explored later. For the moment, it is important to note that trust in the information we use in decision making and trust in the individuals with whom we have relationships seems crucial to our way of being. Yet trust is difficult to develop in an environment in which one cannot be sure of the identities of the people with whom one is communicating. It is difficult to develop a reliable history of experiences with specific people.

Reproducibility

Information can be reproduced online without loss of value and in such a way that the originator or holder of the information would not notice. Of course, in the ordinary world, information can be reproduced via copying machines and cameras. In electronic networks, however, there is no loss of value in the process of reproduction; a copied program or copied data set is perfectly usable, and the reproduction can be such that there is no evidence that copying has been done—that is, the person who created or owns the information has no reason to believe it has been copied. The difference here is the difference between taking a painting—the painter or owner no longer has the painting and can

† It would be a mistake to claim that anonymity is an intrinsic feature of the technology for the technology could be physically designed to diminish the possibility of anonymity.

‡ Screen-image to screen-image contact is available and is likely to improve in quality over time, but it is unlikely this will ever be as credible as seeing a person face to face since screen-image to screen-image contact may lead to virtual-image to virtual-image contact.

see it is gone—and copying a data set—the creator or owner still has the data set and may have no indication a copy was made.

Another aspect of reproducibility is that activities in an electronic network can be recorded and observed. In ordinary space, I utter a sentence to a friend, my friend hears, and understands, and the words are gone (or, at most, retained in the memories of my friend and me). Not so in most forms of online communication. The words are there until someone or some event deletes them. Depending on where I have sent them, they may be available to others who can copy and send them to others ad infinitum, or they may be available to those who manage and monitor the technology, or they may be available to snoopers.

Reproducibility is related to both scope and anonymity. Reproducibility creates the possibility of permanence or, at least, endurance of information. This adds to the increased scope of actions in networks; that is, actions endure in computer networks. The problem of integrity of information that arises from anonymity (the disconnection between words and person) also arises from the reproducibility of the information. One can anonymously grab words and attribute or alter them because of their reproducibility.

Reproducibility has moral implications because it goes counter to our traditional notions of property and personal privacy. Our notions of property are associated with the idea of control: An owner can control the use of her or his property. Our notions of privacy are based on a physical world in which actions are performed and then are gone; they are irretrievable. (Tape recorders and cameras have also changed this.) In the case of electronic networks, the medium in which an action occurs makes reproduction and observation easier than in ordinary space. Though it depends on how the system is set up, effort is generally necessary to delete an action in a computer network, whereas in ordinary space, effort is necessary to record it. So reproducibility, like anonymity, seems to be favored in computer networks.

In summary, these three special features of communication in networks lead, either directly or indirectly, to problems online.[§] The breadth of scope means that individuals can do a wide variety of things to one another online that would be impossible or extremely difficult to do offline. Individuals can do things to one another online that would require physical closeness and a different set of physical behaviors offline. They can snoop, steal, harass, defame, and sabotage; they can affect thousands of individuals who are vastly geographically distant. Anonymity leads to serious problems for the integrity of information and communication. Reproducibility also threatens the integrity of information, and it means that acts of communication and/or information have endurance. Reproducibility also facilitates surveillance.

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§ We should resist the temptation to think of these characteristics as intrinsic features of computer network communication. In ordinary space, it may seem that privacy is favored because of our bodies and brains. However, we build walls; pass laws specifying that criminal justice agencies cannot wiretap without cause; and expect our neighbors will not aim telescopes at our windows. The same can be said about the special features of computer networks as they have been designed to embody certain characteristics.

Benefits and Dangers

A wide variety of forums now exist for informal interaction online—different kinds of bulletin boards, discussion groups, email, role-playing games, and so on. All three of the characteristics discussed earlier are likely to be addressed and affected as electronic networks evolve. Each offers benefits and creates dangers.

The benefits and dangers seem to come together. The scope of network communications, for example, brings people together, makes the world seem smaller, and opens up opportunities for increased exchange of ideas and information; at the same time, it brings greater danger of harm on a grander scale. Reproducibility creates the possibility of making massive amounts of information available to many more individuals than ever before, at very little cost, with great convenience, and so on. At the same time, reproducibility also means greater opportunity for theft and sabotage of information.

Anonymity poses several benefits and dangers. The anonymity available online is likely to figure prominently in the future development of networked communication systems, both as a feature to be preserved and as a feature to be controlled. Clarity on its value and disvalue will ensure that we take advantage of its benefits and minimize its dangers.

Anonymity does not seem to be bad in itself. In fact, it can be beneficial in certain contexts, such as when race, gender, or physical appearance gets in the way of fair treatment. In these contexts, anonymity serves as an equalizer. In online education, for example, biases are removed from student-to-student interactions as well as from the teacher's evaluations of students. Anonymity may also facilitate participation in certain activities. Individuals who might not otherwise participate in discussions with, say, other rape victims or battered wives or ex-criminals may be more willing to take part under the veil of anonymity. Participation may provide individuals with valuable information or much-needed emotional release. Even in less sensitive contexts, individuals may be more likely to say what they think when they have a degree of anonymity. In formal situations, such as in the workplace, individuals may think more creatively and provide better feedback to authorities when they have the veil of anonymity.

Nevertheless, anonymity is problematic in networks, and this seems to be so for at least three related reasons:

- Offline as well as online, anonymity is problematic because it makes the process of identifying and catching criminals more difficult. Here anonymity is still not bad in itself but bad because of the effect it has. Tracking down those who snoop, steal, and sabotage, as well as those who harass or libel others, is made more difficult.
- The second problem with anonymity is related directly to one of its previously mentioned advantages. Anonymity creates a veil under which people are not afraid to say what they think. This is good when it facilitates discussions that are likely to help discussants deal with their feelings, find comfort from those who have had similar experiences, or acquire useful information. On the other hand, anonymity is not so good when it frees individuals to behave in undesirable and harmful ways [6, 9, 12]. Those who might not snoop, steal, harass, make racist comments, or confront others with pornography offline may be more likely to do so under the veil of anonym-

ity online. Being observed and identified by others seems to serve as a form of social control on undesirable behavior, one that is not present online.

- Anonymity contributes to the lack of integrity of online information. We are inundated with information offline and online and thereby forced to make choices about what to rely upon, such as what information to give weight to, when we form opinions and make decisions. One of the ways we do this is by developing a history of experiences with various sources of information. Over the course of time, based on our experiences, we come to trust some sources more than others, or to trust certain sources for certain purposes. This is true in both personal relationships and our relationships with the media. The best example is the way in which individuals typically deal with the wide variety of news sources—newspapers, magazines, and individual reporters. Experiences with each help one to make judgments about which to rely upon for what.

However, this way of dealing with massive amounts of information is not available in an environment in which the identities of the sources of information are uncertain. The same person may be contributing information under multiple identities; the same identity may be used by multiple individuals. In effect, you don't know the sources of the information you receive; you can't develop a history of experiences with a source. The fact that words can be stolen and altered contributes to this problem.

Diminished Trust

These three problems with anonymity contribute to a general situation of diminished trust. One cannot put one's trust in information and individuals online for a variety of reasons: One does not know (at least, in the ordinary sense of "know") the individuals with whom one is communicating. The system of communication is vulnerable to sabotage. Individuals are more likely to behave in undesirable ways when they are anonymous, so you can't be sure how you will be treated.

The problem of diminished trust comes into focus when we consider the case in which women in an online discussion group on women's issues discovered that a participant whom they believed to be an older single woman confined to a wheelchair was in reality a male psychiatrist in his 30s [10]. The women who participated in the forum were shocked and upset when they found out that a person with whom they shared their intimate thoughts was not who they thought she was. We might view this simply as a case of deception, but that would miss an important component. Participants in the discussion group had come to place their trust in a persona based on a history of experiences (communications) with that persona. I presume they felt betrayed when they discovered the participant's true identity.

Now, some might say the women who participated in the forum were wrong to put any trust in an online persona. They were naive to assume that anyone online is who they claim to be. This response is disturbing, for it suggests that we must give up trust altogether when it comes to online communication. At this point in time it may well be smart to presume very little and to be very cautious. However, it would be a shame if we came to accept diminished trust as a given in online communication. There is no reason to believe that conditions necessary for more trust could not be created.

Trust seems to be built on the development of expectations which continue to be met. Individuals feel deceived and betrayed when their expectations are not met. I expect that my friend will not tell anyone what I have said. I expect when I enter a discussion with colleagues that what I say will be treated with respect. I expect that my friends will not lie to me. And so on. My trust is betrayed when individuals fail to fulfill these expectations.

How expectations are created is an extremely complicated matter. Quite often they are embodied in cultural patterns and institutional structures and transmitted implicitly. Other times they are formally created and meticulously reinforced. Other times they are quite informal. They are generally diverse; that is, individuals have differing expectations about the same situation.

Variety and Consent

What seems most important in promoting trust is that there be some sort of match between what individuals expect and what actually happens. In this regard, what seems most important for computer networks is that individuals be informed about what to expect when they enter an online environment and that the environment be what it purports to be.

We can have a wide variety of forms of online communication with a high level of trust if the rules are known or explained to individuals before they enter an environment. We can have environments in which there is a high degree of anonymity, environments in which an operator goes to great lengths to check and verify the identity (and even the credentials) of participants before allowing them to participate, and environments between these two extremes. We can have filtered and unfiltered discussions, discussions filtered by diverse criteria. The important thing is that individuals know what they are getting into before they enter.

This approach will not solve all the problems of social behavior online by any means. Indeed, many forms of online discussion are already taking place, and it is clear one of the persistent problems is how to deal with individuals who refuse, for whatever reason, to play by the rules. The important and difficult issues for any individual or group of individuals setting up an informal discussion arena online are deciding how open or closed the forum should be, and how to deal with those who refuse to behave according to the rules.

The primary principle that ought to be followed now is that the rules be specified up front, that is, before a individual begins using a system. Variety can prevail as long as those who communicate online understand the rules of various modes of electronic exchange vary. The metaphor of different rooms works well here. What the rules are depend on where you go. Some rooms are private, some public. Some have narrow purposes and familiar cultures. Others are broad and/or may have strange cultures. But wherever you go, you are either informed immediately or can find out easily what the rules are and what the consequences of violating the rules will be.

Conclusion

Law and technology will never be enough to solve online behavioral problems. Individuals will have to internalize norms of behavior for their online interactions. After identifying three special features of online communication as compared with offline communication, I have argued that anonymity has benefits and dangers. My analysis suggests we need not insist individuals always be anonymous or always reveal their identities. Rather, I have argued for instituting a principle whereby the rules of all forums are explicit and the consequences for violation are specified. Then individuals can choose which forums they want to join and will know what to expect as they participate.

The ethical issues that arise online are not so different from ethical issues offline. Hence, it should not surprise us if the most defensible norms for behavior online are identical to norms of behavior offline. Online ethics would seem to call for the following general rules:

1. Know the rules of the forums in which you communicate and follow them.
2. Respect the privacy and property rights of others. When in doubt, assume the user wants privacy and ownership.
3. Respect the individuals with whom you communicate and those who are affected by your communication; that is, do not deceive, defame, or harass.

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Discussion Questions and Recommended Reading

Discussion Questions

1. Charles Ess lists three qualities that he believes sets digital media apart from traditional media in terms of the ethical questions they provoke. List, discuss, and explain them.
2. Ess proposes a philosophical approach he calls "pluralism" to address the difficulty of forming a global ethics. What is the relationship between pluralism and the long-established ethical approaches of relativism and absolutism? Where and why does it attempt to address the shortcomings of those theories, and, in your opinion, is it likely to succeed?
3. Deborah Johnson argues that communication over computer networks differs significantly from other forms of media and face-to-face communications. What are they? Explain and discuss.
4. How does Deborah Johnson feel about the status of anonymous speech and trust online? Discuss.

Recommended Reading

Cyberphilosophy: The Intersection of Computing and Philosophy. Eds. James H. Moor and Terrell Ward Bynum. Oxford: Blackwell Publishing, 2002.

James, Carrie et al. *Young People, Ethics, and the New Digital Media: A Synthesis from the GoodPlay Project.* Cambridge: MIT Press, 2009.

The Impact of the Internet on Our Moral Lives. Ed. Robert J. Cavalier. Albany: State University of New York Press, 2005.

Section 4

Self and Selves Online: Identity, Anonymity, Community



The Everyday Posthuman

New Media and Identity

Martin Lister et al.

In very general terms the various discourses of new media studies often concur that new media herald genuine change in relation to human identity or subjectivity. This may be in terms of an ever more thorough integration of everyday life and the mediasphere (Kinder 1991; Hutchby and Moran-Ellis 2001); shifting relationships between the public and private realms or between the individual (or local community) and the global reach of popular media and cultural forms (Mackay 1997; Moores 1993b); the claims for radical experimentation or play with identity in some Internet media (Stone 1995; Poster 1995a; Turkle 1996); or an increasing intimacy or hybridisation between the human and the technological figured in the cyborg (Haraway 1990; Gray 1995).

So questions of the relationship between the human and the technological in new media studies are generally addressed in relation to questions of identity and subjectivity. However, in research on media technologies and identity or subjectivity it is not always clear exactly what is meant by 'identity'. On the one hand it may indicate little more than the day-to-day choices about how an individual chooses to present him or herself to the world (choice of outfit for the day, preference in mobile phone model and ringtone, etc.), on the other a sense of identity 'under construction' implies more fundamental changes in the sense of self, closer to the claims of cybercultural studies. The rest of this section will examine claims that identity and subjectivity have undergone, or are undergoing, profound changes in the age of new media, and suggest the implications of such claims for an understanding of contemporary lived experience.

From Identity 'Under Construction' to Social Networks

The web is now the most widely accessed Internet medium and can be seen as both continuous with, and offering distinct new possibilities for, established relationships between public and private space, public and private selves. With the web's inception in the mid-1990s, the personal home page soon came to be a relatively accessible, and distinctly new, form of media 'production'. Designing and publishing a personal website was relatively easy and inexpensive, and allowed the designer to address

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a (potential) worldwide audience, or engage with a geographically distributed community of interest well beyond the scope of earlier DIY media production. The term 'home page' itself highlighted the relays between public and private space. Even in web browsers and large-scale commercial websites today this reassuringly domestic terminology offers the lost browser a return to a familiar page.

Daniel Chandler studied early individual websites and interviewed their designers. He linked their production with other forms of personal documentation, communication or samizdat publishing (diaries, newsletters, 'round robin' letters, fanzines), but pointed out that where home pages differed was precisely their potential for a global audience. The spare room or bedroom shift in their relationship with the outside world, becoming permeable:

> a home in the real world is, among other things, a way of keeping the world out ... An online home, on the other hand, is a little hole you drill in the wall of your real home to let the world in.
>
> (John Seabrook, quoted in Chandler 1998).

Chandler's main interest, however, was in the ways in which individuals present themselves on websites. Borrowing a metaphor from the conventions of web page production, Chandler argues that just as incomplete web pages are often labelled as 'under construction', so too are the identities of their designers. He describes the aesthetics and construction methods of home page design as 'bricolage'. This term originates in anthropology, denoting the improvised use by pre-industrial peoples of everyday materials and objects to hand in the symbolic practices of art and rituals. The term has been adopted by Cultural Studies to describe the appropriation and manipulation—even subversion—of the meanings of commodities by youth subcultures:

> the extraordinary symbolic creativity of the multitude of ways in which young people use, humanize, decorate and invest with meanings their common and immediate life spaces and social practices—personal styles, and choice of clothes; selective and active use of music, TV, magazines; decoration of bedrooms.
>
> (Willis 1990: 2)

Susanna Stern also makes the connection between the content and aesthetics of young people's public presentation and self-expression through web page production and the bricolage of the bedroom wall. Through her research into the home pages of adolescent girls, she argues that the construction and presentation of identity is mapped onto 'real world' gendered practices and spaces. Thus, Stern's research does not find 'fluid' identities as such, rather a more complex picture of self-presentation and construction of image: 'in this study, girls' home pages were ultimately regarded as texts that reflect in some way the selves girls think they are, the selves they wish to become, and most likely, the selves they wish others to see' (Stern 1999; 24).

There are distinct approaches to self-representation in the sites studied, which Stern summarises as 'spirited', 'sombre' and 'self-conscious' sites. Each of these develops new ways of making private practices

of identity construction public, from light-hearted listings of likes and dislikes to the presentation of very personal, often painful, reflections or poetry, modes of writing previously confined to diaries and journals. Stern takes this further: the bedroom as a 'safe' if restricted social space for girls is transformed through the use of Internet media into a space for self-expression which is more public, but still safe:

> It seems likely that for some girls, the web presents the 'safe company' they need to 'speak their experience' and 'say what is true'. It also seems to grant some girls the freedom to 'develop their sense of possibility and to experience themselves as active agents in their own lives'.
>
> (Stern 1999: 38)

In recent years the weblog or blog has displaced the personal home page as the primary Internet medium for individual professional and non-professional self-expression. The key distinctions from the home page are that no knowledge of HTML editing software or FTP is required to set up a simple blog; the chronological journal or diary-like structure suggests and shapes a particular kind of engagement and content (a more or less frequent updating of thoughts, observations, comments and links to other blogs or sites of interest); and blog software facilitates and encourages other bloggers to link to and comment on the site. Thus the blog lends itself more to sustained and continuous communication than does the home page:

> the ability to archive blog posts creates a way to scaffold on previous impressions and expressions; thus, constructing identity can be a continuous process for adolescents, and one to which they can refer. Finally, when blog software offers ways to provide feedback or link to other bloggers, this can foster a sense of peer group relationships.
>
> (Huffaker and Calvert 2005)

Other Internet media and sites have developed their form and content in response to the particular technical format and cultural conventions of the blog, notably YouTube's support for the embedding of its video clips in blog posts, or facilities for linking to users' photograph albums on sites such as Flickr. Social networking sites such as MySpace and Facebook certainly build on the same long-established traditions of vanity publishing and journal-keeping; they often assume, or attempt to initiate, an ongoing communication network with their readers and viewers. They encourage the acquisition of online contacts ('friends'), providing all manner of channels of private and semi-public communication along the lines of email and messaging, but also with more playful modes such as quizzes, remediations of card and board games, virtual gifts, automated comparisons of tastes in literature and film, drawings and photographs, and games, such as Facebook's zombies, that exploit the interwoven networks of friends in a kind of ludic viral marketing.

If web home pages were sites of self-presentation or identity construction through the bricolage of interests, images and links, then personal blogs and social network profiles could be seen to add an

ongoing identity *performance* both individually and collectively, driven by Web 2.0 technologies of multimedia, content management, network building and persistent communication.

Virtual Identity

> Our interaction with the world around us is increasingly mediated by computer technology, and [thus] bit by digital bit, we are being 'Borged', as devotees of *Star Trek: The Next Generation* would have it—transformed into cyborgian hybrids of technology and biology through our ever-more-frequent interaction with machines, or with one another through technological interfaces.
>
> (Dery 1994: 6)

The language and concepts of cybercultural studies are shot through with science fiction and cyberpunk imagery, blurring distinctions between the human and machine in near-future worlds replete with media technologies, or riddled with gateways to virtual worlds. These discourses and their cyberpunk imaginary are widely critiqued in those strands of new media studies drawn from Cultural Studies, wary of assumptions of radical newness and the transcendence of historical and social divisions and conflicts via new technologies and their alternative, disembodied worlds. Feminist Cultural Studies in particular has questioned theories that assume a separation of mind (or consciousness or identity) from the body, evident in cybercultural studies (Bassett 1997; Kember 1998), cyberpunk fiction (Squires 1996) and computer sciences such as cybernetics and AI (Hayles 1999).

Yet there are resonances across this discursive divide. Cultural and Media Studies and Feminist Cultural and Media Studies make far-reaching claims for the mutability of the human subject in a heavily mediated culture, whether characterised by print and electronic media, or computer-based media. Moreover, important work on technoscience and technoculture emerges from both Cultural Studies and Feminist Cultural Studies, work that asks serious questions about the nature and volatility of the subject or of identity in a time of rapid technological change.

Theories of the virtual age responding to new computer media such as VR, the Internet and videogames in the 1980s and early 1990s promised the transformation of the everyday, or transport into realms far distant from the everyday. There was a tendency to define these new media and their users in opposition to the embodied and material: the virtual versus the real, play versus consumption, Utopia versus the mundane politics and contractions of the real world, cyberspace and VR versus commercial communications and information media, identity versus corporeality (and all the body's historical and cultural 'baggage'). To question some of the assumptions of the 'virtual age' thesis is not to argue that identities are not being constructed or transformed, or to deny that our increasingly intimate relationships with machines and networks challenge long-held conceptual oppositions between the local and global, public and private, or consumption and production. Indeed media technologies can be seen as implicated in a shifting sense of identity in numerous ways, including the following:

- through changes in mass media: we have seen, for example, how developments in television broadcasting can facilitate the presentation or performance of identity;
- through consumption as an active practice of bricolage, constructed through the images and consumer goods we 'choose', a process perhaps given new impetus by the interactive and reproductive power of digital software;
- identity can be 'constructed' in cyberspace or virtual worlds;
- as individuals within virtual communities;
- virtual reality and cyberspace are undermining (our understanding of) the real, within which we have constructed our identities;
- an ever more intimate relationship with technologies and media from the Internet to genetic engineering, raising questions of the boundaries between the human body and consciousness, machines and networks;
- that new media are only a part, however significant, of the impact of broader historical, economic and/or cultural change on identity.

As the excitement of the early 1990s and its assumptions of widespread entry (or upload) of human consciousness into virtual reality fades into cultural history, critiques of its naivety increasingly seem to have been misplaced, as attacks on straw men, running the risk of missing significant concepts and objects of study bound up in this technocultural idealism. If we put the fictional cyborgs in Dery's statement to one side (for now), the statement can be reread: it is clear that interaction with the world is increasingly mediated by computer technology, people *do* experience ever-more-frequent interaction with sophisticated machines—and with one another—through technological interfaces. Increasingly intimate relationships with machines and networks do challenge long-held conceptual and lived oppositions between the local and global, public and private, consumption and production, or as we shall see later, between the human and the non-human.

The discursive constitution of identity, subjectivity, and old and new media and technologies is thoroughly tangled. As we have noted, 'identity' and 'subjectivity' are rarely defined, are used differently in different discourses, and are often apparently interchangeable. Also, the term 'real world' should be read with caution. Virtual environments and media are no less real for being virtual—they exist as both data and lived experience. What follows is a short survey of how new media studies have constituted the relationship between identity, subjectivity, the body, technology and media.

What Is New About Networks?

New media studies generally concerns itself with networked new media, and the Internet media in particular. Much of the early excitement about the possibilities for users to present or perform alternative identities, to *play* with identity was predicated on the simple fact that Internet users were geographically remote from one another. Hence conventional markers of identity become irrelevant because users cannot see each other. This then, it has been argued, facilitates new online cultures based

on meritocratic principles in which often marginalised people (the young, women, the disabled, black people) can be accepted for their knowledge or communicational skill.

> In bulletin boards like The Well, people connect with strangers without much of the social baggage that divides and alienates. Without visual cues about gender, age, ethnicity, and social status, conversations open up in directions that otherwise might be avoided. Participants in these virtual communities often express themselves with little inhibition and dialogues flourish and develop quickly.
>
> Poster 1995a:90

From this, some make the bolder claim that with online communication in 'cyberspace' or virtual reality, not only can we not be seen, but we are liberated to present our identities in new ways, or more profoundly, develop new identities—playful identities in which gender, race, species even, become fluid. Sherry Turkle has addressed the individual's sense of self in computer networked communication. She sees networks as potential 'identity workshops' in which identity is refracted through role-play and remote interaction with other users: 'The self is not only decentered but multiplied without limit. There is an unparalleled opportunity to play with one's identity and to "try out" new ones' (Turkle 1996: 356).

From this, early cybercultural studies sometimes made the bolder claim that in online communication in cyberspace, not only can we 'float free of biological and sociocultural determinants', but in some way our bodies are left behind in 'incorporeal interaction' (Dery 1994: 3). Thus not only can we present ourselves as a different gender, race or species, we could be disembodied (see 5.4.4). While the fevered predictions of the early 1990s about the imminent uploading of human consciousness to cyberspace may have faded, current academic and popular debates on digital culture often still assume a fundamental separation between actual space and virtual space, and between the actual domestic, everyday lives of the users and players of virtual spaces and their presence (through avatars for example) within the virtual.

Does then the everyday engagement with Internet media escape established patterns of play and the negotiations and constructions of identity in 'old' media consumption? On what notions of historical, technological or cultural change are these incorporeal virtual identities based? Alluquere Roseanne Stone asks 'what is new about networking?' and gives two possible answers. The first is 'nothing', i.e. communicating via a computer network is little different from using the telephone (though this overlooks the possibility that early telephony might in itself have been a profound proto-cybercultural experience!). The second possible answer is 'everything': networks could be seen as more like public theatre than 'old' media, as new arenas for social experience and dramatic communication, 'for qualitative interaction, dialogue and conversation' (Stone 1995: 16). Stone asserts that the second answer is true and argues that this has profound implications for our sense of our selves as bodies in space, our sense of 'presence'. She argues that the relationship between the material nature of the body—the 'physical envelope'—and the identity with which it once seemed coterminous is 'embedded in much larger shifts in cultural beliefs and practices [including] repeated transgressions of the traditional concept of the

body's physical envelope and of the locus of human agency' (Stone 1995: 16). For Stone, these larger shifts are symptomatic of nothing less than the end of the 'mechanical age', and the beginning of the 'virtual age' (Stone 1995: 17). Others concur. Mark Poster is one contemporary writer on new media who sees the advent of electronic media as analogous in historical importance to that of movable type. New media mark the end of the modern era and usher in postmodern subjectivity:

> In the twentieth century electronic media are supporting an equally profound transformation of cultural identity. Telephone, radio, film, television, the computer and now their integration as 'multimedia' reconfigure words, sounds and images so as to cultivate new configurations of individuality. If modern society may be said to foster an individual who is rational, autonomous, centered, and stable ... then perhaps a postmodern society is emerging which nurtures forms of identity different from, even opposite to those of modernity. And electronic communications technologies significantly enhance these postmodern possibilities.
>
> Poster 1995a:60

Cutting across cybercultural (and postmodernist) thought we can see quite diverse assumptions about relationships between the individual or subject, media technology, and historical and cultural change. The question we must now ask is: what role might media technologies play in effecting or facilitating changes in identity or subjectivity? As Poster indicates above, the development of print through movable type in the mid-fifteenth century is generally seen as the first mass medium and is often cited as a key factor in the development of modern rationality and subjectivity, and the undermining of the medieval religious world (see also McLuhan 1962, Birkerts 1994, and Provenzo 1986).

It could be argued that the epochal shift from the mechanical to the virtual is not quite so clear cut. Poster for example seems confused as to whether his 'postmodern possibilities' are the product of new media in particular, or electronic media (including television and radio) in general. The above quote suggests the latter, but elsewhere he specifically identifies digital media as the point of rupture. Against the 'alienation' of 'one-way' broadcast media, he posits the many-to-many system of the Internet:

> the question of the mass media is seen not simply as that of sender/receiver, producer/consumer, ruler/ruled. The shift to a decentralized network of communications makes senders receivers, producers consumers, rulers ruled, upsetting the logic of understanding of the first media age.
>
> (Poster 1995a: 87–88)

Stone, however, is clear on the distinction between old and new. It rests on the networked structure of new media use. Thus 'one-to-one' telephone conversations and 'one-to-many' model of broadcast media are superseded by 'many-to-many' communications facilitated by Internet media

Virtual Ethnography

A comprehensive understanding of relationships between identity, technologies, and everyday life must draw on ethnographic approaches and description. The ethnography of new media cultures faces distinct challenges. There are questions of the *sites*, as well as the subjects, of ethnographies of new media cultures. Christine Hine outlines an established view of ethnography as 'the sustained presence of an ethnographer in the field setting, combined with intensive engagement with the everyday life of the inhabitants of the field site, which make for the special kind of knowledge we call ethnographic' (Hine 2000: 63–64). Traditional ethnography then is site-specific: Miller and Slater argue that even Internet ethnography can be sited in actual places, 'by investigating how Internet technologies are being understood and assimilated somewhere in particular ... ' (Miller and Slater 2000:1). How then to conduct an ethnography that describes both actual and virtual spaces?

Hine makes (after Clifford Geertz) a key distinction between two broad and contradictory approaches to 'traditional' ethnography:

> The ethnographer is able to use this sustained interaction to 'reduce the puzzlement' (Geertz, 1993: 16) which other people's ways of life can evoke. At the same time, ethnography can be a device for inducing that same puzzlement by 'displacing the dulling sense of familiarity with which the mysteriousness of our own ability to relate perceptively to one another is concealed from us' (Geertz, 1993: 14).
>
> (Hine 2000: 64)

This latter strategy, of inducing puzzlement (perhaps denaturalising, 'making strange') is particularly suggestive for the study of the researcher's own culture (or subcultures or groups thereof). Hine is clear that her intentions, in studying the Internet, are thus oriented; such an approach allows for the description and articulation of the familiar and the strange, the established and the novel. The following case study exemplifies this.

CASE STUDY 4.6: Cyberferret and Play with Virtual Gender

Caroline Bassett's ethnographic study 'Virtually Gendered: life in an online world' (1997) undermines assumptions that virtual worlds (and our identities within them) fully escape the actual world, that visitors to them leave behind their sociocultural contexts. She notes the diverse and ostensibly emancipatory presentations of self in the playful virtual environment of Xerox's PARC research centre online 'world': LambdaMOO. As with other MUDs, LambdaMOO has a text-based interface, and citizens present themselves through three basic attributes: name, gender and appearance, all represented to other users as textual description. They can also 'build' themselves a textual home, its design reflecting their new identity. For example exploring ambiguity and androgyny:

> Neuterworld.
>
> A bland, white room. Clean air is sucked into your nostrils and unclean exhalation is sucked out of the room through the huge roof mounted extractor fan. A sense of peace pervades the whole room. Bara is here.
>
> Bara.
>
> A tall, dark individual of slight build. This person is curious in that it is impossible for you to tell whether it is male or female! It is sleeping.
>
> (Bassett 1997: 541)

Whilst sympathetic to the possibilities of MUDs and related online communication forms, Bassett questions uncritical notions of new free-floating identities in cyberspace, observing that whilst some participants do experiment with very different characteristics, or multiple 'identities', this is by no means practised by all. Thus while some take advantage of the transgressive genders allowed by the MUD:

> E looks content, and eir eyes beam at you with a kind of amusement … the black suede mini hugs Peri's hips and barely covers eir crotch, black suede glistening in the light or lack there of. Carrying bodysuit, nipple clamps …
>
> E carries a [hash] note on Eir gender in Real Life …
>
> (Bassett 1997: 545)

Most adhere to stereotyped constructions of masculinity or femininity:

> Beige Guest
>
> One luscious babe, with a flowing mane of brilliant red hair, with crystal emerald eyes, and the most enchanting smile on earth.
>
> (Bassett 1997: 546)

Bassett notes that it is probable that such hyperfeminine presentation is almost certainly that of a male participant. Even shifting identity to an inanimate object or animal does not automatically mean an escape from the gendered structures of Real Life:

> Cyberferret is a ferret ... with several cybernetic implants. One leg is bionic, and his entire skeletal system is made of titanium. He is looking for something to KILL!
>
> (Bassett 1997: 549)

Cyberferret aside, most online identities within LambdaMOO are, regardless of their play with gender, overwhelmingly presented as being white, attractive and young. This counters any straightforward assumption that identity construction is free from real life constraints and distinctions. Bassett draws on Judith Butler's concept of identity formation as 'performative', that is to say that identity (and in gender in particular) is not so much constructed as constantly materialised through acts in language.

Despite this, Bassett argues for two progressive readings of 'the small world' of Lambda. The first is that it highlights gender as constructed and 'unnatural', and second she implies that Real Life discourses are not entirely dominant in cyberspace, that Lambda does provide 'spaces for disruption, for the possibility of gender-play, and for the emergence of new forms of multiple subjectivity' (Bassett 1997: 550). Identities and subject positions persist across the actual and the virtual, but not without the possibility of transformation and play.

There is now a substantial body of 'virtual ethnographic' research, the most interesting of which traces the interpenetration of virtual and actual worlds (see for example Hine 2000, Slater 1998, Taylor 2006, Dixon and Weber 2007). The attention of this research to the textures of actual/virtual cultures and events is rich and productive, but it can be noted that its primary concern is often with the conversations and relationships between human participants and the broader contexts of language and culture that position them. Explicit attention is rarely given to the nature or specific effects of the technologies that facilitate or afford these cultures and identity games in the first place. This accounts for new media studies' focus on networked communication, on the relationships between humans across the various Internet media. It also explains the reluctance to study direct relationships between the human and the technological in digital environments, for example that between player-avatars and the non-human agents (bots) in online games. There are important exceptions to this general rule. For example, Turkle's assessment of the possibilities of identity play online is based very much in her earlier work on the relationship between computer users, their identities, their computers and the programs (including games) they were using. It is not only information and images that this technology allows us to experiment with and manipulate, she argues, but also the user's personality, identity and sexuality (Turkle 1984: 15). Here then identity play is effected through the feedback between individual and machine, not between individuals through networks. This raises a couple of important points. The cybercultural paradigm of free-floating identity play in virtual worlds is not necessarily predicated on remote communication between humans: the technological imaginary of networked virtual reality is rooted in the interactive engagement with the space of the computer game. It follows then that, at the very least, new media studies' conceptualisation of identity and subjectivity should encompass the direct relationship between human and machine as well as the relationships between humans facilitated by machines.

For example, the characteristics of online 'identity' have shifted somewhat with the advent of graphically sophisticated persistent virtual worlds of *Second Life* and games such as *World of Warcraft*. Rather than the player's descriptive skills, the avatar is developed through the software conventions and defaults of the world itself and time, application, aptitude and technical resources are required to produce a more customised avatar. To engage fully in these worlds and realise their ludic and creative potential also requires substantial investments of time, effort and ability (and money). In *World of Warcraft* this means the forging and maintenance of teams of players to undertake quests, levelling up through the acquisition (within the diegesis of the game) of financial, armorial and supernatural resources. Similarly in *Second Life*, to build a house, and to learn how to make (and then distribute or sell) virtual objects, requires many hours learning the software, developing skills, networking and expertise.

Whatever identity play might be evident in these everyday virtual practices, it is only one of a broader range of playful (and work-like) activities and processes, shaped by the affordances of the software and the social (and game) rules established by both the corporations that run these worlds (for *World of Warcraft* and *Second Life*: Blizzard and Linden Labs respectively) and the protocols and norms established, negotiated and fought for by the players themselves (in this sense these graphic virtual worlds are similar to social networking sites). Tanya Krzywinska suggests that

> Identity play is only one aspect [of *World of Warcraft*], however, and for many it fends to tail off after a while as it is harder to maintain the more you play. Transformational elements do not simply operate in terms of identity play; becoming more skilled at playing the game, making for a greater sense of agency and acting as an apparent foil to the forces of determination, is also a form of pleasure-generating transformation.
>
> (Krzywinska 2007: 117).

What is needed is a model of enquiry that factors in both the intangible nature of subjectivity and the materiality of the technologies and techniques with which subjectivity is interwoven.

Relationships between identity and everyday technologies are *material* as well as imaginary. An awareness of computers may offer ways of thinking about the self, but users, programmers and players are changing, working with, their subjectivity in learning to manipulate the hardware and software. Taste and preference, self-presentation and performance in popular technoculture are inseparable from the embodied nature of technical expertise and dexterity.

Videogame culture is a clear example of this. One may think of oneself as a gameplayer, as others might think of themselves as film buffs, or as music fans, but a player identity can only be fully inhabited through marked levels of technical competence. The videogame is an unforgiving medium: while it is possible to sit through a demanding art film for example, attempting to decode its images and intentions, if a player does not understand the game's interface or hasn't the experience or dexterity to handle its controls or solve its puzzles, then they are stuck, not players at all.

There are other barriers to a gameplaying identity, particularly in collective, online games. Helen W. Kennedy has studied the gendered culture of the online FPS *Quake*, both the games themselves and the

Internet forums, fan websites, communities and amateur production of game elements that surround the games. Her interviews with female players reveal a range of strategies deployed to gain entry to this predominantly (and sometimes aggressively) masculine culture (Kennedy 2007, see also Dovey and Kennedy 2006). As well as developing expertise in playing the game itself, these include setting up websites, forming women-only 'clans' for multiplayer competition, and designing 'skins', graphics that can be loaded into the game to transform the appearance of the player's avatar. Kennedy points out that while these women are individually and collectively negotiating and constructing the possibilities for femininity in the hypercharged and ultraviolent killing floors of *Quake*, these identities are inseparable from the material technocultural phenomena of both the intense embodied pleasures of gameplay and the acquisition and exploitation of technical knowledge in the design of skins and websites.

> You have to be able to use the mouse for more than just point and click you have to sort of be able to use it around space which is a bit different and it's easy to end up looking at the ceiling or getting stuck in corners and becoming frag bait. Oh, yeah, and your left and right hands are doing totally different things, you've got to really know where all the keys are ... at first I couldn't get it all sorted out, changing weapons, jumping, moving around and shooting it was all a bit much and my mouse hand would be doing one thing and I'd have to look at the keyboard to try and find the right keys ... then after a while it all sort of clicks and you're just staring at the screen and your hands are going like crazy and you just sort of do it all on automatic and you feel like it's you in there, sneaking round corners and fragging that poor little eyeball on legs to bits ... (Interview with author, Xena, *Quake Interviews*, December 2001).
>
> (Kennedy 2007:123)

The virtual world of *Quake* is populated by figurations of cyborgs (not least those created by these female gameplayers themselves), but, Kennedy argues, gameplay, gameplayers and game culture are literally cyborgian, a circuit of 'machines, code and bodies' (Kennedy 2007:127). Identity then is 'technicity', which here encapsulates 'taste, technological competence and the use of technology as a means through which to form and express individual and group identities' (Kennedy 2007: 137). Expertise, knowledge, dexterity, training, aptitude, preference, and creative practices are all techniques in the technological sense, and are all the stuff of everyday work and play. They are shaped by, and shape, bodies, minds and machines.

The Subject of Technology

To make sense of the varying claims of these theories of changing identities in relation to media technologies, it is important to be clear what is meant by identity—or rather at least to be clear that it is not clear what is meant by identity. Within Cultural and Media Studies 'identity' as a concept is generally interchangeable with 'subjectivity' (Hall 1997; Butler 2000). Sometimes the terms have

different connotations. Whereas, for example, an individual designing a MySpace page or writing their daily blog post may choose aspects of their interests and personal life to present as their identity, their *subjectivity* may be seen as less accessible to conscious manipulation, as more fundamental to that individual's place in the world and its hierarchies. Subjectivity, then, may be established through broader historical and cultural contexts, and positions individuals within the power structures of gender, class, and race.

Though central to modern notions of individuality and liberty, it should be noted that the word 'subject' also carries connotations of subjection, of being an individual constituted within or by power structures, 'a subject of the Crown' for example. So, on the one hand this is a concept which constitutes an internal, private sense of self in individuals, but on the other it refers to the positioning of the individual within society. Michel Foucault's work is particularly influential here. He argues that these two concepts of the subject are not contradictory but inseparable: the very rationality celebrated by the Enlightenment is not a universal principle, but a discourse which positions some individuals as rational but others as criminal or insane (Foucault 1989).

Descartes' famous dictum 'Cogito ergo sum' (I think therefore I am) is emblematic of the Enlightenment subject's ideal existence in the higher realms of thought and reason. As we will see, this philosophical separation of mind and body, or Cartesian dualism, has proved immensely popular in thinking through the status of thought and communication in cyberspace

The subject is a historical category of existence, emerging in the Renaissance, the beginning of the modern world. It can be seen as marking the end of the medieval worldview of a static, God-ordained universe of fixed hierarchies in which individuals and social classes, along with angels, animals and minerals, all had their immutable place:

> The Enlightenment subject was based on a conception of the human person as a fully centred, unified individual, endowed with the capacities of reason, consciousness and action, whose 'centre' consisted of an inner core [identity] which first emerged when the subject was born, and unfolded with it, while remaining essentially the same—continuous or 'identical' with itself—throughout the individual's existence.
>
> (Hall *et al.* 1992: 275)

With the Reformation, the emerging social and economic forces of mercantile capitalism increased the mobility of individual traders, and with the beginnings of urbanisation established social relationships were shaken, requiring new relationships between individuals and society. The category of an autonomous individual helped to make sense of this new, non-natural order. Ideas of the freedom of the rational individual informed both the French Revolution and the development of liberalism in economics and politics.

If the subject, then, is the figure of Man (Hall *et al.* (1992) point out that the Enlightenment subject was generally assumed to be male) in the modern world, and if subjectivity is changing in some fundamental way, the argument runs that we must be seeing the emergence of a postmodern subject. Hall describes how this putative new subject is conceptualised as 'having no fixed, essential

or permanent identity. Identity becomes a "movable feast"; formed and transformed continuously in relation to the ways we are represented or addressed in the cultural systems which surround us.' This is not always the liberating, pluralising of identity celebrated in postmodernist identity politics however. It could be catastrophic hyperreality: 'as systems of meaning and cultural representation multiply, we are confronted by a bewildering, fleeting multiplicity of possible identities, any one of which we could identify with—at least temporarily' (Hall *et al.* 1992: 277).

These diverse histories and hierarchies of subjective change are important to bear in mind as they underlie any idea of what subjective change might be today. All of the key positions covered here reject any idea of historical or cultural change as smooth and evolutionary. All are based on an understanding of distinct periods in history. Foucault, for instance, in charting the history (or 'archaeology') of knowledge, sees a profound break in our ideas of self in the Enlightenment, which established the rational and ostensibly universal principles on which the modern Western world is based. Other arguments seem to imply a modernist subject (i.e. late nineteenth century to mid-twentieth) rather than this modern one (i.e. Enlightenment or post-Renaissance), seeing the coming of industrial society and mass urbanisation as an environment that necessitates subjective change. Some discourses see different qualitative levels of change, some more significant than others. Marxists, for example, might see the modern subject as emerging with capitalism at the end of the feudal era. Subsequent changes, corresponding to changes of the mode of production (e.g. the shift from mercantile to monopoly capitalism), while perhaps significant, would not then be seen as fundamental. Feminists, while charting similar shifts in the modern world, may see the far older power structures of patriarchy as being the most significant.

There are contradictions here: on the one hand online communications create or realise a fluid, decentred subject, while on the other, by stripping away 'superficial' corporeal markers of identity we approach something like a 'truthful' essential self constituted in ideal communication with other disembodied but authentic identities. N. Katherine Hayles notes connections between recent cybercultural notions of identity and the long-established Enlightenment subject. Both, she argues, are based on the notion that

> embodiment is not essential to human being ... Indeed one could argue that the erasure of embodiment is a feature common to both the liberal human subject and the cybernetic posthuman. Identified with the rational mind, the liberal subject possessed a body but was not usually represented as being a body. Only because the body is not identified with the self is it possible to claim for the liberal subject its notorious universality, a claim that depends on erasing markers of bodily difference, including sex, race, and ethnicity.
>
> (Hayles 1999: 5 quoted in Kitzmann 1999)

For Judith Butler it seems that the construction of identity is effected through subjects organising together according to affinities in a process of *identification*. Here then identity is the social appearance of the subject (Butler 2000). Identity is sometimes used more specifically in the analysis of media consumption (Tomlinson 1990), and a different inflection of the term identification is central to Film Studies' theories of the relationships between film spectators and film images (Metz 1985).

Subjects and Media Technologies

There are precedents for linking changes in the subject to changes in media technologies. The development of print through movable type in the mid-fifteenth century is generally seen as the first mass medium. It is often cited as a key factor in the waning of the medieval religious world, and hence the development of modern rationality and subjectivity (McLuhan 1962; Birkerts 1994; Provenzo 1986). The role of the mass media and specific media technologies in the second half of the twentieth century is articulated differently across the diverse debates in cultural theory, yet there is a general assumption that contemporary culture in the developed world is characterised by an increasing prevalence of mediated forms and images, with concomitant effects on life, experience, political activity and so forth (see e.g. Jameson 1991, Harvey 1989).

As we have seen, even in mainstream Cultural and Media Studies media technologies are often assumed to be instrumental in a shifting sense of identity in numerous ways, including the following: the provision of media images and narratives for identity construction (Kellner 1995); consumption as an active practice of identity bricolage (Hebdige 1979; Willis 1990), constructed through the images and consumer goods individuals 'choose' (Tomlinson 1990); all processes given new impetus by the interactive and reproductive power of digital software (Chandler 1998), or by a shift from the 'broadcast' model of mass media to the non-hierarchical networks epitomised by the Internet (Poster 1995b). Where Cultural and Media Studies and related disciplines turn their attention to new media, they explore how identity can be 'constructed' in cyberspace or virtual worlds and how individuals engage in virtual communities (Hine 2000; Bassett 1997; Slater 1998; Green and Adam 2001).

On a less epochal timeframe and register, film theory since the late 1960s has established a quasi-cyborgian model of media subjectivity in which the film spectator is one component in the 'cinematic apparatus', both physically and psychically positioned by the film, its mode of projection, and the cinema auditorium. The position of spectator within the cinema auditorium (in the dark, looking at the large screen in front whilst the images are projected overhead from behind) produces an array of ideological effects, not least that of identification with the camera:

> that which has looked, before the spectator, at what the spectator is now looking at ... The spectator is therefore interpellated by the filmic text, that is the film constructs the subject, the subject is an effect of the film text.
>
> (Hayward 1996: 8)



Who Am We?

Sherry Turkle

We are moving from modernist calculation toward postmodernist simulation, where the self is a multiple, distributed system.

There are many Sherry Turkles. There is the "French Sherry," who studied poststructuralism in Paris in the 1960s. There is Turkle the social scientist, trained in anthropology, personality psychology, and sociology. There is Dr. Turkle, the clinical psychologist. There is Sherry Turkle the writer of books—*Psychoanalytic Politics* (Basic Books, 1978) and *The Second Self: Computers and the Human Spirit* (Simon & Schuster, 1984). There is Sherry the professor, who has mentored MIT students for nearly 20 years. And there is the cyberspace explorer, the woman who might log on as a man, or as another woman, or as, simply, ST.

All of these Sherry Turkles have authored a new book, *Life on the Screen: Identity in the Age of the Internet*, published November 30 by Simon & Schuster. *Life on the Screen* tells how the computer profoundly shapes our ways of thinking and feeling, how ideas carried by technology are reshaped by people for their own purposes, how computers are not just changing our lives but changing our selves.

This story is borne of Turkle's past decade of research. In a series of pizza parties for MUDders in the Boston area, Turkle found conversations quickly turning to multiple personae, romance, and what can be counted on as "real" in virtual space. She soon turned to the world of Internet Relay Chat, newsgroups, bulletin boards, and commercial online services. She also examined the burgeoning cyberspace lives of children and teenagers.

What has she found? That the Internet links millions of people in new spaces that are changing the way we think and the way we form our communities. That we are moving from "a modernist culture of calculation toward a postmodernist culture of simulation." That life on the screen permits us to "project ourselves into our own dramas, dramas in which we are producer, director, and star. ...

Sherry Turkle, "Who Am We?" *Wired*, vol. 4, no. 1. Copyright © 1996 by Conde Nast Publications. Reprinted with permission.

Computer screens are the new location for our fantasies, both erotic and intellectual. We are using life on computer screens to become comfortable with new ways of thinking about evolution, relationships, sexuality, politics, and identity."

Turkle's own metaphor of windows serves well to introduce the following samplings from her new book. Those boxed-off areas on the screen, Turkle writes, allow us to cycle through cyberspace and real life, over and over. Windows allow us to be in several contexts at the same time—in a MUD, in a word-processing program, in a chat room, in e-mail.

"Windows have become a powerful metaphor for thinking about the self as a multiple, distributed system," Turkle writes. "The self is no longer simply playing different roles in different settings at different times. The life practice of windows is that of a decentered self that exists in many worlds, that plays many roles at the same time." Now real life itself may be, as one of Turkle's subjects says, "just one more window."

As recently as 10 to 15 years ago, it was almost unthinkable to speak of the computer's involvement with ideas about unstable meanings and unknowable truths. The computer had a clear intellectual identity as a calculating machine. In an introductory programming course at Harvard University in 1978, one professor introduced the computer to the class by calling it a giant calculator. Programming, he reassured the students, was a cut-and-dried technical activity whose rules were crystal clear.

Such reassurances captured the essence of what I call the modernist computational aesthetic. It's the computer as calculator: no matter how complicated a computer might seem, what happened inside it could be mechanically unpacked. Programming was a technical skill that could be done a right way or a wrong way. The right way was dictated by the computer's calculator essence. The right way was linear and logical. This linear, logical [model] guided thinking not only about technology and programming, but about economics, psychology, and social life. Computational ideas were one of the great modern metanarratives, stories of how the world worked that provided unifying pictures and analyzed complicated things by breaking them down into simpler parts. Computers, it was assumed, would become more powerful, both as tools and as metaphors, by becoming better and faster calculating machines, better and faster analytical engines.

From today's perspective, the fundamental lessons of computing are wrong. Programming is no longer cut and dried. Are you programming when you customize your word-processing software? When you design "organisms" to populate a simulation of Darwinian evolution in the computer game SimLife? Or when you build a room in a MUD so that opening a door to it will cause "Happy Un-Birthday" to ring out on all but one day of the year?

The lessons of computing today have to do not with calculation and rules, but with simulation, navigation, and interaction. The very image of the computer as a giant calculator has become quaint and dated. Fifteen years ago, most computer users were limited to typing commands. Today they use off-the-shelf products to manipulate simulated desktops, draw with simulated paints and brushes, and fly in simulated airplane cockpits.

Today's computational models of the mind often embrace a postmodern aesthetic of complexity and decentering. Mainstream computer researchers no longer aspire to program intelligence into computers but expect intelligence to emerge from the interactions of small subprograms.

In the games in the Sim series (SimCity, SimLife, SimAnt, SimHealth), you try to build a community, an ecosystem, or a public policy. The goal is to make a successful whole from complex, interrelated parts. Tim is 13, and among his friends, the Sim games are the subject of long conversations about what he calls Sim secrets. "Every kid knows," he confides, "that hitting Shift-F1 will get you a couple of thousand dollars in SimCity." But Tim knows that the Sim secrets have their limits. They are little tricks, but they are not what the game is about. The game is about making choices, and getting feedback. Tim talks easily about the trade-offs in SimCity—between zoning restrictions and economic development, pollution controls and housing starts.

SimLife is Tim's favorite game, because "even though it's not a videogame, you can play it like one." By this he means that as in a videogame, events in the Sim world move things forward. ("My trilobytes went extinct. They must have run out of algae. I didn't give them algae. I forgot. I think I'll do that now.") He is able to act on a vague intuitive sense of what will work even when he doesn't have a verifiable model of the rules underneath the game's behavior. When he is populating his universe in a biology laboratory scenario, Tim puts in 50 each of his favorite creatures, such as trilobytes and sea urchins, but puts in only 20 sharks. ("I don't want 50 of these, I don't want to ruin this.") Tim can keep playing even when he has no idea what is driving events. For example, when his sea urchins become extinct, I ask him why.

Tim: I don't know, it's just something that happens.

ST: Do you know how to find out why it happened?

Tim: No.

ST: Do you mind that you can't tell why?

Tim: No. I don't let things like that bother me. It's not what's important.

"Your orgot is being eaten up," the game tells us. I ask Tim, "What's an orgot?" He doesn't know. "I just ignore that," he says. "You don't need to know that kind of stuff to play."

I am clearly having a hard time hiding my lifetime habit of looking up words that I don't understand, because Tim tries to appease me by coming up with a working definition of orgot. "I ignore the word, but I think it is sort of like an organism. I never read that, but just from playing, I would say that's what it is."

The orgot issue will not die: "Your fig orgot moved to another species," the game informs us. This time I say nothing, but Tim reads my mind: "Don't let it bother you if you don't understand. I just say to myself that I probably won't be able to understand the whole game any time soon. So I just play it."

I begin to look through dictionaries, in which orgot is not listed, and finally find a reference to it embedded in the game itself, in a file called READ ME. The file apologizes for the fact that orgot has

been given several and in some ways contradictory meanings in this version of SimLife, but one of them is close to organism. Tim was right enough.

Children are comfortable with the idea that inanimate objects can both think and have a personality. But they no longer worry if the machine is alive. They know it is not. The issue of aliveness has moved into the background as though it is settled. But the notion of the machine has expanded to include its having a psychology. In talking about computers in a psychological way, children allow computational machines to retain an animistic trace, a mark of having passed through a stage in which the issue of the computer's aliveness was a focus of intense consideration.

Children also grant new capacities and privileges to the machine world on the basis of its animation if not its life. They endow artificial objects with properties, such as having intentions and ideas, previously reserved for living beings.

Granting a psychology to computers can mean that objects in the category "machine," like objects in the categories "people" and "pets," are fitting partners for dialog and relationship. Although children increasingly regard computers as mere machines, they are also increasingly likely to attribute qualities to them that undermine the machine/person distinction.

Children develop the two concepts in parallel and take what they understand to be the computer's psychological activity (interactivity as well as speaking, singing, and doing math) as a sign of consciousness. But they insist that breathing, having blood, being born, and, as one put it, "having real skin" are the true signs of life. Children today contemplate machines they believe to be intelligent and conscious yet not alive.

These children who so effortlessly split consciousness and life are forerunners of a larger cultural movement. Adults, less willing than children to grant that today's most advanced computer programs are even close to conscious, no longer flinch from the very idea of a self-conscious machine. Even a decade ago, the idea of machine intelligence provoked sharp debate. Today, the controversy about computers does not turn on their capacity for intelligence but on their capacity for life. We are willing to grant that the machine has a "psychology," but not that it can be alive.

People accept the idea that certain machines have a claim to intelligence and thus to their respectful attention. They are ready to engage with computers in a variety of domains. Yet when people consider what if anything might ultimately differentiate computers from humans, they dwell long and lovingly on those aspects of people that are tied to the sensuality and physical embodiment of life. It is as if they are seeking to underscore that although today's machines may be psychological in the cognitive sense, they are not psychological in a way that comprises our relationships with our bodies and with other people. Some computers might be considered intelligent and might even become conscious, but they are not born of mothers, raised in families, they do not know the pain of loss, or live with the certainty that they will die.

The 13-year-old Tim thinks that SimLife, unlike videogames and computer programming, is useful. "You get to mutate plants and animals into different species. You get to balance an ecosystem. You are part of something important." Tim thinks that the "animals that grow in the computer could be alive," although he adds, "This is kind of spooky."

Robbie, a 10-year-old who has been given a modem for her birthday, puts the emphasis not on communication but on mobility in considering whether the creatures she has evolved on SimLife are alive. "I think they are a little alive in the game, but you can turn it off and you cannot save your game, so that all the creatures you have evolved go away. But if they could figure out how to get rid of that part of the program so that you would have to save the game ... if your modem were on, [the creatures] could get out of your computer and go to America Online."

Sean, 13, who has never used a modem, comes up with a variant on Robbie's ideas about travel. "The creatures could be more alive if they could get into DOS. If they were in DOS, they would be like a computer virus and they could get onto all of your disks, and if you loaned your disks to friends, it would be like they were traveling."

In the late 1970s and early 1980s, when I studied children's ideas about aliveness in dealing with stationary computer objects, the focus of children's thinking had shifted to an object's psychological properties. Today, in children's comments about the creatures that exist on simulation games, in talk about travel via circulating disks or over modems, in talk of viruses and networks, movement is resurfacing as a criterion for aliveness. Children widely assume that the creatures on Sim games have a desire to move out of the system into a wider digital world.

The creatures in simulation space challenge children to find a new language for talking about them and their status, as do mobile robots that wander about, making their "own decisions" about where to go. When MIT professor Rodney Brooks asked his 10-year-old daughter whether his mobots, or mobile robots, were alive, she said, "No, they just have control." For this child, and despite her father's work, life is biological. You can have consciousness and intentionality without being alive. At the end of the 1992 Artificial Life Conference, I sat next to 11-year-old Holly as we watched a group of robots with distinctly different "personalities" compete in a special robot Olympics. I told her I was studying robots and life, and Holly became thoughtful. Then she said unexpectedly, "It's like Pinocchio. First, Pinocchio was just a puppet. He was not alive at all. Then he was an alive puppet. Then he was an alive boy. A real boy. But he was alive even before he was a real boy. So I think the robots are like that. They are alive like Pinocchio [the puppet], but not like real boys."

In the early 1970s, the face-to-face role-playing game Dungeons and Dragons swept the game culture. The term "dungeon" persisted in the high-tech culture to connote a virtual place. So when virtual spaces were created that many computer users could share and collaborate within, they were deemed Multi-User Dungeons or MUDs, a new kind of social virtual reality. (Some games use software that make them technically MUSHes or MOOs, but the term MUD has come to refer to all of the multi-user environments.)

MUDs are a new kind of virtual parlor game and a new form of community. In addition, text-based MUDs are a new form of collaboratively written literature. MUD players are MUD authors, the creators as well as consumers of media content. In this, participating in a MUD has much in common with scriptwriting, performance art, street theater, improvisational theater, or even commedia dell'arte. But MUDs are something else as well.

As players participate, they become authors not only of text but of themselves, constructing new selves through social interaction. Since one participates in MUDs by sending text to a computer that

houses the MUD's program and database, MUD selves are constituted in interaction with the machine. Take it away and the MUD selves cease to exist: "Part of me, a very important part of me, only exists inside PernMUD," says one player. Several players joke that they are like "the electrodes in the computer," trying to express the degree to which they feel part of its space.

All MUDs are organized around the metaphor of physical space. When you first enter a MUD, you may find yourself in a medieval church from which you can step out into the town square, or you may find yourself in the coat closet of a large, rambling house. For example, when you first log on to LambdaMOO, one of the most popular MUDs on the Internet, you see the following description:

> The Coat Closet. The Closet is a dark, cramped space. It appears to be very crowded in here; you keep bumping into what feels like coats, boots, and other people (apparently sleeping). One useful thing that you've discovered in your bumbling about is a metal doorknob set at waist level into what might be a door. There's a new edition of the newspaper. Type "news" to see it.

In the MUDs, virtual characters converse with each other, exchange gestures, express emotions, win and lose virtual money, and rise and fall in social status. A virtual character can also die. Some die of "natural" causes (a player decides to close them down), or they can have their virtual lives snuffed out. This is all achieved through writing, and this in a culture that had apparently fallen asleep in the audiovisual arms of television. Yet this new writing is a kind of hybrid: speech momentarily frozen into artifact, but curiously ephemeral artifact. In this new writing, unless it is printed out on paper, a screenful of flickers soon replaces the previous screen.

The anonymity of MUDs gives people the chance to express multiple and often unexplored aspects of the self, to play with their identity and to try out new ones. MUDs make possible the creation of an identity so fluid and multiple that it strains the limits of the notion. Identity, after all, refers to the sameness between two qualities, in this case between a person and his or her persona. But in MUDs, one can be many.

A 21-year-old college senior defends his violent characters as "something in me; but quite frankly I'd rather rape on MUDs where no harm is done." A 26-year-old clerical worker says, "I'm not one thing, I'm many things. Each part gets to be more fully expressed in MUDs than in the real world. So even though I play more than one self on MUDs, I feel more like 'myself' when I'm MUDding." In real life, this woman sees her world as too narrow to allow her to manifest certain aspects of the person she feels herself to be. Creating screen personae is thus an opportunity for self-expression, leading to her feeling more like her true self when decked out in an array of virtual masks.

MUDs imply difference, multiplicity, heterogeneity, and fragmentation. Such an experience of identity contradicts the Latin root of the word, idem, meaning "the same." But this contradiction increasingly defines the conditions of our lives beyond the virtual world. MUDs thus become objects-to-think-with for thinking about postmodern selves. Indeed, the unfolding of all MUD action takes place in a resolutely postmodern context. There are parallel narratives in the different rooms of a MUD. The cultures of Tolkien, Gibson, and Madonna coexist and interact. Since MUDs are authored by their

players, thousands of people in all, often hundreds at a time, are all logged on from different places; the solitary author is displaced and distributed. Traditional ideas about identity have been tied to a notion of authenticity that such virtual experiences actively subvert. When each player can create many characters in many games, the self is not only decentered but multiplied without limit.

As a new social experience, MUDs pose many psychological questions: If a persona in a role-playing game drops defenses that the player in real life has been unable to abandon, what effect does this have? What if a persona enjoys success in some area (say, flirting) that the player has not been able to achieve? Slippages often occur in places where persona and self merge, where the multiple personae join to comprise what the individual thinks of as his or her authentic self.

Doug is a Midwestern college junior. He plays four characters distributed across three different MUDs. One is a seductive woman. One is a macho, cowboy type whose self-description stresses that he is a "Marlboros rolled in the T-shirt sleeve kind of guy." The third is a rabbit of unspecified gender who wanders its MUD introducing people to each other, a character he calls Carrot. Doug says, "Carrot is so low key that people let it be around while they are having private conversations. So I think of Carrot as my passive, voyeuristic character." Doug's fourth character is one that he plays only on a MUD in which all the characters are furry animals. "I'd rather not even talk about that character because my anonymity there is very important to me," Doug says. "Let's just say that on FurryMUDs I feel like a sexual tourist." Doug talks about playing his characters in windows and says that using windows has made it possible for him to "turn pieces of my mind on and off.

"I split my mind. ... I can see myself as being two or three or more. And I just turn on one part of my mind and then another when I go from window to window. I'm in some kind of argument in one window and trying to come on to a girl in a MUD in another, and another window might be running a spreadsheet program or some other technical thing for school. ... And then I'll get a real-time message that flashes on the screen as soon as it is sent from another system user, and I guess that's RL. RL is just one more window, and it's not usually my best one."

Play has always been an important aspect of our individual efforts to build identity. The psychoanalyst Erik Erikson called play a "toy situation" that allows us to "reveal and commit" ourselves "in its unreality." While MUDs are not the only "places" on the Internet in which to play with identity, they provide an unparalleled opportunity for such play. On a MUD one actually gets to build character and environment and then to live within the toy situation. A MUD can become a context for discovering who one is and wishes to be. In this way, the games are laboratories for the construction of identity.

Stewart, a 23-year-old physics graduate student, uses MUDs to have experiences he can't imagine for himself in RL. His intense online involvements engaged key issues in his life but ultimately failed to help him reach successful resolutions.

Stewart's real life revolves around laboratory work and his plans for a future in science. His only friend is his roommate, another physics student whom he describes as even more reclusive than himself. For Stewart, this circumscribed, almost monastic student life does not represent a radical departure from what has gone before. He has had heart trouble since he was a child; one small rebellion, a ski trip when he was a college freshman, put him in the hospital for a week. He has lived life within a small compass.

Stewart is logged on to one MUD or another for at least 40 hours a week. It seems misleading to call what he does there playing. He spends his time constructing a life that is more expansive than the one he lives in physical reality. Stewart, who has traveled very little and has never been to Europe, explains with delight that his favorite MUD, although played in English, is physically located on a computer in Germany and has many European players.

On the German MUD, Stewart shaped a character named Achilles, but he asks his MUD friends to call him Stewart as much as possible. He wants to feel that his real self exists somewhere between Stewart and Achilles. He wants to feel that his MUD life is part of his real life. Stewart insists that he does not role play, but that MUDs simply allow him to be a better version of himself.

On the MUD, Stewart creates a living environment suitable for his ideal self. His university dormitory is modest, but the room he has built for Achilles on the MUD is elegant and heavily influenced by Ralph Lauren advertising. He has named it "the home beneath the silver moon." There are books, a roaring fire, cognac, a cherry mantel "covered with pictures of Achilles's friends from around the world.

> "You look up ... and through the immense skylight you see a breathtaking view of the night sky. The moon is always full over Achilles's home, and its light fills the room with a warm glow."

Beyond expanding his social world, MUDs have brought Stewart the only romance and intimacy he has ever known. At a social event in virtual space, a "wedding" of two regular players on a German-based MUD I call Gargoyle, Achilles met Winterlight, a character played by one of the three female players on that MUD. Stewart, who has known little success in dating and romantic relationships, was able to charm this desirable player.

On their first virtual date, Achilles took Winterlight to an Italian restaurant close to Stewart's dorm. He had often fantasized being there with a woman. Stewart used a combination of MUD commands to simulate a romantic evening—picking Winterlight up at the airport in a limousine, driving her to a hotel room so that she could shower, and then taking her to the restaurant and ordering veal for her.

This dinner date led to others during which Achilles was tender and romantic, chivalrous and poetic.

The intimacy Achilles experienced during his courtship of Winterlight is unknown to Stewart in other contexts. "She's a very, she's a good friend. I found out a lot of things, from things about physiology to the color of nail polish she wears." Finally, Achilles asked for Winterlight's hand. When she accepted, they had a formal engagement ceremony on the MUD.

At the engagement, Winterlight gave Achilles a rose she had worn in her hair; Achilles gave her 1,000 paper stars.

Although Stewart participated in this ceremony alone in his room with his computer and modem, a group of European players actually traveled to Germany, site of Gargoyle's host computer, and got together for food and champagne. Many of the 25 guests at the German celebration brought gifts and dressed specially for the occasion. Stewart felt as though he were throwing a party. This was the first time that he had ever entertained, and he was proud of his success. In real life, Stewart felt constrained by

his health problems, his shyness and social isolation, and his narrow economic straits. In the Gargoyle MUD, he bypassed these obstacles, at least temporarily.

The psychological effects of life on the screen can be complicated: a safe place is not all that is needed for personal change. Stewart came to MUDding with serious problems, and for Stewart, playing on MUDs led to a net drop in self-esteem. MUDs did help Stewart talk about his troubles while they were still emotionally relevant; nevertheless, he is emphatic that MUDding has ultimately made him feel worse about himself. MUDding did not alter Stewart's sense of himself as withdrawn, unappealing, and flawed.

While Stewart has tried hard to make his MUD self, the "better" Achilles self, part of his real life, he says he has failed. He says, "I'm not social. I don't like parties. I can't talk to people about my problems." The integration of the social Achilles, who can talk about his troubles, and the asocial Stewart, who can only cope by putting them out of mind, has not occurred. From Stewart's point of view, MUDs have stripped away some of his defenses but have given him nothing in return. In fact, MUDs make Stewart feel vulnerable in a new way. Although he hoped that MUDs would cure him, it is MUDs that now make him feel sick. He feels addicted to MUDs: "When you feel you're stagnating and you feel there's nothing going on in your life and you're stuck in a rut, it's very easy to be on there for a very large amount of time."

Stewart cannot learn from his character Achilles's experience and social success because they are too different from the things of which he believes himself capable. Despite his efforts to turn Achilles into Stewart, Stewart has split off his strengths and sees them as possible only for Achilles in the MUD. It is only Achilles who can create the magic and win the girl. In making this split between himself and the achievements of his screen persona, Stewart does not give himself credit for the positive steps he has taken in real life. Like an unsuccessful psychotherapy, MUDding has not helped Stewart bring these good experiences inside himself or integrate them into his self-image.

Relationships during adolescence are usually bounded by a mutual understanding that they involve limited commitment. Virtual space is well suited to such relationships; its natural limitations keep things within bounds. As in Thomas Mann's *The Magic Mountain*, which takes place in the isolation of a sanatorium, relationships become intense very quickly because the participants feel isolated in a remote and unfamiliar world with its own rules. MUDs, like other electronic meeting places, can breed a kind of easy intimacy. In a first phase, MUD players feel the excitement of a rapidly deepening relationship and the sense that time itself is speeding up. "The MUD quickens things. It quickens things so much," says one player. "You know, you don't think about it when you're doing it, but you meet somebody on the MUD, and within a week you feel like you've been friends forever."

In a second phase, players commonly try to take things from the virtual to the real and are usually disappointed.

Gender-swapping on MUDs is not a small part of the game action. By some estimates, Habitat, a Japanese MUD, has 1.5 million users. Habitat is a MUD operated for profit. Among the registered members of Habitat, there is a ratio of four real-life men to each real-life woman. But inside the MUD the ratio is only three male characters to one female character. In other words, a significant number of players, many tens of thousands of them, are virtually cross-dressing.

What is virtual gender-swapping all about? Some of those who do it claim that it is not particularly significant. "When I play a woman I don't really take it too seriously," said 20-year-old Andrei. "I do it to improve the ratio of women to men. It's just a game." On one level, virtual gender-swapping is easier than doing it in real life. For a man to present himself as female in a chat room, on an IRC channel, or in a MUD, only requires writing a description. For a man to play a woman on the streets of an American city, he would have to shave various parts of his body; wear makeup, perhaps a wig, a dress, and high heels; perhaps change his voice, walk, and mannerisms. He would have some anxiety about passing, and there might be even more anxiety about not passing, which would pose a risk of violence and possibly arrest. So more men are willing to give virtual cross-dressing a try. But once they are online as female, they soon find that maintaining this fiction is difficult. To pass as a woman for any length of time requires understanding how gender inflects speech, manner, the interpretation of experience. Women attempting to pass as men face the same kind of challenge.

Virtual cross-dressing is not as simple as Andrei suggests. Not only can it be technically challenging, it can be psychologically complicated. Taking a virtual role may involve you in ongoing relationships. You may discover things about yourself that you never knew before.

Case, a 34-year-old industrial designer who is happily married to a co-worker, is currently MUDding as a female character. In response to my question, "Has MUDding ever caused you any emotional pain?" he says, "Yes, but also the kind of learning that comes from hard times.

"I'm having pain in my playing now. Mairead, the woman I'm playing in MedievalMUSH, is having an interesting relationship with a fellow. Mairead is a lawyer, and the high cost of law school has to be paid for by a corporation or a noble house. She fell in love with a nobleman who paid for her law school. [Case slips into referring to Mairead in the first person.] Now he wants to marry me although I'm a commoner. I finally said yes. I try to talk to him about the fact that I'm essentially his property. I'm a commoner ... I've grown up with it, that's the way life is. He wants to deny the situation. He says, 'Oh no, no, no. ... We'll pick you up, set you on your feet, the whole world is open to you.' But every time I behave like I'm now going to be a countess some day ... as in, 'And I never liked this wallpaper anyway,' I get pushed down. The relationship is pull up, push down. It's an incredibly psychologically damaging thing to do to a person. And the very thing that he liked about her that she was independent, strong, said what was on her mind, it is all being bled out of her."

Case looks at me with a wry smile and sighs, "A woman's life." He continues: "I see her [Mairead] heading for a major psychological problem. What we have is a dysfunctional relationship. But even though it's very painful and stressful, it's very interesting to watch myself cope with this problem. How am I going to dig my persona's self out of this mess? Because I don't want to go on like this. I want to get out of it. ... You can see that playing this woman lets me see what I have in my psychological repertoire, what is hard and what is easy for me. And I can also see how some of the things that work when you're a man just backfire when you're a woman."

Case further illustrates the complexity of gender swapping as a vehicle for self-reflection. Case describes his RL persona as a nice guy, a "Jimmy Stewart type like my father." He says that in general he likes his father and he likes himself, but he feels he pays a price for his low-key ways. In particular, he feels at a loss when it comes to confrontation, both at home and in business dealings. Case likes

MUDding as a female because it makes it easier for him to be aggressive and confrontational. Case plays several online "Katharine Hepburn types," strong, dynamic, "out there" women who remind him of his mother, "who says exactly what's on her mind and is a take-no-prisoners sort."

For Case, if you are assertive as a man, it is coded as "being a bastard." If you are assertive as a woman, it is coded as "modern and together."

Some women who play male characters desire invisibility or permission to be more outspoken or aggressive. "I was born in the South and taught that girls didn't speak up to disagree with men," says Zoe, a 34-year-old woman who plays male and female characters on four MUDs.

"We would sit at dinner and my father would talk and my mother would agree. I thought my father was a god. Once or twice I did disagree with him. I remember one time in particular when I was 10, and he looked at me and said, "Well, well, well, if this little flower grows too many more thorns, she will never catch a man."

Zoe credits MUDs with enabling her to reach a state of mind where she is better able to speak up for herself in her marriage ("to say what's on my mind before things get all blown out of proportion") and to handle her job as the financial officer for a small biotechnology firm.

"I played a MUD man for two years. First I did it because I wanted the feeling of an equal playing field in terms of authority, and the only way I could think of to get it was to play a man. But after a while, I got very absorbed by MUDding. I became a wizard on a pretty simple MUD. I called myself Ulysses and got involved in the system and realized that as a man I could be firm and people would think I was a great wizard. As a woman, drawing the line and standing firm has always made me feel like a bitch and, actually, I feel that people saw me as one, too. As a man I was liberated from all that. I learned from my mistakes. I got better at being firm but not rigid. I practiced, safe from criticism."

Zoe's perceptions of her gender trouble are almost the opposite of Case's. While Case sees aggressiveness as acceptable only for women, Zoe sees it as acceptable only for men. These stories share a notion that a virtual gender swap gave people greater emotional range in the real. Zoe says: "I got really good at playing a man, so good that whoever was on the system would accept me as a man and talk to me as a man. So, other guys talked to Ulysses guy to guy. It was very validating. All those years I was paranoid about how men talked about women. Or I thought I was paranoid. Then I got a chance to be a guy and I saw that I wasn't paranoid at all."

Virtual sex, whether in MUDs or in a private room on a commercial online service, consists of two or more players typing descriptions of physical actions, verbal statements, and emotional reactions for their characters. In cyberspace, this activity is not only common but, for many people, it is the centerpiece of their online experience.

On MUDs, some people have sex as characters of their own gender. Others have sex as characters of the other gender. Some men play female personae to have netsex with men. And in the "fake-lesbian syndrome," men adopt online female personae in order to have netsex with women. Although it does not seem to be as widespread, I have met several women who say they present as male characters in order to have netsex with men. Some people have sex as nonhuman characters, for example, as animals on FurryMUDs. Some enjoy sex with one partner. Some use virtual reality as a place to experiment with group situations. In real life, such behavior (where possible) can create enormous practical and

emotional confusion. Virtual adventures may be easier to undertake, but they can also result in significant complications.

Martin and Beth, both 41, have been married for 19 years and have four children. Early in their marriage, Martin regretted not having had more time for sexual experimentation and had an extramarital affair. The affair hurt Beth deeply, and Martin decided he never wanted to do it again. When Martin discovered MUDs he was thrilled. "I really am monogamous. I'm really not interested in something outside my marriage. But being able to have, you know, a Tiny romance is kind of cool." Martin decided to tell Beth about his MUD sex life and she decided to tell him that she does not mind. Beth has made a conscious decision to consider Martin's sexual relationships on MUDs as more like his reading an erotic novel than like his having a rendezvous in a motel room. For Martin, his online affairs are a way to fill the gaps of his youth, to broaden his sexual experience without endangering his marriage.

Other partners of virtual adulterers do not share Beth's accepting attitude. Janet, 24, a secretary at a New York law firm, is very upset by her husband Tim's sex life in cyberspace. After Tim's first online affair, he confessed his virtual infidelity. When Janet objected, Tim told her that he would stop "seeing" his online mistress. Janet says that she is not sure that he actually did stop.

"The thing that bothers me most is that he wants to do it in the first place. In some ways, I'd have an easier time understanding why he would want to have an affair in real life. At least there, I could say to myself, 'Well, it is for someone with a better body, or just for the novelty.' It's like the first kiss is always the best kiss. But in MUDding, he is saying that he wants that feeling of intimacy with someone else, the 'just talk' part of an encounter with a woman, and to me that comes closer to what is most important about sex.

"First I told him he couldn't do it anymore. Then, I panicked and figured that he might do it anyway because, unlike in real life, I could never find out. All these thousands of people all over the world with their stupid fake names ... no way I would ever find out. So, I pulled back and said that talking about it was strictly off limits. But now I don't know if that was the right decision. I feel paranoid whenever he is on the computer."

This distressed wife struggles to decide whether her husband is unfaithful when his persona collaborates on writing real-time erotica with another persona in cyberspace. And beyond this, should it make a difference if unbeknownst to the husband his cyberspace mistress turns out to be a 19-year-old male college freshman? What if "she" is an infirm 80-year-old man in a nursing home? And even more disturbing, what if she is a 12-year-old girl? Or a 12-year-old boy?

TinySex poses the question of what is at the heart of sex and fidelity. Is it the physical action? Is it emotional intimacy with someone other than one's primary partner? Is infidelity in the head or in the body? Is it in the desire or in the action? What constitutes the violation of trust?

And once we take virtuality seriously as a way of life, we need a new language for talking about the simplest things. Each individual must ask: What is the nature of my relationships? What are the limits of my responsibility? And even more basic: Who and what am I? What is the connection between my physical and virtual bodies? And is it different in different cyberspaces? These questions are equally central for thinking about community. What is the nature of our social ties? What kind of accountability

do we have for our actions in real life and in cyberspace? What kind of society or societies are we creating, both on and off the screen?

When people adopt an online persona they cross a boundary into highly charged territory. Some feel an uncomfortable sense of fragmentation, some a sense of relief. Some sense the possibilities for self-discovery, even self-transformation. Serena, a 26-year-old graduate student in history, says, "When I log on to a new MUD and I create a character and know I have to start typing my description, I always feel a sense of panic. Like I could find out something I don't want to know." Arlie, a 20-year-old undergraduate, says, "I am always very self-conscious when I create a new character. Usually, I end up creating someone I wouldn't want my parents to know about. ... But that someone is part of me."

> Irony is about contradictions that do not resolve into larger wholes ... about the tension of holding incompatible things together because both or all are necessary and true.
>
> —Donna Haraway

As we stand on the boundary between the real and the virtual, our experience recalls what the anthropologist Victor Turner termed a liminal moment, a moment of passage when new cultural symbols and meanings can emerge. Liminal moments are times of tension, extreme reactions, and great opportunity. When Turner talked about liminality, he understood it as a transitional state, but living with flux may no longer be temporary. Technology is bringing postmodernism down to earth itself; the story of technology refuses modernist resolutions and requires an openness to multiple viewpoints.

Multiple viewpoints call forth a new moral discourse. The culture of simulation may help us achieve a vision of a multiple but integrated identity whose flexibility, resilience, and capacity for joy comes from having access to our many selves. But if we have lost reality in the process, we shall have struck a poor bargain. In Wim Wenders's film *Until the End of the World*, a scientist develops a device that translates the electrochemical activity of the brain into digital images. He gives this technology to his family and closest friends, who are now able to hold small battery-driven monitors and watch their dreams. At first, they are charmed. They see their treasured fantasies, their secret selves. They see the images they otherwise would forget, the scenes they otherwise would repress. As with the personae one can play in a MUD, watching dreams on a screen opens up new aspects of the self.

However, the story soon turns dark. The images seduce. They are richer and more compelling than the real life around them. Wenders's characters fall in love with their dreams, become addicted to them. People wander about with blankets over their heads the better to see the monitors from which they cannot bear to be parted. They are imprisoned by the screens, imprisoned by the keys to their past that the screens seem to hold.

We, too, are vulnerable to using our screens in these ways. People can get lost in virtual worlds. Some are tempted to think of life in cyberspace as insignificant, as escape or meaningless diversion. It is not. Our experiences there are serious play. We belittle them at our risk. We must understand the dynamics of virtual experience both to foresee who might be in danger and to put these experiences to best use. Without a deep understanding of the many selves that we express in the virtual, we cannot

use our experiences there to enrich the real. If we cultivate our awareness of what stands behind our screen personae, we are more likely to succeed in using virtual experience for personal transformation.

The imperative to self-knowledge has always been at the heart of philosophical inquiry. In the 20th century, it found expression in the psychoanalytic culture as well. One might say that it constitutes the ethic of psychoanalysis. From the perspective of this ethic, we work to know ourselves in order to improve not only our own lives, but those of our families and society. Psychoanalysis is a survivor discourse. Born of a modernist worldview, it has evolved into forms relevant to postmodern times. With mechanistic roots in the culture of calculation, psychoanalytic ideas become newly relevant in the culture of simulation. Some believe that we are at the end of the Freudian century. But the reality is more complex. Our need for a practical philosophy of self-knowledge has never been greater as we struggle to make meaning from our lives on the screen.



Discussion Questions and Recommended Reading/Viewing

Discussion Questions

1. What do Martin Lister and his co-authors mean by "identity construction" in a virtual age? Where are these identities being constructed, and how does this affect the conventional notion of selfhood or self-presentation?
2. Lister quotes Mark Poster on the changing nature of media: "The question of the mass media is seen not simply as that of sender/receiver, producer/consumer, ruler/ruled. The shift to a decentralized network of communications makes senders receivers, producers consumers, rulers ruled, upsetting the logic of understanding of the first media age." What is Poster describing, and what does he mean? Cite specific examples of media offered through the "decentralized network."
3. Theorists like Lister and Hall suggest that the proliferation of online identities, profiles, avatars, user names and so on may lead to both the liberation and the disclocation and fragmentation of identity. Explain both possibilities. Which do you think is most likely?
4. Sherry Turkle's essay "Who Am We?" opens with the statement "We are moving from modernist calculation toward postmodernist simulation, where the self is a multiple, distributed system." Explain and discuss.
5. "Who Am We?" was written before the advent of rich graphical virtual worlds and games like World of Warcraft, Second Life and Everquest. It focuses instead on MUDs, text-based games that offered many of the same characteristics as these graphical virtual worlds and games—avatars, spatial orientation, strategy, collaboration and relationships—in a text-based format. Turkle offers a number of case studies of active MUD players. Consider and analyze these case studies. Discuss. Which seemed most positive or negative effects on the subjects? Why do you think so?

Recommended Reading

Lanier, Jaron. *You Are Not a Gadget: A Manifesto*. New York: Knopf, 2010.

The Offensive Internet. Ed. Saul Levmore and Martha C. Nussbaum. Cambridge: Harvard University Press, 2010.

Turkle, Sherry. *Alone Together: Why We Expect More from our Technology and Less from Each Other*. Basic Books, 2011.

Recommended Viewing

We Live In Public. Ondi Timoner. This documentary explores privacy, identity, fame and art against the backdrop of the dot-com boom and bust through the controversial projects of Internet pioneer Josh Harris. Some mature subjects are addressed.

Section 5

Games, Avatars, and Virtual Worlds



Gameplay

Martin Lister et al.

This section aims to do three main things: to look at the videogame as an extremely successful new medium in its own right, of central significance to the everyday consumption of new media; to serve as an extended case study applying the key concerns of this part of the book to the consumption of one new medium; and to explore the significance of play as central to, yet in significant ways apart from, everyday life.

Videogames are the first popular computer-based medium. Pre-dating the home computer, games devices such as the 'tennis' game Pong were first plugged into television sets in 1972. They brought with them fears and fascination—a sense that everyday life was meeting the future: new ways of relating to machines, new images and worlds, frightening narratives of symbolic violence and addiction. In this section they will be studied as:

- consumer media technology, shaped by and shaping everyday activities and dynamics;
- new media devices and texts, offering interactive pleasures and possibilities;
- games, inviting the analysis of play as a particular mode of use or consumption that troubles established concepts of everyday space and time, reality, identity and ideology;
- computer media, whose consumption and meanings in everyday life are inseparable from their status as digital technologies, and which suggest that popular computer media and communication technologies more generally might be thought of as playful;
- suggestive of new ways of thinking about the intimate relationships between the human and the technological in new media culture—as everyday lived and embodied cyberculture.

Martin Lister, Jon Dovey, Seth Giddings, Iain Grant, and Kieran Kelly, "Gameplay," *New Media: A Critical Introduction*, pp. 286–306. Copyright © 2009 by Taylor & Francis Group LLC. Reprinted with permission.

New Media's Other

> OK, you're haunted. You're seeing Cyber-Demon Lords in your dreams. You can't get to that Soul Sphere in the Military Base, and it's driving you nuts. You're a hopeless Doom addict. A Doomie. Yeah, it hurts. And yet … who would have thought going to Hell could be so much fun?.
>
> (Barba 1994: v)

These are the opening sentences from *Doom Battlebook*, a manual and cheats guide for the popular computer and video game released in 1993. *Doom* is a first-person shoot-em up (or FPS), a game in which the player's point of view is apparently through the eyes of the character he or she controls in the game. The premise of the game is simple: the player must guide the character through maze-like corridors of a science fiction environment, shooting any creature he meets. Weapons and power-ups (ammunition, first-aid kits, armour) are collected along the way to prolong the slaughter, and the whole experience is one of horror, panic, and the temporary satisfaction of annihilating a room full of enemies, satisfaction soon forgotten as the next level is explored. *Doom* is a grimy post-industrial universe of bubbling toxic waste and slimy metal walls. Perhaps now regarded by gameplayers as quaint in its simplicity, despite (by today's standards) low-resolution graphics and pixellated monsters, the game still generates controversy. As it is now over fifteen years old, the game highlights the longevity of the videogame as a popular new media form, and *Doom*'s conventions (navigable 3-D space, first person perspective, weaponry and health pickups, the possibility of networked play, etc.) are still widely used in contemporary videogames such as the *Halo* and *Quake* series.

Doom is an early example of an often-vilified new medium, which, since its introduction, has been the focus of fears of cultural and social change, particularly around childhood and youth. Seen as encouraging anti-social play in violent and morally dubious computer environments and narratives, videogames become everything that threatens an idealised children's culture. Against 'spontaneous play' on beaches and in woods, a 'play world of the natural child [that is] open and friendly', is set the play world of 'the "electronic child" … hemmed in by conflict and fear' (Stutz 1995). Although videogames are now taken more seriously reviewed alongside television programmes and films in the press for example, they can still at times elicit very similar reactions. More recently the *Grand Theft Auto* series has proved controversial, and *Manhunt 2* was banned in the UK, achieving an 18 certificate only after court action by the game's producers Rockstar.

Many of these anxieties and moral outrages follow the well-established patterns of the 'media scares'—video-nasties, comics, pinball and penny-dreadfuls have all in their time epitomised the new and dangerous (Barker 1984). Videogames add to this panic the threat of the computer's increasing influence in everyday life. These anxieties are evident in academic and theoretical discourses as well. Videogames are generally presented as a problem to be solved, threatening a future of hyper-gendered identities or a technoconsumerist 'Nintendo generation'. Cultural theorists are not immune from such

dread. Julian Stallabrass articulates a nightmare of a cybernetic capitalism and the implosion of the public and private:

> There is a shadowy ambition behind the concept of the virtual world—to have everyone safely confined in their homes, hooked up to sensory feedback devices in an enclosing, interactive environment which will be a far more powerful tool of social control than television.
>
> (Stallabrass 1993: 104)

This paranoia about compelling, immersive and cybernetic relationships between computer games and their players, coupled with the games' status as commercial media, was widely felt:

> Nintendo games ... privatise rather repulsive fantasies of conflict and image; they delimit the imagination and offer only servile participation. The hypnotic alienation it perpetuates hardly suggests that technology has any progressive features.
>
> (Druckrey 1991: 18)

Or Donna Haraway, in her 'Cyborg Manifesto':

> The new technologies seem deeply involved in the forms of 'privatization' ... in which militarization, right-wing family ideologies and policies, and intensified definitions of corporate (and state) property as private synergistically interact. The new communications technologies are fundamental to the eradication of 'public life' for everyone. This facilitates the mushrooming of a permanent high-tech military establishment at the cultural and economic expense of most people, but especially of women. Technologies like video games and highly miniaturized televisions seem crucial to production of modern forms of 'private life'. The culture of video games is heavily orientated to individual competition and extraterrestrial warfare. High-tech, gendered imaginations are produced here, imaginations that can contemplate destruction of the planet and a sci-fi escape from its consequences. More than our imaginations is militarized; and the other realities of electronic and nuclear warfare are inescapable.
>
> (Haraway 1990: 210–211).

In recent years the academic study of video and computer games has flourished with international conferences, new journals and scholarly publications. See for example the journals *Game Studies* (http://www.gamestudies.org) and *Games and Culture*, and the Digital Games Research Association (http://www.digra.org). Key books include Dovey and Kennedy 2006, Juul 2005 and Taylor 2006

In 4.2.2 above we saw how the videogame, for some, exemplifies a post-Fordist colonisation and commodification of everyday time and space, while simultaneously manifesting its 'simulator/hyper-real' cultural correlative (Kline *et al.* 2003: 75)

The constitution of fields of study in new media (CMC, cybercultural studies, media educationalism, etc.) has, until recently, tended to marginalise or exclude popular, commercial and commodified versions of digital media and information technologies. Within education they are a dangerously seductive distraction from learning, or at best offer themselves as Trojan Horses or sweeteners for the real business of computer use. Within cybercultural discourses they haunt the fringes of MUDs and hypertext as gendered, commodified toys, as other to the online heterotopias of identity play. It is evident that discourses celebrating new media may do so in denial of certain key contexts for the development of new media as popular cultural forms.

For example, in an essay on the game *Myst*, David Miles identified interesting precedents for the game's interactive narrative structure and atmosphere. The list is impressive: the gothic novel, *Parsifal*, Verne, modernist literature (Gide, Robbe-Grillet, Borges), Homer, early cinema. The essay is a perceptive and imaginative attempt to take the computer game seriously, and to think of what its future might be. However, in doing so it elided the very 'low' cultural pleasures that have popularised and developed the form. For Miles *Myst* was not a 'videogame' but an 'interactive multimedia novel on CD-ROM' (Miles 1999: 307). Non-violent, sedate and intellectually challenging, *Myst*, though published in the same year as *Doom*, seems to belong to a different world. While the computer or videogame may well, as Miles hoped, offer art and literature new forms and aesthetics, to forget that *Myst* is still a computer game, and as such the hybrid offspring of less prestigious cultural forms (pinball machines, science fiction, fantasy and horror literature, toys, television), is to miss the central significance of the videogame to new media.

In both popular and academic discourses, videogames are often explicitly posited as emblematic of the troubled status of our understanding of the real world in media culture. The principal example is the 1991 Gulf War. The thorough control of news media by the coalition states, and the spectacle of 'smart' weapons and video footage from missiles at their point of impact epitomised a popular notion of 'simulation' as a conflation of digital and video imaging technology and a sense of a remote, mediated experience (by both domestic audiences and Western military). This 'simulation' was explicitly figured in terms of videogames, as General Norman Schwartzkopf's phrase 'the Nintendo war' resonated across the news media and academic discourses (Sheff 1993: 285). The notion of the videogame war has persisted in the reporting of the second Gulf War (see Consalvo 2003).

Doom is often implicated in this blurring of the real and the mediated in violent events. Frequently cited in media scares around youth culture, particularly in the United States, the game has been blamed (along with other commercial youth-oriented media, particularly popular music) in the shooting of school students by classmates in Littleton, Colorado in 1999. Widely quoted in press and television reports on the killings, the military psychologist Lt.-Col. David Grossman argues that, just as *Doom* is used by the US Marines as a training simulator, so it 'trained' these disturbed adolescents to kill. Moreover, the videogame's immersive mode of consumption encouraged a disastrous breaking down

of the distinction between fantasies and reality. In a *New York Times* article reprinted in the *Guardian*, Paul Keegan discussed Grossman's views, concluding:

> And that's what makes shooters [first person shoot-em ups] unlike any other form of media violence we've seen before. You're not just watching a movie, you're in the movie. You're not just empathising with Arnold Schwarzenegger as he blasts the bad guy to smithereens, you're actually pulling the trigger.
>
> (Keegan 2000: 3)

> See Norris (1992). For a fascinating account of an attempt to challenge this scare around youth culture in the US, see Jenkins (2001) on his testimony to the Senate Commerce Committee

This, then, is an extreme form of realism—the interactive manipulation of pixellated icons of hyperbolic violence mapped directly, unmediated, on to real-world behaviour. Such claims do not stand up to serious scrutiny, but they do highlight, through their resonances with certain discourses of VR and cyberspace, the underlying sense in the technological imaginary of interactive media of an idealist (whether Utopian or Dystopian) notion of the end of media. The shoot-em up genre can be seen then as the 'repressed' of the cybercultural enthusiasm for interactivity—losing oneself in the medium can be creative and liberating, but is haunted by the possibility that this immersion can be hypnotic, seductive, 'mindless' as well as bodiless.

In this section we will challenge this marginalisation and argue that the study of videogames offers us analytical and critical purchase on the forms and consumption of new media technologies in general.

Videogames as New Technology

Rather than being a marginal form of new media, videogames (as media texts and as new modes of play and consumption) are indivisible from the dissemination and popularisation, and even the development, of personal computing, its software and interfaces, its practices and meanings. The relationship between the emergence of home/personal computers and videogames is tangled and complex; in what follows we suggest some key strands.

Instrumental Play

Games software was central to the practices of early home computing, not only as entertainment but also as demonstrative of the power and possibilities of the new machines. As we have seen, home computers were distinctly 'open' devices. Games would be bought, copied, or written by users as much to see what the computer could do, exploring graphics, sound and interactivity, as for the pleasures of

gameplay itself. In a broader sense, home computer use has continued to be characterised by a kind of exploratory play with computer or software systems, whether or not game software itself was being used. Indeed, play in this general sense is a significant strategy for learning the computer's system. The governmental, educational and commercial discourses of the promotion of computer use since the 1980s have, sometimes anxiously, emphasised this 'instrumental play'—promising the purchasers of home computers that the information age can be fun. The experience of interacting with and controlling a computer, primarily through play, would link user and machine in the spare bedroom with the historic forces of the information revolution (4.3.1),

It could be argued that the relationship between computer games and personal computing is even more significant. The origins of personal computing lie in the philosophy and innovations of the first 'hackers', students at MIT in the late 1950s. These students challenged official uses of the institution's mainframe computers (statistical analyses, scientific simulations, and so on); instead they would develop non-instrumental ways of exploring the computers' potential. This exploration ranged from using the mainframe to play single-track classical music to programming the lights on the front of the machine to allow a game of computer ping-pong. Such play was not always wilfully trivial however—they also experimented with the possibilities of artificial intelligence in chess programs.

> Levy (1994) identifies a 'hacker ethic', a kind of politics of computer programming as serious play. Many of the elements of this unwritten hacker manifesto—free exchange of information, mistrust of authority, celebration of meritocracy—are evident in subsequent cultures of Internet development and the open source movement. Even the origin of the term 'hacker' is ludic. Deriving from MIT jargon for prank, a hack is 'a project undertaken or a product built not solely to fulfil some constructive goal, but with some wild pleasure taken in mere involvement ... to qualify as a hack, the feat must be imbued with innovation, style, and technical virtuosity' (Levy 1994: 23)

On one level these hackers were, like the home computer hobbyists to follow, 'just seeing what the machine would do'. However, in experimenting with real-time computer interaction and animation, through the design of games, they established a new mode of computer use which ultimately resulted in PC graphical user interfaces (see also 3.6). Some recognised the implications of computer games early on. As MIT researcher Stewart Brand observed, after watching *Space War!* in 1972, ten years after its creation: 'Ready or not, computers are coming to the people. That's good news, maybe the best since psychedelics' (quoted in Ceruzzi 1999: 64).

Hacking as Consumption

Not only have computer and video games played a significant role in turning computer technology into domestic computer media, they have, through their generation of new modes of interaction with screen-based information and communication, leaked out into many other everyday technologies and media—from the PC *Minesweeper* games and 'desktop' puzzles to the games-derived interfaces and

'help' screens on photocopiers, digital photo booths, and mobile phone text-messaging. Tamagotchi, DVD games, board games with DVDs, videogames on mobile phones, on digital cable channels, sites devoted to Flash-based games, games within other applications such as social network sites (applications that are in themselves playful in nature), and so on.

From this observation, a number of questions can be posed:

1. If computer and video games have made computer technology accessible and popular, have they, in so doing, effectively commodified computer technology, turning the radical hacker ethic into consumerist entertainment?
2. What are the implications of the study of media technology as games and its consumption or use as play?
3. Could the recognition of videogames as central to the information revolution require us to look again at the long-established discursive oppositions between work/education and play, instrumental use and consumption, games and everyday life?

CASE STUDY 4.9: *Doom* as Media, Technology and New Cultural Economy

To draw together commercial entertainment, key hacker tenets (free access to code, the hands-on programming imperative), new consumption practices and new Internet-based production and marketing models, we will again enter the fun hell that is *Doom*.

As mentioned above, the US Marine Corps adapted this game as training simulator software. However they also then marketed their customised version as a game. While this circularity may seem a useful example of the thesis that the boundaries between war, power, media and entertainment are now thoroughly blurred, it also allows us to make more specific observations. The job of converting the game into training software (and back again) was facilitated by the innovative way in which *Doom* was distributed. First, the initial levels of the game were given away, made available for download from the Internet (Manovich 1998). Second, in hacker tradition, the publishers made the code and file formats for the game's design freely available, allowing players (as had always been the case with early, simpler, computer games) to modify levels, add new enemies or construct new levels themselves.

Comparing *Doom* to *Myst* (both published in 1993), Lev Manovich argues that there is a fundamental difference between them that is not to do with violent content or cultural pedigree, but rather cultural economy. Whereas *Myst* invited its players to 'behold and admire' its images and narratives, *Doom* asked its players to take them apart and modify them. In this sense *Doom*, then, is a good example of computer media designed for creative and enabling engagement by its users. As Manovich puts it, the game 'transcended the usual relationships between producers and consumers' (Manovich 1998).

Online gaming has developed from *Doom*'s office-based, multi-player networks to *Quake* tournaments on LANs or the Internet, and the technical and aesthetic legacy of its 3-D interface and game engine is evident in the current popularity of MMOGs and other networked virtual worlds such as *Second Life*.

Programming as Play

To address question 1 above, the focus must be shifted from the technologies themselves, to the practices of their use. Hacking as play has been seen as inseparable from the demands (in terms of expertise and time) of programming. For the producers and users of early home computers it was assumed that computer use meant programming. To run the most elementary game or application required a grasp of programming languages such as BASIC, and a grasp of coding was seen as central to the realisation of the potential of computers. Leslie Haddon has differentiated between 'computer games' and 'videogames' (arcade machines, or early dedicated consoles) on just such grounds. The keen player/programmer could intervene into the code of the home computer game, using 'pokes' or cheats to explore the game environment or change parameters (Haddon 1992: 89).

By the late 1980s however, as the micro gave way to IBM-compatible or Apple Macintosh personal computers with DOS (later Windows) and the Apple GUI, programming ceased to be needed in everyday computer use, and, partly as a consequence, the distinction between computer and video games became less clear. Today, the PC is regarded by videogame manufacturers as one platform alongside the various competing dedicated videogame consoles. The most popular games are adapted across these platforms.

> Not only did this shareware marketing strategy continue and extend the long established gaming culture of cheats and patches, it was also the inspiration for Netscape's early conquest of Internet browsing through free availability of its software (Herz 1997: 90)
>
> However, not all computer-mediated play and games fall within the videogame mode. Traditional games such as chess, bridge, quizzes have also been adapted. Recent advances in the secure handling of money online has led to the increasingly popular phenomenon of online poker games

> Another example of an earlier (in this case much earlier) computer game with far-reaching implications for the development of popular, personal computing and the Internet, is *Adventure* (1967). An interactive story, set in a Tolkeinesque fantasy world, with forking paths followed according to the player's choice, luck, or ability to solve puzzles. As well as remaining popular in its own right for decades, it has been influential on a number of more recent game genres, and is an early example of interactive narrative

To explore the issues arising from popular new media's implication within commercial entertainment culture we will return to the multi-platform worlds of *Pokémon* as a case study.

Beginning life in 1996 as a game for the Nintendo Gameboy hand-held videogame console, *Pokémon* went on to achieve dramatic success as a card collecting and trading game, and grew to a merchandising franchise worth $5 billion a year. The 'Pocket Monsters' feature in a television series, animated feature films, videogames on all Nintendo consoles, and all the other licensed products of children's media culture. It is estimated that, at the phenomenon's height, half of all Japanese seven- to

twelve-year-olds were regular players. Even before it had been released in the UK, *Pokémon: The First Movie* had overtaken *Lion King* as the most successful animated film (*Guardian*, 20 April 2000). After pornography, *Pokémon* was the most searched for subject on the web in 1999 (*Guardian Editor*, 21 April 2000).

Pokemon is an example of the transmedial 'entertainment supersystem' or convergent 'media mix' discussed above in 4.3.3. Marsha Kinder developed her notion of the 'entertainment supersystem' through studying Teenage Mutant Ninja Turtles, a children's media craze of the late 1980s. Like the Turtles, *Pokémon* is based around ritualised conflict (and, like the Turtles a decade earlier, has had its products banned from schools for apparently provoking real fights). However, *Pokémon* has exceeded even the Turtles in its saturation of children's media and everyday lives:

> The real reason for the game's astounding success probably has more to do with the breath-takingly clever way in which Nintendo and its franchisees have created a self-referential world in which every product—every trading card, computer game, movie, cartoon and hamburger box—serves as propaganda for ail the others.
>
> (Burkeman 2000: 2)

The idea that we are seeing the emergence of a global commercial popular culture is a familiar one. This global culture is, however, commonly viewed as evidence of US cultural dominance, with talk of Disnification or McDonaldisation as the analogue in the cultural sphere to globalisation in the economic sphere. *Pokémon* and *Teenage Mutant Ninja Turtles*, however (along with other supersystems such as *Power Rangers*), are evidence of a meeting and hybridisation of Eastern and Western popular cultural forms. Even before *Pokémon*, the videogame was perhaps the most thoroughly transnational form of popular culture, both as an industry (with Sony, Sega and Nintendo as the key players) but also at the level of content—the characters and narratives of many videogames are evidence of relays of influence between America and Japan.

Nintendo, in its pre-videogame incarnation as playing card manufacturer, introduced the first Disney licensing into Japan soon after the Second World War, and a tremendous boom in (the already established) Japanese animation industry followed. As Disney took European folktales, stripped them of their original religious motivations, and animated them with the anxieties and morals of a Western bourgeoisie, so Japanese anime (animated films) and manga (comics) took Disney images, with their graphic resonances with traditional Japanese art, and charged them with very different philosophies.

MacKenzie Wark asserts that videogames are 'primers in junk consumerism' (Wark 1994). If we accept this analysis, then the *Pokémon* card game could also be seen as an education in market economics. There are over 150 characters in each iteration of the gameworld, each with their own card, and the manufacturers ensure competition and trade between players (and sales) by restricting the supply of certain cards. This exploitation of the established children's culture of collecting has been widely criticised: 'the result is a particularly pure form of kiddie capitalism, in which acquisition is no longer just a means to further play, but the very essence of play itself' (Burkeman 2000: 2).

However, this trading aspect also makes it a sociable game, with its own improvised playground-level practices and the emergence of local cultural economies such as collectors' fairs and game tournaments. To determine whether *Pokémon* can in any way be seen to exceed 'kiddie capitalism'—whether its status as one of the most effective of the 'ideal commodities' of videogames means it reduces childhood and play to a nightmare of commodification and manipulation—we would need to study in more detail the ways in which the games are played and articulated in children's everyday lives. In her studies of similar media mix cultures in Japan (discussed in 4.3.3 above) Mizuko Ito puts the issue thus:

> The rise of global communication and media networks is tied to an imagination that is more commercially driven, fantasy-based, widely shared, and central to our everyday lives at the same time as it is now becoming more amenable to local refashioning and mobilization in highly differentiated ways.
>
> (Ito, undated)

A vivid example of this refashioning of commercial media by everyday imagination is provided by Julian Sefton-Green's study of the consumption of the *Pokémon* game-universe by his 6-year-old son, Sam (Sefton-Green 2004). The study offers significant insights into computer games as distinct media forms and their play as distinct cultural practices. For example, Sam's Gameboy sessions alternated with intense periods of study, poring over *Pokémon* magazines, rehearsing plots and remembering cues. He learned all the maps within the Poké-world and the locations of secret keys and potions. Obsessive discussion about how to get his *Pokémon* characters to grow levels (evolve) and to have enough strength and/or hit points to defeat the enemy he knew he was going to face ...

> Towards the end of the game he did get very frustrated with his ability to defeat the Elite 4 (the penultimate challenge) and eventually he sought help. About 75 hours into the game, on a visit to the home of family friends who had older children (and Gameboys), Sam asked for their assistance. The older boys gave him some advice and also allowed him to hook his Gameboy to one of their machines to swap characters; taking pity on him, they gave him a well-developed Golduck (level 60). At that point, Sam essentially saw the game as a personal individual challenge and because he was not part of a larger community of players he seemed indifferent to the social dimension provided by this aspect of the game. Crucially, from his perspective, when he was given the Golduck, he also learned a 'cheat': 'You go to Viridian City and talk to this person who tells you how to train Pokémon. Then you go to Cinnabar Island and swim along the right hand edge. When you find a Missingo it changes to what's top of your list [of objects carried with you] to more than a hundred; and if it's rare candy [which enables Pokémon to evolve] you can grow your Pokémon.'
>
> (Sefton-Green 2004: 147)

This cheat 'transformed his attitude to the game' and he completed it and other versions much more quickly. The 'cheat' then is a complex actor, at once a software technology, a videogame media convention, a gameplay tactic, and a social resource.

Not only are games and their playing distinct from television and television viewing, but moreover, they require on some level an understanding of their distinct nature as interactive computer media 'texts' or technologies. Sefton-Green describes the experience of the *Pokémon* game as one of tension between the game's imaginative world (its diegesis) and its formal constitution as a logical (software) system. For example a hyperpotion powerup might be saved for a favourite character, Butterfree, rather than given to the more strategically powerful Vaporeon:

> For Sam, part of the challenge of the game was learning to see it as a discrete rule-bound process in and of itself and not as a natural phenomenon that could be addressed following the logic of the TV series.
>
> (Sefton-Green 2004: 151)

In his play, Sam does not differentiate between old and new media. He made up songs about his favourite Pokémon, played with Pokémon toys in the bath and enacted Pokémon-style battles with friends. Though books and magazines are as much a part of Sam's engagement with the Poké-world as videogames are, Sefton-Green suggests that we may be seeing different kinds of engagement with 'old' media in these videogame play cultures: Sam is an intense autodidact, educating himself in the minutiae of a simulated world, but devours this printed material not only to immerse himself in an imaginative fantasy world, but as information or tools for play.

This Poké-world reveals a vision of a transformed everyday life/media culture, newly populated with alien species, shot through with 'colourless energy' and hyperpotions, and governed by the conflicting systems of children's media drama and software logic. Sam lives in an ecology that is both virtual and actual; an ecology simultaneously playful and very serious.

Play, Media and Everyday Life

Play is a key term in the development of popular computer media and in theories of identity and subjectivity in digital culture. As we have seen it underpins cybercultural shifting subjectivities, notably online 'identity play', and is a foundational concept in important areas of new media research and history: exploratory, ludic computer programming and robotics are seen as educationally progressive (Papert 1980, 1994); play and games are central to the development of personal computing via the ethics and aesthetics of the early hackers (Levy 1994); and the necessary experimentation of early home computer use (Haddon 1988a). While it is clear that these playful, creative activities are to be understood as distinct from, or opposite to, the instrumental uses of computer media (word processing, spreadsheets, work-related emails etc.), the concept of play itself is rarely defined or reflected on. Moreover implicit assumptions about play can be put to ideological use; anxieties about videogames

are often bound up in contradictory assumptions about the value, and types of, play. The most popular mode of non-instrumental engagement with computer media, videogame play, provokes, as we have seen, profound anxieties and wild assumptions of militarised imaginations, servile participation and hypnotic alienation.

Play has not been exposed to sustained study in Media Studies either, though there are notable and useful exceptions and these will be briefly surveyed below. In Cultural and Media Studies too then the value of play in a mediated everyday life is often ambiguous—perhaps creative and resistant, but also worryingly conformist or rule-bound. The exemplars of media form and consumption from which Media Studies has developed some of its key concepts tend to be news media and drama, not entertainment or ludic media such as comedy or game shows. The popularity of videogames as a media form offers the opportunity to foreground play in a number of ways: as a mode of cultural practice in general; as a mode of media consumption; as a way into analysing the forms and conventions of ludic media and media games; and as a way of thinking about the 'consumption' of computer media as noninstrumental 'uses' of technology. One of the first projects of the field of Game Studies has been to locate and synthesise disparate theories of play and games from across the humanities and social sciences (Salen and Zimmerman 2003; Dovey and Kennedy 2006; Perron 2003).

This section will not attempt a comprehensive survey of theories of play but will suggest some implications of taking play seriously as a cultural phenomenon of central significance to new media studies as well as to the study of videogame culture. It will concentrate on notions of games and play as:

- fundamental to culture, yet undertheorised;
- an ambiguous yet central aspect of—both part of and separate from—the space and time of everyday life;
- a distinct yet ambiguous form of entertainment and communication media, and their consumption (not least with the advent of new media); and
- a concept with the potential to confuse a series of distinctions underpinning Cultural and Media Studies and new media studies, including consumption/production, real/fantasy, rules/freedom, ideology/critique, meaning/nonsense, as well as generating or repurposing a few new ones—for example, simulation/representation.

Theories of Time, Space and Games

The literature of play operates at the margins and in the interstices of the humanities and social sciences. In his book *Homo Ludens* (1986 [1938]), the cultural historian Johan Huizinga suggested that play is not an ephemeral, inconsequential activity, but an essential, central, factor in civilisation. Religious rituals, sport and drama, to name but three near-universal cultural realms, are all characterised by types of play—for Huizinga play and games can be very serious activities. The human then is not characterised primarily by rational thought and self-awareness (*homo sapiens*) or creativity and the use of technology (*homo faber*) but by play (*homo ludens*).

Though central to culture, play is always, according to Huizinga, separate from ordinary or real life, it is 'a stepping out of "real" life into a temporary sphere of activity with a disposition all of its own' (Huizinga 1986: 8). Separated from the materially necessary activities of work and the satisfaction of bodily needs, it occurs in *interludes* in daily life. Play is not ephemeral however; through its often regular repetitions and rituals (football matches on Sunday, crossword puzzles in coffee breaks) it is integral to everyday life. Play is distinct from other areas of everyday life both temporally and spatially, 'It is "played out" within certain limits of time and place',

> the arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, etc. are all in form and function play-grounds, i.e. forbidden spots, isolated, hedged around, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart.
>
> (Huizinga 1986: 10)

CASE STUDY 4.11: Playing the Internet

Sonia Livingstone recounts a story from her research, an account illustrative of the fundamentally enmeshed relationships between technology, media, imaginative play, 'real' and 'virtual' space:

> Two eight year old boys play their favourite multimedia adventure game on the family PC. When they discover an Internet site where the same game could be played interactively with unknown others, this occasions great excitement in the household. The boys choose their fantasy personae, and try diverse strategies to play the game, both co-operative and competitive, simultaneously 'talking' online (i.e. writing) to the other participants. But when restricted in their access to the Internet, for reasons of cost, the game spins off into 'real life'. Now the boys, together with their younger sisters, choose a character, dress up in battle dress, and play 'the game' all over the house, going downstairs to Hell, The Volcanoes and The Labyrinth, and upstairs to The Town, 'improving' the game in the process. This new game is called, confusingly for adult observers, 'playing the Internet'.
>
> (Livingstone 1998: 436)

This brief account is tantalisingly illustrative of the fundamentally enmeshed relationships between technology, media, imaginative play, 'real' and 'virtual' space. Yet the 'Internet game' is offered as an interesting aside to the article's primary research concerns, and its implications are left unexplored. It is a reflection of the problem discussed in 4.3.4 above that new technologies may be visible and available for analysis at moment of 'impact' (or breakdown) but not once 'adopted' and naturalised. But it is also perhaps a problem of describing, assessing and theorising play as a mode of being in mediated everyday life.

These children have not left the real world for cyberspace, they have at once invented new games with new media, and demonstrated a powerful sense of continuity with play and games pre-dating digital culture, playing with and performing in space that is both actual and imaginary. Technology, media, performance, consumption, family and gender relationships are all intertwined in the ambiguous time and space of play.

Rules of the Game: *Ludus* and *Paidia*

Roger Caillois developed Huizinga's ideas and his categorisation of types of play and games has been particularly influential on Game Studies' consideration of play theory. He categorised what he saw as the fundamental elements of play: *agon*—competitive play, as found in many sports and games from football to chess; *alea*—games largely based on the workings of chance; *mimicry*—role play or make-believe; and *ilinx*—or 'vertigo', dizziness and disorder, evident in children rolling down hills or screaming (Caillois 1962: 25). These categories are not mutually exclusive and are often evident as pairs within particular games. For example, though *agon* and *alea* are opposites, one relying on skill and dedication, the other on luck, they are both present in many card games.

Cutting across these categories is an axis that measures the underlying qualities of particular games or types of play. One pole on this axis is *ludus*, and the other *paidia*. Ludus denotes modes of play characterised by adherence to strict rules: 'calculation, contrivance, subordination to rules'. Paidia is the opposite: 'true' creative play—'active, tumultuous, exuberant, spontaneous' (Caillois 1962: 53). Thus chess can be placed near the ludus end of this axis, whereas the imaginative and improvised make-believe of young children would sit at the opposite pole of paidia. It is the political or moral values given to positions on this ludus-paidia axis, rather than the categories of agon, alea, mimicry and ilinx, which often underlie popular and academic anxieties about videogame play. Videogames are generally, in this sense, ludic: rule-bound and apparently not offering much space for spontaneity or innovation. As the influential critic of videogames, Eugene Provenzo put it,

> [c]ompared with the worlds of imagination provided by play with dolls and blocks, [video] games ... ultimately represent impoverished cultural and sensory environments for the child.
>
> (Provenzo 1991: 97)

Significantly however Caillois himself does not privilege paidia over ludus. For him, ludus is fundamentally linked with the development of civilisation. Rules, he asserts, transform play 'into an instrument of fecund and decisive culture' (Caillois 1962: 27). On a more everyday level, the ludic is also evident in more respectable games and activities such as chess, crossword puzzles, even detective stories. Many videogames share this intellectual play—the solving of puzzles for no apparent reason than the pleasure of doing so. Moreover, even ludic games need room for improvisation:

> the game consists of the need to find or continue at once a response which is free within the limits set by the rules. This latitude of the player, this margin accorded to his action is essential to the game and partly explains the pleasure which it excites.
>
> (Caillois 1962: 8)

Sherry Turkle identifies a relationship between the paidia of fantasy, and the rule-bound ludic in videogames. Science fiction and fantasy fiction are extremely influential on the development of video and computer games, not only at the level of symbolic content (spaceships and monsters), but through the operations of an analogous tension between the fantastical or imaginative, and the logical and rule-governed.

> A planet can have any atmosphere, but its inhabitants must be adapted to it ... You can postulate anything, but once the rules of the system have been defined they must be adhered to scrupulously.
>
> (Turkle 1984: 77)

Similarly, the logic of the videogame world is that events may well be surprising, but they shouldn't be arbitrary. Ultimately, then, she argues that computer games are rule-governed rather than open-ended (Turkle 1984: 78; see also Provenzo 1991: 88ff).

What Do Games Mean?

The place of games and play in culture is ambiguous. For Caillois, while games are fundamental to civilisation, 'play and ordinary life are constantly and universally antagonistic to each other' (Caillois 1962: 63). For Marshall McLuhan games are at once communication media, a popular art form, and a collective modelling of society:

> Games, like institutions, are extensions of social man and of the body politic, as technologies are extensions of the animal organism ... As extensions of the popular response to the workaday stress, games become faithful models of a culture. They incorporate both the action and the reaction of whole populations in a single dynamic image.
>
> (McLuhan 1967: 235)

They are not simple representations of a culture though. McLuhan's games share with those of Caillois an ambiguous relationship with the social world, they exist within it but distinct from it:

> Games are a sort of artificial paradise like Disneyland, or some Utopian vision by which we interpret and complete the meaning of our daily lives. In games we devise means of non-specialized participation in the larger drama of our time.
>
> (McLuhan 1967: 238)

Games then are separate from the world in time and space, played within boundaries and bound by rules. However in important ways they are part of the world: they may figure or model their larger social context, and of course they are part of the world in that people play games everyday—they are no less real for being distinct from other cultural activities. Moreover this notion of the game dynamically modelling real world relationships or forces resonates with simulation as a computer media form. Simulation finds particular expression in particular genres of videogame (from *SimCity* and *SimAnt* to the current popularity of *The Sims*) but is, in highly significant ways, integral to all videogames.

In fact, for Caillois, the separation of play from other areas of everyday life is essential. The danger in games comes not from restrictive rules, but rather from their 'corruption' if their autonomy from the real world is undermined: for example, the horoscope's aleatory blurring of reality and chance, or the vertiginous corruptions of drug and alcohol consumption. It is precisely the sharp delineation between fantasy and reality that protects the player from alienation from the real world (Caillois 1962: 49).

Games Mean Nothing: Ludology to Simulation

> Video games are a window onto a new kind of intimacy with machines that is characteristic of the nascent computer culture. The special relationship that players form with video games has elements that are common to interactions with other kinds of computers. The holding power of video games, their almost hypnotic fascination, is computer holding power.
>
> (Turkle 1984: 60)

If, on the one hand, videogames spring from mass media, and on the other, media consumption in general can be seen as playful, can the videogame be analysed as a specific new medium, and do its ludic practices have any distinct critical purchase? In shifting the emphasis to games as a specific set of cultural forms, rather than play as a general mode of consumption, we can see that videogames do mark a significant new medium: mass media as games. That is to say, though boardgames may draw on entertainment themes and images, they are not as thoroughly imbricated in, or formally similar to, the images and action of moving image media: film, animation and television. There is in the content of videogames a semiotic complexity at the level of content not evident in chess or golf or *Cluedo*.

However, despite evident continuities and connections between videogames and other popular media, we might ask whether established methods of media theory are fully adequate to the study of videogames. Where distinctions are made between videogames and earlier electronic media, they tend to be drawn along questions of the mode of consumption or spectatorship of these interactive, 'immersive' forms. The videogame as computer-based medium, and its interactive consumption, requires specific critical attention.

> A jaundiced figure floats across the screen. He is constantly searching for things to eat. We are looking at a neo-Marxist parable of late capitalism. He is the pure consumer. With his obsessively gaping maw, he clearly wants only one thing: to feel whole, at peace with himself. He

> perhaps surmises that if he eats enough—in other words, buys enough industrially produced goods—he will attain this state of perfect selfhood, perfect roundness. But it can never happen. He is doomed forever to metaphysical emptiness. It is a tragic fable in primary colours.
>
> (Poole 2000: 189)

As Steven Poole demonstrates in his tongue-in-cheek (though telling) interpretation of the symbolic content of Pac-Man, videogames may not be 'representational' in the same way as other popular visual media. Visually *Gran Turismo* represents a car race (or more accurately it remediates television's representations of motor racing), but playing the game is little like watching a race on television. The pleasures of controlling and responding to the screen representations follow the logic of the game itself, a logic of variables within a system. Videogames are, in the strict sense of the word established in 1.2.6, simulations.

While the pleasures of many videogames cannot be entirely separated from the material dynamics and processes they simulate—and part of the pleasure of a videogame like *Doom* is the sense of more directly engaging with or intervening in (even 'controlling') popular media images and action—they cannot be analysed only in terms of methodologies of film or television textual analysis. Neither *Monopoly* nor *SimCity* are accurate models of the complex systems of property markets or urban development. Each is a game, with its own structure and economy set up to defer and grant pleasure, to facilitate the solitary passing of time, or social interaction. Whatever the narrative potential for the videogame, its conventions and modes of play are inseparable from its status as computer media. Playing a videogame requires an understanding of, even a decoding of, its structure or system. This system (of levels, of architectural organisation, of points, timing of events, of non-player characters' AI, etc.) is itself, of course, a highly complex semiotic system, which could feasibly be thought of as radically independent from the particular set of images or scenarios textured-mapped over it. For example, the *Doom* 'engine', as we have seen, has been used as the basis for a number of quite different interactive environments.

> Underneath the flashy graphics, cinematic cut-scenes, real-time physics, mythological back-stories and everything else, a videogame at bottom is still a highly artificial, purposely designed semiotic engine.
>
> (Poole 2000: 214)

Media Play

Earlier in this Part it was suggested that the notion of popular media 'consumption' might not be fully adequate to an understanding of videogame play. Recent work in Media Studies has suggested that *play* might be a productive term for thinking about media 'consumption' more generally. Roger Silverstone for instance regards the mass media and play as inseparable:

> We are all players now in games, some or many of which the media make. They distract but they also provide a focus. They blur boundaries but still somehow preserve them. For, arguably we know, even as children, when we are playing and when we are not. The thresholds between the mundane and the heightened spaces of the everyday are still there to be crossed, and they are crossed each time we switch on the radio or television, or log on to the World Wide Web. Playing is both escape and engagement. It occupies protected spaces and times on the screen, surrounding it and, at some further remove. While we can enter media spaces in other ways and for other purposes, for work or for information, for example, while they exist to persuade as well as to educate, the media are a principal site in and through which, in the securities and stimulation that they offer the viewers of the world, we play: subjunctively, freely, for pleasure.
>
> (Silverstone 1999a: 66)

For John Fiske, the pleasure of engagement with the texts and images of the media is the 'active' consumer's articulation of the relationship of the real world and media representations and is both creative and playful. However playing with the boundary between the real and the representation in media consumption can also be an anxious activity. Fiske cites arguments that children's control of television sets (changing channels, switching the set on and off) is a kind of electronic fort/da game. Children will also playfully explore the distinction between the symbolic and the real in the content of programmes—satirising representations they do not approve of (Fiske 1987: 231).

> The fort/da game refers to Freud's observations of his eighteen-month-old grandson throwing a wooden reel on a string out of his cot, and pulling it back in, making sounds Freud took to be 'fort' (gone) and 'da' (there). Freud interpreted this as the infant playing out his anxieties over his mother's absence and return

Both of these elements of play—the anxious and the performative—are also evident in, indeed central to, videogame play. They raise the question of the political dynamic of play in general and videogame play in particular: what is the relationship between the activity, performance and pleasure of the player, the specific rules of the game and broader social rules and ideologies? For John B. Thomson, the everyday politics of individual identities in the dominant symbolic systems (ideologies or discourses) can be discussed in ludic terms, 'Like a game of chess, the dominant system will define which moves are open to individuals and which are not' (Thompson 1995: 210). Whilst for Fiske, playing with the rules is an emancipatory activity:

> The pleasures of play derive directly from the players' ability to exert control over rules, roles, and representations—those agencies that in the social are the agencies of subjection, but in play can be agents of liberation and empowerment. Play, for the subordinate, is an active,

> creative, resistive response to the conditions of their subordination: it maintains their sense of subcultural difference in the face of the incorporating forces of the dominant ideology.
>
> (Fiske 1987: 236)

In a response to political and press condemnation of videogame arcades (or video parlours) in Australia in the 1980s, Fiske and Jon Watts expand on this politics of play. They argue that there is a contradiction

> centred in the technical nature of the games themselves, in that they offer disapproval of versions of activities that are normally highly valorised by society at large: they position the player in interaction with a machine (the reference for this is clearly the production line) and they position him in front of an electronic screen like that of the television set. Clearly, the similarities to two such central social activities as manufacturing and television-watching cannot be responsible for the parlours' antisocial image, but they provide us with a starting point for our investigation, which must concern itself with inversions of the normal, not with reproductions of it.
>
> (Fiske and Watts 1985)

It is interesting to note that in the two decades since this essay was published the electronic screen has become the technological locus of work as well as leisure. The salient point here is that playful activities that 'look like' non-playful activities (whether these activities are the virtual violent activities on screen or the activities of the player in front of the machine) are not necessarily analogues for those non-playful activities. Like a medieval festival they might turn the world upside down.

However, if play as cultural practice so thoroughly suffuses contemporary media consumption and identity construction, there is a danger of losing any sense of it as a critical or analytical term in understanding new media. It should also be noted that these examples of attention to play in Media Studies, welcome as they are, are speculative, sketches for a potential field of enquiry. They do not draw on, and do not conduct, ethnographic research into media play. Game Studies is beginning to undertake both theoretical and empirical research into play however. The work of the anthropologist Victor Turner on play, for example, has been used to examine the communication in, and talk around, the multiplayer game *Counterstrike* (Wright, *et al.* 2002, see also Dovey and Kennedy 2006: 34–35). More often though, play is introduced as part of efforts to define games, whether for the purposes of defining the key concepts of Game Studies (Walther 2003), of the analysis of games as a distinct cultural form (Juul 2003) or to inform the game design process (Salen and Zimmerman 2003).

Playing with a Computer

Play is sometimes invoked or factored in to support studies of which it is not the main object of research. Studies of fan fiction use a notion of play to articulate the creativity of such practices around the scaffolding of the source text (Jenkins 1992; Hills 2002). Matt Hills uses the psychologist D. W.

Winnicott's theories of play as a 'third space' between the subject and object (for instance the child and his or her toy) in his work in this field

We have suggested that the development of personal computing is bound up in playful practices and identified some characteristics of videogames as new media, distinct from other screen-based popular media. What does it mean though, to play with a computer?

Interactivity Game Play

While action games are perceived as crude and one-dimensional, it must be remembered that game events unfold, through play, in real time. Key aspects of established narrative visual media (cinema and television drama), such as timing, plot, character development and depth, the controlled revelation of narrative information to the viewer, etc. are all extremely limited by interactivity. The player is not only immersed in but is also 'responsible' for the onscreen events. If the game ends it is because of the player's failure, not the deeply established reassurance of narrative closure. It could be added that, contrary to the prevalent critical view of games such as *Doom* or *Grand Theft Auto* as an uncomplicated desire for control and mastery, gameplay is characterised as much by anxiety, even fear, as by triumphant machismo. Players lose constantly, replay and are 'killed' again.

There is a contradiction, or at least a tension, here between the player's awareness of the conventions and thorough artificiality of this experience, and the real, often visceral fear this experience can provoke. We know this from horror films—we are quite conscious, from the music and other signs, that something is about to jump out, but this knowledge only seems to heighten the experience rather than defuse it. The videogame compensates with other features, depending on the genre: *Tomb Raider* (a mixture of reflexes, lateral thinking and spatial awareness), *Silent Hill* (atmosphere), or *Tetris* (reflexes and panic).

Learning

Whilst all media consumption requires knowledge of particular codes, and is always an active process, 'decoding' or learning is foregrounded in the interactive playing of videogames. The process of learning the codes and conventions, the ways of understanding and playing the game must take place with each genre of game. Each genre has its own mode of interaction—and each game within the genre invents its own variations, different combinations of buttons to press or peripherals to add. Mastering the controls of each game is essential, and a fundamental pleasure in its own right. Videogames are, as Provenzo says, 'literally teaching machines that instruct the player … in the rules … as it is being played' (Provenzo 1991: 34).

It is not just the controls and rules that the player must learn. Each videogame is a semiotic universe—every element from backgrounds to characters, walls, trees, etc. is coded and its place within the meaning of the world and its playing decided. Nothing is incidental or random. Again we return to the peculiarly non-immersive quality of videogame play—to some degree, the more sophisticated the representation of an immersive world, the more aware the player must be of its artifice. The graphic and conceptual simplicity of *Tetris* may leave the player, hours later, with a feeling of having been in

a trance, but to play *Tomb Raider*, for example, is to learn the semiotics of virtual world construction. The environments are like stage sets: painted backdrops, with some elements that appear to function as we would expect their referents in the real world to (doors that open, stairs that can be climbed, etc.). Some elements do not—windows and doors can serve only a decorative function. Move Lara Croft up close to a foliage-covered wall of architectural ornament and it is revealed as pixellated graphics mapped onto the regular polygonal units that structure these artificial realms.

Identification

> It is often assumed in popular descriptions of game-playing that a facile process of identification occurs ... given that one appears to play many games in the first person and that one is 'rewarded' by maintaining the 'life' of this character, it is all too easy to assume an identification between player and role, but characters in computer games are rarely complicated personae.
>
> (Sefton-Green, quoted in Green *et al.* 1998: 27)

This active engagement with the very structure of the videogame in its playing suggests that established critical frameworks for understanding the relationship of the media spectator to media text are not enough. Theories of cinema spectatorship, founded on the assumption that viewers identify with the film's main protagonist, may initially appear useful to studying gameplay, given the videogame player's interactive control of the game's characters. However, as the shift from second to third person in this instruction book indicates, this is not a straightforward connection:

> Infiltrate without being seen by your enemies. You're Solid Snake and you've got to single-handedly infiltrate the nuclear weapons disposal facility, which is being occupied by a group of terrorists. If the enemy spots Snake, they will call in reinforcements and go after him. You can't win a firefight against superior numbers, so try to avoid unnecessary battles whenever you can.
>
> (Konami's *Metal Gear Solid* instruction book, 1999)

The consumption of this new medium can only be understood if the videogame is theorised as software as well as media text—as computer-based media. As Poole argues, the player of *Pac-Man* is 'having a conversation with the system on its own terms' (Poole 2000: 197).

In this Part of the book we have already touched on the complexities of videogame play and identity and the cybernetic relationship between players and game technologies. The following two case studies explore these issues further and in relation to the symbolic and abstract systems of the videogame as computer media object.

CASE STUDY 4 .12: Identifying with the Computer in Simulation Games

Ted Friedman has explored this question of the videogame player's identification with the texts, images and worlds of this new medium. He focuses on the successful genre of simulation games, games in which complex social, historical, geographical, or fantastical interactions are modelled by the computer (for example, *Populous*, *SimCity*, *Theme Park*, *SimAnt*, *Civilisation*, etc.). Sometimes known as 'God games', the player is usually 'omniscient', the interface is a bird's-eye view or isometric map-like representation of the game's world over which the player can scroll. The player is not, however, omnipotent. The object is not to control the simulation fully, but instead to intervene within the unfolding complex developments (geo-politics, city development or fantastical evolutionary processes, etc.), to shape these dynamic forces according to each game's algorithms. The game may be extremely open-ended—the *SimCity* player chooses the kind of urban environment they wish to encourage, and there is often no obvious end, solution or victory. The player, therefore, does not 'identify' with any individual protagonist, as they might if watching a film. Instead, Friedman argues, in the game *Civilisation II*, the player has to juggle numerous different roles at the same time, 'king, general, mayor, city planner, settler, warrior, and priest to name but a few' (Friedman 1995). We cannot here talk, as film theory might, about occupying subject positions in our identification with this game. For Friedman, rather, the player must identify 'with the computer itself ... the pleasures of a simulation game come from inhabiting an unfamiliar, alien mental state: from learning to think like a computer' (Friedman 1999). As we have seen, the interactive playing of a game does not allow the player free rein:

> computers 'teach structures of thought', 'reorganize perception'. Simulation games in particular aestheticize our cybernetic connection to technology. They turn it into a source of enjoyment and an object for contemplation ... Through the language of play, they teach you what it feels like to be a cyborg.
>
> (Friedman 1999)

Here, then, we see videogames not as ephemeral digital toys but as offering unique opportunities for engaging with and making sense of the complex and intimate relationships—networks even—between people and computer media and technology.

> Ted Friedman (1999) 'Civilisation and its Discontents: simulation, subjectivity, and space', in Greg Smith (ed.) *On a Silver Platter: CD-ROMs and the promises of a new technology*, New York: New York University Press, pp. 132–150. Available online: http://www.duke.edu/~tlove/civ.htm (accessed 6/11/00)

CASE STUDY 4.13: Identifying with Codes and Demons

The complex shifting of focus and identification necessary to play videogames is clearly indicated in an Australian study of the implications of children's videogame culture for education. Two twelve year old boys were asked to play a favourite Nintendo game (*Super Ghouls and Ghosts*). One of the friends

played the game and the other observed and offered commentary. Their dialogue is revealing of the complexities of their engagement with the game:

> **Louis:** What is the game play about? What are you actually doing here?
> **Jack:** Well, you're … what you do is you go around shooting zombies, with weapons like daggers, arrows …
> **Louis:** Like medieval-time weapons?
> **Jack:** Yes.
> **Louis:** Yeah, OK—What is your favourite level that you have encountered?
> **Jack:** My favourite level has to be the first level …
> **Louis:** The first level … Easy?
> **Jack:** Yes, it's fairly easy.
> **Louis:** Now, do you like playing the game normally, or do you like having it with the codes inputted?
> **Jack:** I like playing it with … both.
> **Louis:** Oh, OK … What kind of codes would you put in for the action replay, which we have at this moment, Da Dah!!!!
> **Jack:** I would, I would put … 'continuous jumping', which means you can just jump, and jump, and just keep jumping …
> **Louis:** … and jump, and jump, and jump, and jump … What else? Infinite energy, is that a code?
> **Jack:** I'd make it immune, I'd make myself immune to my enemies. That means no enemies could rip me.
> **Louis:** Oh, that's alright. I like how that goes.
>
> (Green *et al.* 1998: 27)

A little later:

> **Jack:** Like, how about … I wish I was Knight Arthur. Could you please explain who Knight Arthur is?
> **Louis:** He is the character you play in this story. I wish I could be Knight Arthur with my little pro-action replay plugged in … and I would turn on, I'd turn on the action again. I'd put in, let's see, 70027602 in the code importer, and you would get, you'd be immune to enemy attacks if … I can walk around it going through flames and lava and big demons like hydras and things.
>
> (Green *et al.* 1998: 28)

The researchers are particularly concerned with questions of the kinds of 'literacy' demonstrated here—as the children switch between text and images on screen and on printed pages. They point out that these children have a clear sense that they are playing a game, that they see themselves separately

from the game's characters. 'Identification', then, is with the game as program, the boys are engaging with its semiotic structure, simultaneously articulating the iconography (medieval weapons, etc.), its conventions (levels, bosses), and knowledge external to the game (codes and cheats). Playing such games involves the simultaneous mapping of the game as software, as simulated space, and as symbolic environment, within their social circuits and resources.

It is worth noting the sheer complexity of this gameplay—within the same breath the boys are talking in terms of symbolic content (monsters and knights), virtual space, identification with characters/avatars, yet they are also engaging with the game as software, simultaneously ludic and algorithmic, offering tactical variations within a system (cheats): a manipulation of the gameworld at the level of program as well as symbolic content.

> Videogame play is bound up in the materiality and imaginary of cyberculture. William Gibson's sketch of intense arcade players is an ur-moment in the genesis of cyberpunk and his insight and the implications of it for understanding cyberculture more generally are discussed in detail in Part 5 of this book

Cybernetic Play

Ted Friedman has seen the cybernetic loops between game and player as only a particularly intense example of those of computer use more generally:

> What makes interaction with computers so powerfully absorbing—for better or worse—is the way computers can transform the exchange between reader and text into a feedback loop. Every response you make provokes a reaction from the computer, which leads to a new response, and so on, as the loop from the screen to your eyes to your fingers on the keyboard to the computer to the screen becomes a single cybernetic circuit.
>
> (Friedman 1995).

In similar terms, James Newman points out that

> Importantly, the ... relationship between player and system/gameworld is not one of clear subject and object. Rather, the interface is a continuous interactive feedback loop, where the player must be seen as both implied and implicated in the construction and composition of the experience.
>
> (Newman 2002: 410).

This notion of digital game playing as cybernetic takes us beyond notions of the 'interactivity' of popular new media and has far-reaching consequences. In these terms interactivity can be seen as

players choosing pathways or objects via interfaces and menus, perhaps not so far removed from other forms of media consumption. To describe digital gameplay as cybernetic though is to suggest a much more intense and intimate relationship between the human and the machine, and a relationship in which neither partner is dominant, or, as Newman intimates, clear distinctions between them become unsustainable. Player and software are a circuit. It is not surprising then that the monstrous figure of the cyborg stalks through discussions of the nature of videogame play (see also Lahti 2003 and Giddings and Kennedy 2006).

As we have seen, for Ted Friedman the player is taught how to think 'like a cyborg', and for Katherine N. Hayles the adolescent videogame player is a 'metaphoric' cyborg. In her work on female *Quake* players Helen W. Kennedy is clearly using this terminology literally (4.4.3 above). For her, gameplay is cybernetic, 'networks and flows of energy which are entirely interdependent', in gameplay 'there is no player separate to the interface and game world, there is a fusion of the two into a cyborgian subjectivity—composed of wires, machines, code and flesh' (Kennedy 2007: 126). The fact that this videogame-and-player loop is temporary or intermittently constructed (i.e. it exists as such only in particular moments of gameplay) should not detract from either its reality or its technocultural significance. In these terms then the event of videogame play can be thought of as *literally* cyborgian, not only a human subject in a technologised environment, but rather as the human as one element in an event assembled from and generated by both human and nonhuman entities.

This not only challenges a fundamental tenet of Media Studies—that media messages or communication are always only socially (not physically or technologically) determined, it also suggests that gameplaying in particular (but also technocultural relationships more generally) must be conceived of in ways which fundamentally challenge existing ways of theorising the relationships between humans and (media) machines (and the physical world).



The Unbearable Lightness of Games

Tom Bissell

I have been publishing long enough now to look back on much of what I have written and feel the sudden, pressing need to throw myself off the nearest bridge. Every person lucky enough to turn a creative pursuit into a career has these moments, and at least, I sometimes tell myself, I do not often look back on my writing with shame.

I am ashamed of one thing, however, and that is an essay I contributed to a nonfiction anthology of "young writing." I was encouraged to write about anything I pleased, so long as it addressed what being a young writer today felt like. I wrote about video games and whether they were a distraction from the calling of literature. Even as I was writing it, I was aware that the essay did not accurately reflect my feelings. Recently I wondered if the essay was maybe somewhat better than I remembered. I then reread it and spent much of the following afternoon driving around, idly looking for bridges.

"As for video games," I wrote, "very few people over the age of forty would recognize them as even a lower form of art. I am always wavering as to where I would locate video games along art's fairly forgiving sliding scale." Video games are obviously and manifestly a form of popular art, and every form of art, popular or otherwise, has its ghettos, from the crack houses along Michael Bay Avenue to the tubercular prostitutes coughing at the corner of Steele and Patterson. The video game is the youngest and, increasingly, most dominant popular art form of our time. To study the origins of any popular new medium is to become an archaeologist of skeptical opprobrium. It seems to me that anyone passionate about video games has better things to do than walk chin-first into sucker-punch arguments about whether they qualify as art. Those who do not believe video games are or ever will be art deserve nothing more goading or indulgent than a smile.

I think that was what I was trying to say. But I was then and am now routinely torn about whether video games are a worthy way to spend my time and often ask myself why I like them as much as I do, especially when, very often, I hate them. Sometimes I think I hate them because of how purely they bring me back to childhood, when I could only imagine what I would do if I were single-handedly fighting off an alien army or driving down the street in a very fast car while the police try to shoot out

Tom Bissell, "The Unbearable Lightness of Games," *Extra Lives: Why Video Games Matter,* pp. 33–47. Copyright © 2010 by Random House, Inc. Reprinted with permission.

my tires or told that I was the ancestral inheritor of some primeval sword and my destiny was to rid the realm of evil. These are very intriguing scenarios if you are twelve years old. They are far less intriguing if you are thirty-five and have a career, friends, a relationship, or children. The problem, however, at least for me, is that they are no less *fun*. I like fighting aliens and I like driving fast cars. Tell me the secret sword is just over the mountain and I will light off into goblin-haunted territory to claim it. For me, video games often restore an unearned, vaguely loathsome form of innocence—an innocence derived of *not knowing anything*. For this and all sorts of other complicated historical reasons—starting with the fact that they began as toys directly marketed to children—video games crash any cocktail-party rationale you attempt to formulate as to why, exactly, you love them. More than any other form of entertainment, video games tend to divide rooms into Us and Them. We are, in effect, admitting that we like to spend our time shooting monsters, and They are, not unreasonably, failing to find the value in that.

I wrote in my essay that art is "obligated to address questions allergic to mere entertainment. … In my humble estimation, no video game has yet crossed the Rubicon from entertainment to true art." Here I was trying to say that what distinguishes one work of art from another is primarily intelligence, which is as multivalent as art itself. Artistic or creative intelligence can express itself formally, stylistically emotionally, thematically, morally, or any number of ways. Works of art we call masterpieces typically run the table on the many forms artistic intelligence can take: They are comprehensively intelligent. This kind of intelligence is most frequently apparent in great works of art created by individuals. Unity of artistic effect is something human beings have learned to respond to, and for obvious reasons this is best achieved by individual artists. Many games—which are, to be sure, corporate entertainments created by dozens of people with a strong expectation of making a lot of money—have more formal and stylistic intelligence than they know what to do with and not even trace amounts of thematic, emotional, or moral intelligence. One could argue that these games succeed as works of art in some ways and either fail or do not attempt to succeed in others. "True" art makes the attempt to succeed in every way available to it. At least, I think so.

My ambivalence goes much deeper, though. A few years ago I was asked by a magazine for my year-end roundup of interesting aesthetic experiences, among which I included 2K Boston's peerless first-person shooter *BioShock*, which, I wrote, "I would hesitate to call … a legitimate work of art," even though "its engrossing and intelligent story line made it the first game to absorb me without also embarrassing me for being so absorbed." Seeing that halfhearted encomium in print, with my name attached to it, about a game I adored, obsessed over, and thought about for weeks drove home the plunger of a fresh syringe of shame. Was I apologizing to some imaginary cultural arbiter for finding value in a form of creative expression whose considerable deficits I recognize but which I nevertheless believe is important? Or is this evidence of an authentic scruple? On one hand, I love *BioShock*, which is frequently saluted as one of the first games to tackle what might be considered intellectual subject matter—namely, a game world exploration of the social consequences inherent within Ayn Rand's Objectivism (long story). On the other hand, what passes for intellectual subject matter in a video game is still far from intellectually compelling, at least to me, and I know I was not imagining the feeling of slipping, hourglass loss I experienced when I played *BioShock* ten hours a day for three days

straight. If I really wanted to explore the implications and consequences of Objectivism, there were better, more sophisticated places to look, even if few of them would be as much fun (though getting shot in the knee would be more fun than rereading *Atlas Shrugged*). When I think about games, here is where I bottom out. Is it okay that they are *mostly* fun? Am I a philistine or simply a coward? Are games the problem, or am I?

I came to this once-embarrassed, formerly furtive love of games honestly. Because the majority of the games I have enjoyed most as an adult tell stories, I was always comparing those stories with the novels and films I admire. Naturally, I found (and find) most video-game stories wanting. But this may be a flagrant category mistake. For one thing, no one is sure what purpose "story" actually serves in video games. Games with any kind of narrative structure usually employ two kinds of storytelling. One is the framed narrative of the game itself, set in the fictional "present" and traditionally doled out in what are called cut scenes or cinematics, which in most cases take control away from the gamer, who is forced to watch the scene unfold. The other, which some game designers and theoreticians refer to as the "ludonarrative," is unscripted and gamer-determined—the "fun" portions of the "played" game—and usually amounts to some frenetic reconception of getting from point A to point B. The differences between the framed narrative and the ludonarrative are what make story in games so unmanageable: One is fixed, the other is fluid, and yet they are intended, however notionally, to work together. Their historical inability to do so may be best described as congressional.

An example of such narrative cross-purpose can be found in Infinity Ward's first-person shooter *Call of Duty 4*. In one memorable sequence, moving forward the framed narrative requires you and a computer-controlled partner to crawl and sneak your way through the irradiated farmlands of Chernobyl in order to assassinate an arms dealer. The ludonarrative, meanwhile, is the actual (and, as it happens, pretty thrilling) process of getting there. If you choose to be a dick and frag your partner, it has only ludonarrative consequences. At worst, you have to start the mission over. No matter what you do, the framed narrative does not change: You and he need to get there together. *Call of Duty 4* is a game with little to no ambition to change the emotional outlook of anyone who plays it. It is a war-porn story of good and evil. All the same, the chasm between its framed narrative and ludonarrative calls attention to the artificiality of both. While the former attempts to be narratively meaningful, the latter is concerned only with being exciting. The former grants the player no agency and thus has no emotional resonance because the latter, with its illusion of agency, does nothing to reinforce what that resonance might be, other than that shooting your friend in the head is bad news. Believing in the game's fiction often becomes as difficult as obeying orders issued by a world-class hypocrite. For a game of *Call of Duty 4*'s simplistic themes, this is a problem of glancing consequence. For games of greater ambition, however, the problem becomes exponentially larger. (*Call of Duty 4* does offer a couple of formally compelling experiences. One is that it kills off the character you assume you will control for the duration in a mid-game helicopter crash, but not before allowing you to take a few disoriented steps from the wreckage—altogether an eerie sequence. Another is the game's opening, which grants the gamer the helpless first-person POV of a man being driven, it becomes increasingly evident, to his execution. This sequence ends with the gamer being shot, jarringly, in the face.)

Several games have lately been experimenting with allowing decisions made during the ludonarrative to alter the framed narrative, most notably in *Fallout 3* and Lionhead's *Fable II*, but this is mainly expressed in how you are perceived by other characters. Once a game comes along that figures out a way around the technical challenges of allowing a large number of ludonarrative decisions to have framed-narrative-altering consequences—none of which challenges I understand but whose existence several game designers sighingly confirmed for me-—an altogether new form of storytelling might be born: stories that, with your help, create themselves. There is, of course, another word for stories that, with your help, create themselves. That word is *life*. So would this even be a good thing?

I am not so sure. When I am being entertained, I am also being manipulated. I am *allowing* myself to be manipulated. I am, in other words, surrendering. When I watch television, one of our less exalted forms of popular entertainment, I am surrendering to the inevitability of commercials amid bite-sized narrative blocks.

When I watch a film, the most imperial form of popular entertainment—particularly when experienced in a proper movie theater—I am surrendering most humiliatingly, for the film begins at a time I cannot control, has nothing to sell me that I have not already purchased, and goes on whether or not I happen to be in my seat. When I read a novel I am not only surrendering; I am allowing my mind to be occupied by a colonizer of uncertain intent. Entertainment takes it as a given that I cannot affect it other than in brutish, exterior ways: turning it off, leaving the theater, pausing the disc, stuffing in a bookmark, underlining a phrase. But for those television programs, films, and novels febrile with self-consciousness, entertainment pretends it is unaware of me, and I allow it to.

Playing video games is not quite like this. The surrender is always partial. You get control and are controlled. Games are patently aware of you and have a physical dimension unlike any other form of popular entertainment. On top of that, many require a marathon runner's stamina: Certain console games can take as many as forty hours to complete, and, unlike books, you cannot bring them along for enjoyment during mass-transit dead time. (Rarely has wide-ranging familiarity with a medium so transparently privileged the un- and underemployed.) Even though you may be granted lunar influence over a game's narrative tides, the fact that there is any narrative at all reminds you that a presiding intelligence exists within the game along with you, and it is this sensation that invites the otherwise unworkable comparisons between games and other forms of narrative art.

Yes, as difficult as it sometimes is to believe, games have authors, however diminutive an aura he or she (or, frequently, they) might exude. What often strikes me whenever I am playing a game is how glad I am of that hovering authorial presence. Although I enjoy the freedom of games, I also appreciate the remindful crack of the narrative whip—to seek entertainment is to seek that whip—-and the mixture of the two is what makes games such a seductive, appealingly dyadic form of entertainment. A video game whose outcomeless narrative is wholly determined by my actions—as in, say, *World of Warcraft*, which is less a video game than a digital board game, and which game I very much dislike—would elevate me into a position of accidental authorship I do not covet and render the game itself a chilly collation of behavior trees and algorithms. I *want* to be told a story—albeit one I happen to be part of and can affect, even if in small ways. If I wanted to tell a story, I would not be playing video games.

A noisy group of video-game critics and theoreticians laments the rise of story in games. Games, in one version of this view, are best exemplified as total play, wherein the player is an immaterial demiurge and the only "narrative" is what is anecdotally generated during play. (*Tetris* would be the best example of this sort of game.) My suspicion is that this lament comes less from frustration with story qua story than it does from the narrative butterfingers on outstanding display in the vast majority of contemporary video games. I share that frustration. I also love being the agent of chaos in the video-game world. What I want from games—a control as certain and seamless as the means by which I am being controlled—may be impossible, and I am back to where I began. Reload.

The purpose story serves in video games is complicated, then. Less complicated is how many gamers view story For many gamers (and, by all evidence, game designers), story is largely a matter of accumulation. The more *explanation* there is, the thought appears to go, the more *story* has been generated. This would be a profound misunderstanding of story for any form of narrative art, but it has hobbled the otherwise high creative achievement of any number of games. Frequently in work with any degree of genre loyalty—this would include the vast majority of video games—the more explicit the story becomes, the more silly it will suddenly seem. (Let us call this the Midi-chlorian Error.) The best science fiction is usually densely realistic in quotidian detail but evocatively vague about the bigger questions. Tolkien is all but ruined for me whenever I make the mistake of perusing the Anglo-Saxon Talmudisms of his various appendices: "Among the Eldar the Alphabet of Daeron did not develop true cursive forms"—kill me, please, now—"since for writing the Elves adopted the Fëanorian letters." As for horror films, the moment I learned Freddy Krueger was "the bastard son of a thousand maniacs" was also the final moment I could envision him without spontaneously laughing. The impulse to *explain* is the Achilles' heel of all genre work, and the most sophisticated artists within every genre know better than to expose their worlds to the sharp knife of intellection.

A good example of a game that does not make that mistake is Valve's cooperative first-person shooter *Left 4 Dead*, which offers yet another vision of zombie apocalypse. Unlike the *Resident Evil* series, which goes to great narrative pains to explain what is happening and why (culminating in one of the most ridiculous moments in video-game history, when the hero of *Resident Evil 4* discovers an enemy document helpfully titled OUR PLAN), *Left 4 Dead* abandons every rational pretext and drops you and three other characters into the middle of undead anarchy. Almost nothing is explained; the little characterization there is comes in tantalizing dribs; and all that is expected is survival, which is possible only by constantly working together with your fellow gamers: covering them while they reload, helping them up when they are knocked down, and saving them when they are trapped in the eye of a zombie hurricane. *Left 4 Dead* is one of the most well-designed and explosively entertaining games ever made. While its purpose is incontinent terror, its point is that teamwork is, by definition, a matter of compulsion, not choice. *Left 4 Dead*'s designer, Michael Booth, had the maturity to grasp the power that narrative minimalism would provide his game. The speedy and acrobatic zombies of *Left 4 Dead* have no plan more refined than kicking you to death and sucking the marrow from your femur. As a scenario, it is as ridiculous as any forged by the Vulcans of video-game conceit, and yet, from start

to finish, *Left 4 Dead* is as freefallingly unfamiliar and viscerally convincing as the worst dream you have ever had.

Capturing what playing *Left 4 Dead* feels like is not easy But set *Left 4 Dead* to its highest difficulty level, recruit three of its best players you can find, push your way through one of the game's four scenarios, and make no mistake: What will go down will be so emotionally grueling, it will feel as though you have spent an hour playing something like full-contact psychic football. The end of the game, however it turns out, will feel epic to no one who did not take part in it, but those who did take part will feel as though they have marched, together, through a gauntlet of the damned.

The game's refusal to explore the who, what, why or how of its zombie citizenry is emblematic of the unusually austere approach to narrative in many Valve games, which the company may not have invented but has certainly come close to perfecting. The four controllable characters in *Left 4 Dead* are all common video-game types: the girl, the black guy, the biker, the elderly Vietnam vet. They are not, however, blank canvases. (I play as—in order of preference—the girl, the black guy, and the biker. I absolutely refuse to play as the Vietnam vet. For some reason I absolutely hate the guy. Tactics that failed in the jungles and swamps of the Mekong Delta have no place against an army of the undead.) The object of the game is to fight your way through scenarios that are themselves divided into five stages, all of which, but for the scenarios' finales, conclude with the players' slamming shut a safe house's thick red metal door. The problem, of course, is that between these safe houses are devastated locales (a high-rise hospital, a train yard, an airport, a traffic tunnel, among others) filled with literally thousands of zombies looking to attack you—and even, sometimes, one another. (You want a weird video-game experience? Creep around a corner in the sewers adjacent to the hospital, say, and you might find, to your fascinated horror, a couple of unawares zombies casually *beating each other up*.) These zombies attack singly or in groups or in what the game calls "the horde." Standing in the middle of a darkened city street while a horde of zombies pours up out of a subway station and clamors over and around parked cars to get to you is about as unnerving as video games get. And these are just the rank-and-file zombies. The far more perilous "special infected" is where *Left 4 Dead* begins to glitter.

These special infected come in five nightmare flavors: the Hunter (a hoodied zombie who pounces upon and then tears into his prey, rendering the pouncee helpless until a friend comes along to shoot or push the Hunter off); the Smoker (a coughing, shambolic, elastically tongued zombie who operates much like a sniper, extending his tongue to pluck survivors from the pack); the Boomer (an obese and suppurating slob zombie who is as fragile and explosive as a Pinto but whose vomit and bile attract the dreaded horde, and whose vomit, on top of that, is *blinding*, so that during a well-coordinated, attack you cannot see the Hunter tearing to pieces your screaming friend right in front of you); the Tank (as advertised, a steroidally distended zombie as tough as an armored car, but who mercifully appears only a few times a game); and, finally, the Witch (a crying lost-soul zombie who seems the very picture of helplessness, until she is startled by a flashlight or loud noise, upon which she uses her razored manicure to instantly kill the survivor who startled her, and whom you must try to sneak past, and who is as upsetting and inspired a video-game nemesis as any). What is so brilliant about these special infected is the way they tap into distinct types of emotional unease. For the Hunter it is shock and for the Smoker helplessness. For the Boomer it is panic and for the Tank flight. For the Witch it is a strange

combination of alarm and paranoia and blame. These emotions, aroused as they are alongside other, living gamers, are part of what makes a game with no traditional narrative to speak of such a dynamically fertile experience to look back on. *Left 4 Dead* creates, within a structure that is formally storyless but highly controlled, a game that feels to those playing it as harrowingly and expertly designed as a first-rate horror film.

Credit here is due to the so-called AI Director that Valve designed specifically for *Left 4 Dead.* It is, most basically, a piece of in-game computation that monitors the gamers, judges their performance, and complicates things as it deems advisable. If things are going really swimmingly for the survivors, why not inflict upon them a Tank? If the survivors are hurting, why not drop in an extra health pack? The AI Director, which could not work in a game with an inflexible narrative structure, also ensures that the survivors are never attacked in the same place by the same number of enemies. The revelatory quality of this innovation cannot be overstated. Gamers often learn how to master a game by memorization, but *Left 4 Dead* is impossible to master in this way All one can do is hone strategies, which, especially on the highest difficulty level, have a toothpick-house fragility.

You do not get a delivered narrative in *Left 4 Dead.* What you get is a series of found narratives. How do these found narratives in *Left 4 Dead* work, and what gives them their resonance? Well, as it happens, I have a *Left 4 Dead* story and it occurred while playing the game's versus mode, in which two human teams (one survivor, one zombie) have at each other. Playing against human-controlled infected takes the robotically inflicted havoc of the AI and turns it into something far more wonderful and vicious. In versus mode, the object is to reach the safe house with as many living survivors as possible. The more survivors that make it, the more points your team receives. One night, at the end of the first stage of the "Dead Air" campaign, I and three fellow survivors (two of whom were friends, one of had just jumped in) had come to realize that we were up a vilely gifted and absolutely devastating team of *Left 4 Dead* tacticians—the Hannibal, Napoleon, Crazy Horse, and Patton of zombies. They attacked with insurgent coordination and to maximum damage, and it was only our own skill that had managed to hold them off as long as we had. By the time the first-stage safe house came into view, we—four extraordinarily good Left 4 veterans—were limping, hobbled, and completely freaked out. Then, another coordinated attack, led by the Boomer puking on us, blinding us, and summoning the horde. While we staggered around, the Smoker took hold of one friend while a Hunter pounced on another. The other remaining survivor and I decided to break for the safe house door. Before getting there my remaining friend was pounced on by yet another Hunter. Although I freed him, I was still mostly blind, and my friend, despite having been released, was under assault by at least a dozen rapacious normal zombies. Deciding that one of us making it was better than none of us making it, I stepped inside the safe house and closed the door. Outside, the friend I had left behind managed to fight his way out of the horde and kill the Smoker and Hunter ripping apart the other survivors, who were now incapacitated, incapable of getting up without help, and quickly bleeding out, which is to say, dying. Unfortunately, the heroic friend was himself incapacitated while doing this. While my three downed friends could shoot their sidearms, they could not rise. They needed me for that. In a minute or so, they would be dead, and from the shelter of the safe house I watched their health bars steadily drain away while, the opposing team had begun to respawn. A lone survivor even against even two

special infected opponents would stand no chance, as all it would take to end the round would be a Hunter or Smoker incapacitating me. So I stayed put. Better one of us than none of us.

My downed friends failed to see it this way. Over my headphones they vigorously questioned my courage, my manhood, the ability of my lone female survivor to repopulate the world on her own, and my understanding of deontological ethics. On the other side of the safe house door, I could hear the Boomer belching, farting, and waiting for me to come out. "You dick!" one of my friends called out. He had just finished bleeding out, a skull appearing beside his onscreen name. My remaining friends were now seconds away from the same fate. I looked within, did not like what I saw, steeled myself, and fired several shotgun rounds through the door, safely killing the Boomer (who it must be said behaved with uncharacteristic carelessness). When I opened the door I saw a Hunter a few feet away, in the corner, waiting to pounce, but I killed him before moving out of the safe room and into the street. The second Hunter was better prepared, but with miraculous good luck I managed to blast him out of the air in mid-pounce. I quickly helped up the first survivor and together we made it out to the final remaining survivor, who was down to his last droplets of virtual existence. While I helped up the final survivor, my friend, covering me, eliminated the lurking Smoker, and with glad cries the three of us made it back into the safe house. At great personal risk, and out of real shame, I had rescued two of my three friends and in the process outfaced against all odds one of the best *Left 4 Dead* teams I had and have ever played against. I realized, then, vividly, that *Left 4 Dead* offered a rare experience in which a game's theme (cooperation) was also what was encouraged within the actual flow of gameplay.

The people I saved that night still talk about my heroic action—and, yes, it *was*, it did *feel*, heroic—whenever we play together, and, after the round, two of the opposing team's members requested my online friendship, which with great satisfaction I declined. All the emotions I felt during those few moments—fear, doubt, resolve, and finally courage—were as intensely vivid as any I have felt while reading a novel or watching a film or listening to a piece of music. For what more can one ask? What more could one *want*?

I once raved about *Left 4 Dead* in a video-game emporium within earshot of the manager, a man I had previously heard angrily defend the position that lightsaber wounds are not necessarily cauterized. (His evidence: The tauntaun Han Solo disembowels in *The Empire Strikes Back* does, in fact, bleed.) "*Left 4 Dead*?' he asked me. "You liked it?" I admitted that I did. Very, very much. And him? "I liked it," he said, grudgingly. "I just wished there was more story." A few pimply malingerers, piqued by our exchange, nodded in assent. The overly caloric narrative content of so many games had caused these gentlemen to feel undernourished by the different narrative experience offered by *Left 4 Dead*. They, like the games they presumably loved, had become aesthetically obese. I then realized I was contrasting my sensitivity to that of some teenagers about a game that concerns itself with shooting as many zombies as possible. It is moments like this that can make it so dispiritingly difficult to care about video games.

The Warcraft Civilization

William S. Bainbridge

Entrance

I am Incognita, one of the Undead. I entered World of Warcraft, also called Azeroth, in the Shadow Grave crypt, deep beneath the ground near Deathknell. I understood that the time was midnight on the sixth of March 2007, but I knew little of my previous existence. Unlike a newborn child, I could talk, reason, read, and take complex actions, although there was much I needed to learn. I had some knowledge but few memories. My skills were terribly underdeveloped. It is said that Humans wonder what will happen after they die, but we Undead wonder what happened before we died.

The first thing I saw was the trash-strewn floor of the crypt, lifeless gray like the walls. Then the flickering light revealed two tiers of niches where disordered bones indicated that Human bodies had once lain. Each niche was decorated by a grim, carved skull, shaped from the same gray stone as everything else within my field of view. In one niche, a stout, oddly shaped candle kept vigil over a mound of dirt hinting at the flesh that once covered the bones. A torch on the wall behind me mirrored another across the shallow pit, lighting a stone staircase. I ascended, turned left at the landing where more carven skulls supported shallow arches, and ascended again past cobwebs and the dust of ages. The third flight of stairs brought me to the surface of my new world. Gross stone columns, with the same skull motif, framed the exit from the crypt into a desolate graveyard.

Waiting for me was the undertaker, who spoke: "About time you woke up. We were ready to toss you into the fire with the others, but it looks like you made it. I am Mordo, the caretaker of the crypt of Deathknell. And you are the Lich King's slave no more." Somehow I found myself thinking like an anthropologist, or perhaps a linguist. *Mordo*, I hypothesized, came from the Latin word for "dead," *mors* in the nominative or *mortis* in the genitive, related to *morbidus* meaning "deceased." I looked at his bared teeth and wondered if the word *mordere*, meaning "to bite," was a better derivation. Death bites, does it not? The German word for "murder" is *Mord*. Who was this Lich King, of whom Mordo spoke? A *lich-gate* is the place in a churchyard where the corpse waits for burial, and *litchfield* is an old word for "cemetery." Perhaps the Lich King was the king of corpses, cognate with the German word for "corpse," *Leiche*, Norwegian *lik*, and Dutch *lijk*.

William S. Bainbridge, "Entrance," *The Warcraft Civilization: Social Science in a Virtual World*, pp. 1–24. Copyright © 2010 by MIT Press. Reprinted with permission.

Mordo told me to speak with Shadow Priest Sarvis, who could be found at the bottom of the hill, in a decayed chapel. When I entered the building, I saw no religious symbols, and the boarded windows admitted no daylight. Sarvis said to me, "No other race on Azeroth has suffered as much as our people, priest. To laugh in the face of death has become second nature for all of us." Then I realized that I, like Sarvis, was a member of the priestly class, although an untrained one. I noticed he was wearing red and lavender robes and holding in his right hand a staff topped with a symbol at the top vaguely reminiscent of a cross, but with four rods forming a diamond shape around a red gem. As I was admiring his finery, Sarvis explained that our new leader was Lady Sylvanas, who had liberated us from the Lich King. "The Dark Lady guides us in our war against the hated Scourge and the holdouts of humanity who dog our every step."

I then received my first combat task, exterminating the Mindless Ones, eight one-armed Wretched Zombies and eight Mindless Zombies, whose brains had been pierced by arrows. This was a sad task, because they were Undead like me, but lacking full consciousness. When I returned to the blasted chapel to report my success, Sarvis gave me a Hallowed Scroll written by Dark Cleric Duesten, the local priest trainer, telling me, "feel blessed that your spirit was not released to the Nether," and suggesting I learn to deal with the fact that "the people you once knew, perhaps even cared for, are no longer!" When I presented it to Duesten, he commented, "The Holy Light no longer concerns you, the spirits of your forefathers are fairy tales, and creatures from the Nether don't want you … There is only one thing you must know: we have survived through will alone. It is faith in ourselves that separates us from others, and with our powers, we will cause great change in all of Azeroth."

More grim tasks were given to me: collecting magically useful organs from animals such as bats and wolves, and exterminating more of my brothers and sisters who had failed to make the complete return to consciousness after death. I looted valuable items, which I exchanged for money, and I began to gird myself with worn pieces of armor taken from those I killed. I learned with mixed pleasure and revulsion that we Undead can gain sustenance by eating the corpses of those we slew. As I interacted with the other Undead in the ruined village, they gave me advice: "Embrace the shadows." "Trust no one." "Beware the living." Novice Elreth bestowed a blessing, "Dark Lady watch over you!" Executor Arren asked the chilling question, "What would you ask of Death?" (See figure 1.1.)

The nature of my opponents changed fundamentally when Executor Arren assigned me the mission of killing twelve converts and initiates of the Scarlet Crusade. These were healthy, young Humans who, unlike me, had never died. They stood straight, whereas I hunched over, and they seemed filled with health. Given these contrasts, it was easy to hate them. Then I intercepted a map carried by the Red Messenger, showing where they had infiltrated our territory with agents. Arren ordered me to leave Deathknell and take the map swiftly to Executor Zygand, in Brill, our main Tirisfal settlement. Here I learned more about the huge conflict in which we Undead found ourselves, hunted as traitors by the forces of the Lich King, and invaded by Humans, who resented that we had seized Tirisfal from them just a few years before.

Repeatedly, I encountered the religious fanatics of the Scarlet Crusade. Sometimes, as we fought, they would shout at me, but I could not understand their words. On four occasions, I had the presence of mind to write down what they said: "*Bur wirsh ras wirsh va ras faergas Sturume ko majis ras landowar*

skilde." "*Ras Vassild Lithtos eynes majis ras valesh ash garde noth dana novas eynes*." "*Ras garde hamerung nud nud valesh noth Hir bur dana bor*." "*Ergin lo ti danieb nud bur Ras Lithtos eynes vassild nud nud wirsh ras firalaine wirsh*." At first, I thought they might be speaking Swedish, or some northern Indo-European tongue. But now, I am not so sure. It perplexes me that I cannot speak with the Humans, even though I myself seem to be the reincarnation of one of them. At the time, a general truce existed between our people and the Humans, but rogue groups like the Scarlet Crusade refused to recognize it. I wondered what drove them to annihilate us, and wished I could speak with them about the growing tragedy we shared.

In some of my Tirisfal assignments, I assisted Apothecary Johann, who was trying to develop new biological weapons to use against our enemies. I learned that the original Plague of Undeath had been used by the Lich King in his invasion of Human territory, and I guessed my own metamorphosis had been caused by it. Having declared independence from the Lich King's Scourge, we Forsaken needed our own bioweapon technology, both to counterattack against the Scourge and perhaps to defend ourselves if the Humans attacked in force. Johann had me collect the blood of darkhounds, vile murloc scales, and night web spider venom. Once he had brewed his new plague, we tested it on a captured Dwarf.

The scope of my labors expanded again when Magistrate Sevren sent me to Bethor Iceshard, a high-ranking mage in Undercity, the capital of the Forsaken Undead, hidden beneath the ruins of Lordaeron. I understand that *Lordaeron* means something like "the land of the peaceful people," or "the place of peace for people," combining three words from three different languages. But the Scourge killed the people in the Third War, and we built our metropolis in the sewers beneath it. The access elevators, ironically enough, operate from the crypt of King Terenas Menethil II, who had led the Alliance against the Horde in the Second War. As I stepped hesitantly into the elevator, on my first journey to the Undercity, I was filled with trepidation, but was curious to learn more about my place as a priest of the Forsaken, a member of the Horde, and a citizen of a vast and disintegrating world.

The Game

Incognita is a character in World of Warcraft (WoW), the most popular massively multiplayer online role-playing game (MMORPG), created by Blizzard Entertainment. By December 2008, WoW had eleven million players in North America, Europe, and Asia. It is a fantasy game, because it concerns an imaginary world where magic exists and historical events have taken a unique course. In this, for example, it is different from realistic online battle games set in World War II or some comparable historical context. WoW is similar in many respects to *EverQuest*, Sony's fantasy MMORPG. Indeed, it is solidly rooted in a rich tradition of fantasy stories and games, distinctive chiefly for its quality and massive size. Thus, WoW cannot be said to be terribly innovative, but from the social-scientific point of view, this is a good thing.

World of Warcraft not only represents but also includes within itself a great culture, on the surface as modern as the Internet itself, but reaching down to the very origins of European civilization. It is so complex, and offers players so much scope for action, that it transcends the game category to become

a virtual world. As the editors of a special WoW issue of the journal *Games and Culture* write, "The World of Warcraft is a complex world indeed, an extraordinary mixture of art and design, technologies, economics, the social and the cultural. It is a game, a virtual world, and an online community." As such, it is a laboratory where the social and behavioral sciences can thrive and contribute to information science and technology by supporting innovations in human-centered computing.

Note the themes in Incognita's brief narrative. She is lost and seeking to discover who she is and what she must do within a mysterious environment. Some would say this is the fundamental human condition, merely exaggerated in her case. She lacks understanding and skills, so she must learn. She will do so in a world gripped by conflict, where the group she belongs to seeks to define her identity in terms of competition against other groups. Her identity is also defined by religion, as a member of one sect in conflict with another. She struggles to think social-scientifically about her environment, and this brief narrative highlights linguistics, because language is both a marker of group boundaries and a barrier to communication. She also reasons historically, laboring to understand the present as a consequence of past events. Technology is crucially important, in this case, biotechnology devoted to the development of weapons of mass destruction. The vignette ends as she is about to enter an underground city created by her faction in the ruins of a defeated civilization, symbolizing both the possibility of rebirth and the ever-present danger of annihilation. This is an allegory of the real world in which we find ourselves today.

World of Warcraft is usually called a game, but this word has multiple and ambiguous meanings. An example is the classic 1924 short story "The Most Dangerous Game," by Richard Connell, which has been adapted many times for movies, radio drama, and television. A big-game hunter, Sanger Rainsford, washes ashore on a remote island ruled by General Zaroff, who also has an addiction to hunting. Zaroff confesses that he had become bored with hunting the ordinary and not very intelligent animals such as cape buffalo and tigers, and wanted a prey he could match wits with. So he set up the island as a hunting preserve for humans, where he chased and killed lost sailors lured there by false navigation beacons. Rainsford becomes Zaroff's latest prey: the hunter becomes the hunted. Only by outwitting Zaroff can Rainsford avoid becoming another stuffed head on the trophy wall. Thus, the word game in the title has two meanings: the prey in a hunt, and the play in a strategy contest.

In terms of sales over the years, *The Sims* is the most popular computer game, and yet by many definitions it is not a game at all. I feel a special connection to the Sims, not only because my middle name literally is Sims, or because people mistakenly think "Sims" is a computer moniker I adopted to express my interest in virtual worlds. Rather, I am interested because I have programmed artificial intelligence computer simulations of human interaction for a quarter century, and my daughters used to be avid players of The Sims. It simulates the everyday activities of virtual people, called "Sims," in complex but rather ordinary environments, starting with a home where the player can set up furniture and appliances like those in real American suburbs. There is, however, no real winning and losing. The originator, Will Wright, prefers to call it a "software toy."

World of Warcraft has the essential quality that people generally associate with games: competition. Players must struggle against adversity to increase many point scores, of which the most crucial is experience, which takes them up a graded series of levels. Attaining a high level is a source of pride.

Leveling up faster than somebody else makes a player feel superior. Both blind chance and clever tactics are important in determining the outcome of many brief battles, and battles chain together into quests. However, there is no ultimate victory. Thus, WoW is a virtual world that includes thousands of games, rather than simply being a game itself. As Cory Ondrejka has said, "No other medium provides such breadth and depth of experience, intermingling the social while encouraging exploration and discovery."

If "game" is a complex concept, "role-playing" is even more so, and the combination of the two adds further complexities. In the real world, we constantly play roles, some, such as "customer" and "teacher," that follow well-developed scripts provided by the culture, and others that we largely invent ourselves. Every mentally normal person is able to pretend to be someone else, as well as to play roles while being himself or herself. Perhaps there are three dimensions to role-playing. First is the *competence* a person needs to play a given role, and roles differ in the demands they make on players. I can do a pretty good imitation of a priest, although I have never taken holy orders, but I am quite incompetent in impersonating a ballet dancer. Second is the degree to which the role is pre-scripted rather than creatively *improvised*. An actor playing Romeo in the balcony scene when he courts Juliet must say certain exact words and is not free to improvise as the same actor must when he courts the actress offstage. The third dimension is *genuineness*, the extent to which the person's thoughts and intentions match those apparently associated with the role. The actor playing Romeo is genuine, because we all know the drama is fiction, but a question often arises about the sincerity of used-car salesmen, even though it is safe to assume they really do have cars to sell.

We explore the concept of role-playing more deeply in the chapter on identity, but for now it is enough to say that the player must take on the perspective of the character he or she is playing, with some degree of competence, improvisation, and genuineness. All these are matters of degree, and Blizzard Entertainment takes explicit notice of this fact. In a sense, World of Warcraft is not one virtual world but hundreds of them, called *realms*. Technically, a realm is a separate computer or Internet server maintaining one instance of the world. In computer lingo, this is also called a *shard* of the world. Players can interact only with players who are in the same realm, and each character is restricted to a single realm. A player can enter multiple realms, one at a time, but needs a different character for each, with the very rare exception of a player paying to move a character from one realm to another. Each realm develops its own qualities, reflecting the players who enter it, and a few have been officially set aside as "role-playing realms" by Blizzard:

> If you enjoy role-playing (RP) and would like to imagine that you are an inhabitant of a fantasy- based world, then a role-playing realm may be for you. Players who choose to play on an RP realm should abide by the Role-Playing realm policies and remain in-character at all times. Role-Playing realms give players the chance to develop characters with a backstory who do not simply progress from quest to quest, but instead assist or hamper the efforts of others for reasons of their own.

Given that role-playing has many dimensions in online role-playing games, it is worth noting a very different technical definition of *role-playing game*, or RPG. This does not concern the relation between the player and a character in the game but the mechanics of combat inside the game. Consider the difference between two classic Nintendo games for single players, *Super Mario World* and *Super Mario RPG*. In *Super Mario World*, a mustached Italian plumber needs to explore and fight his way through a number of levels, which are separate environments, more like the geographic zones of WoW than the experience levels. Along the way, he encounters many enemies. If one bumps into him from the side, Mario dies. If he hops on its head, the enemy dies. Sometimes Mario can get a *power-up*, which means he does not die the first time he is touched but the second time. However, interaction between Mario and an enemy is very simple.

In *Super Mario RPG*, interactions between Mario and his enemies are far more complex. Much of the time, Mario is wandering around the landscape, picking up resources, and finding his way toward goals, just as in his traditional Nintendo games. But when he encounters an enemy, the play switches to combat mode. Mario and the enemy take a series of turns. On each turn, one strikes the other or casts a spell. The amount of damage done by this attack depends on a hidden mathematical algorithm that can combine numbers representing several things: Mario's strength, the enemy's strength, the particular attack used, the defendant's armor, and a random number. Characters have a number, or a variable, called *hit points* or *health*, which is reduced after each hit by the number of points of damage that resulted from the algorithm. The damage numbers are typically displayed on the screen in RPGs, and the character's health may be represented by a number on the screen or a bar graph. When the health reaches zero, the character dies. When either Mario or his enemy is killed, the game exits combat mode.

Hit points are a very old concept. Electronic RPGs are very much influenced by the 1974 tabletop card game *Dungeons and Dragons*, which used hit points, but there is a much earlier example. In the early 1950s, my sister and I played a card game simply called *War*. We sat on the floor, shuffled a deck of cards, and dealt them all out so each of us had twenty-six, or sometimes we used two or more decks for a really long game. In each round of the game, each of us would place three cards facedown in a line, then one card face up. Whoever placed the higher card face up, took all those on the floor. If the two cards were the same value, we put three more cards facedown, and another face up, again winner taking all. When one player had all the cards, the game was won. Notice that the number of cards I held were comparable to hit points, and when I had very few, I got concerned that I would lose. This was a pure game of chance, and we were not allowed to look at the cards in our own hands and make a strategy about how to play them.

In complex modem RPGs, the player does have choices during a combat, including running away, and there may not be explicit turn taking. But the basic principle is the same, a series of exchanges causing damage that is the result of a number of factors including random numbers. Modern RPGs enhance the player's experience by giving great freedom between combat episodes. Richard Rouse calls the outdated approach to electronic games "linear," because it allowed only one route from start to finish. In contrast, World of Warcraft is highly nonlinear:

> In terms of gaming, this means that the player is not locked into achieving different goals in a specific order or in achieving all of the goals she is presented with. Instead, the player is able to move through the game in a variety of paths and can be successful in a variety of ways. Nonlinearity leaves the player with more choice to play the game her own way.

The greater the nonlinearity, and the greater the choices in general, the more the game becomes a world. Consider the evolution of Mario's environment. *Super Mario Bros.* was released in 1985, when the video game industry was in a slump, and it was instrumental in launching the genre toward its current high popularity. Mario has a single goal, to rescue Princess Toadstool. To do this, he needs to fight his way through a number of distinct levels, essentially running linearly from left to right, with many jumps and climbs providing the semblance of a second dimension. At the end of each level, he is ported to the next level, in a set order. *Super Mario World*, issued five years later, takes this approach to its logical extreme, a huge number of levels, most of which however are entirely linear. There are a few major choices, some hidden areas, a map through which the player may revisit old levels, and the possibility of finishing the game without accessing every last one of them. However, this is not yet a virtual world, despite the name. One reason is simply the limitations of the game console, the Super Nintendo, although a few games such as *Star Fox* went some distance in the direction of the third dimension, by means of additional computing power in the game cartridge.

Super Mario 64, released in 1996 for the more capable Nintendo 64 system, offered three dimensions of movement and gave the player many choices. Because it is nonlinear, it encourages the player to explore the world, thus gratifying a wider range of human emotions than a game that consists of one predetermined jump or combat after another. The game is won by collecting stars, but Mario can rescue Princess Peach without finding all of them. Thus, there can be two different definitions of winning: rescuing the princess or getting all the stars. *Super Mario 64* is very nearly a virtual world. Most crucially, it lacks other people, because it is a one-player game. Also, it is a game rather than a world, precisely because it has an ending. A player can win games inside a virtual world, but cannot really win the entire world itself. Finally, an electronic environment is not fully a world unless it gives people the freedom to create things of their own design.

World of Warcraft is far more than a game. It contains in excess of five thousand completable quests, each of which might be considered a game, but WoW cannot be completed as a whole. The nearest thing to an end goal, when it was released in 2004, was the highest experience level achievable, which was sixty. In 2007, the top experience level was increased to seventy, and in November 2008, the top level rose again to eighty. But even at the top level, there are many challenges still to meet, in the form of dungeons or instances, battlegrounds, and the collection of valuable virtual items to strengthen one's character in duels or to give one's character martial beauty.

There are many opportunities to interact with other people. No information system yet built could handle ten million people at once, and too many people competing to kill the same boss enemy would spoil one another's enjoyment of triumph. The North American region has nearly 250 separate, parallel realms (or computer servers), and each one can handle a maximum of 4,000 players simultaneously. A character is limited to one realm, but each player may have characters in multiple realms, or multiple

characters in the same realm. A player cannot run more than one player at a given time, however, without purchasing a separate account for each character, and using multiple computers. Despite such limitations, social life in WoW is exceedingly diverse, and 4,000 characters are quite enough for a complex social structure.

The main area of limitation is the creation of virtual objects. A number of professions that players may choose for their characters involve assembling complex objects from multiple parts, but one cannot invent an object and construct it entirely from scratch. This contrasts with the popular nongame virtual world *Second Life*, in which one may use a graphics program to create a physical object, upload images to cover its surface, then write a script program to make it do things.

There are two reasons WoW is limited in this way. First, all the graphic images reside on the user's computer, rather than being downloaded laboriously from the server as in *Second Life*. This means that the graphics are much smoother in WoW, allowing a character to run from one environment into another without pausing for the graphics files to download. A consequence of this design choice is that you cannot create your own graphics, because they would not be available to all the other players. Second, because WoW is still promoted as a game, the designers need to be very careful to prevent computer-savvy players from gaining an advantage over others with less programming expertise. If I could create any object I want, I could forge a sword that kills any enemy in a single blow. However, as we see in later chapters, the social software included in the WoW user interface gives players wide scope for creating social groups, notably guilds, with user-defined membership ranks, evocative names, role-playing styles, goals, and memberships. Thus, the opportunities for creativity are significant without being infinite.

WoW retains many features of a game while being more than a game. It is worth noting also that many social scientists view the real world in gaming terms. The influential 1944 book *Theory of Games and Economic Behavior*, by John von Neumann and Oskar Morgenstern, launched game theory as a branch of economics, social exchange theory, and an analysis of society more broadly. However, this was far from the first influential classic that considered society in terms of games. *Homo Ludens*, written in 1938 by Johan Huizinga, argued that humans by their very nature play games, and that cultural innovations generally arise in play. Indeed, we should consider how World of Warcraft is also something between a game and a world, namely, a civilization. Every major civilization is an integration of multiple societies and cultures, and thus it presents huge challenges for social science.

Social Science in a Virtual World

Contemporary social sciences are fragmented, undecided about fundamental issues of theory and methods, and rather low in social status. Superficially, the computer and information sciences appear to enjoy demonstrable success and high social status. Beneath the surface, however, these apparently separate fields have much in common. Most important, they have much to contribute to each other.

Arguably, sociology was the most computational of all the sciences a century ago, but ironically, it has been left out of some of the most sociological developments in recent computer science. The roots of computational sociology were firmly planted by Herman Hollerith's work to analyze the data from

the 1900 census of the United States. To analyze social data, Hollerith developed the entire system of punched cards, complex programming of counting machines, and automatic tabulation that dominated information processing for three quarters of a century. Most sociologists still think of computing in terms of rectangular data sets in which columns represent variables, and rows represent cases, and they have been slow over the past quarter of a century to adopt new methodological perspectives.

At the same time, an increasing number of scientists with training in such fields as physics or who otherwise have little connection to sociology have been encroaching upon "our" territory, because they are able to handle computers creatively and have become interested in social issues. For example, to a classically trained sociologist who happens also to program computer simulations, it is alarming that the leading textbook *Simulation for the Social Scientist*, by Nigel Gilbert and Klaus Troitzsch, fails to cite more than a handful of computer simulation studies published in standard social science journals. Many such articles exist, but the broader simulation community ignores them. However, despite numerous examples of good social computer simulation research, it remains a peripheral method, largely exiled to the outer reaches of social science publications.

A quarter century ago I was exploring multiagent systems, in some ways reminiscent of the programming that controls the herds of beasts in World of Warcraft, to explore the way religious faith spreads through a human community by social influence and communication. In 1987, I was able to publish a set of neural network and multiagent simulations, but only disguised as educational software. With great difficulty, I was much later able to get a couple articles based on the research into marginal sociology journals, and only in 2006 could I publish a scholarly book reporting that work in expanded form, even including a table I generated way back in 1984. The gap between the social and computer sciences is so vast that few people on either side see any reason to take account of those on the other, let alone collaborate with them.

My perspective is quite different: social science is an information science, and information science is a social science. Both are radical movements aiming to transform society, as well as being sciences. Humanly meaningful data—whether we call it *information* or *knowledge*—can be articulated only within an appropriate culture. Like other cultural products, therefore, information is a socially constructed phenomenon. Properly understood, twenty-first century sociology needs to draw heavily upon computer science as a means for developing theory as well as for tools of data analysis. Most important, only by combining can they achieve their revolutionary potential.

In the early 1980s, the National Science Foundation considered creating a new Directorate for Social, Behavioral, and Information Sciences, but then bowed to disciplinary chauvinism and established first the Directorate for Computer and Information Science and Engineering (CISE), and then the Directorate for Social, Behavioral and Economic Sciences (SBE). Following the principle of "back to the future," I suggest that it is high time to merge social and information sciences. Having worked for years in both SBE and CISE, I believe I have a clear perspective on how their fields relate. In the cover article of the July 27, 2007, issue of the journal *Science*, I explained how virtual worlds like World of Warcraft could be laboratories for uniting these fields.

Many scientists and scholars are already conducting research about virtual worlds, and they are beginning to use them as environments to ask general social-scientific questions. Economist Edward

Castronova argues that an increasing fraction of human life, economy, and culture will take place in these novel environments, so they need to be studied as important phenomena in their own right. In a study of social and economic coordination, Castronova has shown that it can be fruitful to compare results from research in different virtual worlds, just as is true for nations on Earth. There is some evidence that they serve as hatcheries for new cultural movements—for example, facilitating the consolidation of post-Christian religious ideologies—and are substituting for disintegrating social institutions in the real world.

It is especially important to study virtual worlds now because the current period of transformation may not last much longer and because it may be impossible to reconstruct its key processes and phenomena entirely from historical records that are naturally preserved. Practically all of the classic one-player electronic games can still be played, either because computer emulators of the old systems have been created, or because the games have been ported over to new systems. But the same is unlikely to be true for today's virtual worlds because they depend on the extensive social infrastructure of the companies that support them and on the current population of people who inhabit them.

Virtual worlds are good environments in which to explore wider issues related to emerging technologies, such as intellectual property rights and the sociotechnical implications of online misbehavior. Research concerning the cultural boundaries of virtual worlds includes studies of the following issues: the extent to which gender- specific behavioral norms transfer to these nontraditional environments; comparisons with role-playing games that are not electronic, such as *Dungeons and Dragons*; the human impacts of alternative architectural philosophies; the social processes through which cooperation emerges; the possibility of addiction to virtual worlds; and the different meanings that participants attach to virtual life and death. There has even been research on how World of Warcraft and other virtual worlds can illuminate social factors implicated in the spread of disease epidemics. To date, much of the research has followed the twin qualitative paradigms of anthropological ethnography and sociological participant observation, but quantitative approaches using rigorous statistical and computational techniques show very great promise.

WoW is a very conducive environment for quantitative research because it encourages individuals to write "mod" or "add-on" programs, and scientists can use some existing software as research tools or write their own. These range all the way from very simple sequences of character behaviors constructed using macros built in to the WoW user interface, to long programs written in the Lua language. For example, one widely used program called Auctioneer analyzes prices on the WoW virtual item auction system, and CensusPlus tallies all the players currently online by several characteristics. With census data on more than 200,000 WoW characters, a team centered at the Palo Alto Research Center analyzed the factors associated with the upward status mobility of individuals and the dynamics of social groups.

This book uses qualitative rather than quantitative methods, and I save my more technical studies for journals that regularly publish statistical research. I hesitate to say that this book is more oriented toward theory, because the very word *theory* conjures up images of dry abstractions, as if hundreds of pages of desert lay ahead rather than the lush jungles that WoW has actually prepared for us. On one level, this book analyzes World of Warcraft from multiple standpoints of the history of social thought. By doing so, it suggests a second level, on which information-science design of virtual worlds must take

account of the nature of human beings and the societies they construct. And on a third level, the book seeks insights about life in the so-called real world.

Why would WoW be an especially good place to look for insights about Western civilization? One reason is that it bridges past and future, rooted in a major Western cultural tradition, yet aiming toward the virtual worlds we can create in times to come. WoW is tremendously eclectic. Consider the ten races. Orcs are derived most directly from J. R. R. Tolkien's *The Lord of the Rings* tetralogy, and Tolkien was a leading scholar of historical linguistics who based his fantasies on the legends of Britain. Tolkien told us that Elves were especially tall, as the Night Elves in WoW are, but shorter ones are found in *Grimm's Fairy Tales*, along with very short Dwarves including seven who lived with Snow White. The brothers Grimm, Jacob and Wilhelm, were scholars who collected folk stories as later anthropologists would, and who contributed substantially to the advancement of linguistics. Gnomes were made familiar to modern audiences in the Oz books of L. Frank Baum, which also pioneered the mixture of fantasy adventure and cultural parody we find in WoW. The mountain king in *Peer Gynt*, a drama by Henrik Ibsen with music by Edvard Grieg, is a troll. WoW's Tauren are minotaurs, familiar to us from the ancient Greek myth of Theseus, Daedalus, and Icarus. The Undead are reminiscent of zombies, but they especially resonate in popular movies about semidead humans, notably George Romero's *Night of the Living Dead* (1968) and the three movies based on a science fiction novel by Richard Matheson: *The Last Man on Earth* (1964), *The Omega Man* (1971), and *I Am Legend* (2007).

Dwarves also feature in Richard Wagner's titanic cycle of four grand operas, *Der Ring des Nibelungen*. For Wagner, *Nibelung* essentially means *Dwarf*, and the magical ring was forged by Dwarves from pure gold. Based on Norse or Germanic mythology, but also modeled after ancient Greek dramatic cycles, *The Ring* cast long shadows over the political and cultural future of Europe. One can still debate whether Wagner was at all responsible for the rise of the Nazis, long after his death, or whether his popularity was merely exploited by them. We could also debate the extent to which *The Ring* influenced Tolkien's rather different ring tetralogy, the music in *Star Wars*, and World of Warcraft. Remarkably, in 1849, Wagner prophesied that the future of art would go in a direction that today looks rather like WoW.

In 1848, a wave of largely unsuccessful revolutions swept Europe, and Wagner was rather unsuccessfully involved in a radical movement in Germany. As soon as he had settled in exile in Switzerland, he began writing *The Ring* and developing an aesthetic justification he called *The Art-Work of the Future*. This little book really presents two ideas: the concept of a total work of art, and the notion that great artists could speak with the voice of the people.

A total work of art, or *Gesamtkunstwerk* in German, is an artwork that combines multiple different arts. Wagner wrote both the poetry and the music for *The Ring*. He also felt a *Gesamtkunstwerk* would combine the visual arts of painting and dance, although the sets in traditional presentations of *The Ring* look like uninspired landscape pictures, and the singers on stage hardly move at all. One innovation that tied together Wagner's poetry and music was the leitmotif, a melody that represented a specific character or concept. All these principles apply to World of Warcraft, as they do to *Star Wars*. Each of the main cities or geographic areas in WoW has its own leitmotif, particular music that plays when a character arrives there. Although it is hard to find much dancing, the characters all move, often in ways that are both subtle and pronounced. One can invest marvelous hours documenting the particular

spasms with which each kind of enemy dies, for example. The varied environments of nature and architecture are often quite beautiful and express the particular nature of events that take place in them. Weaving everything together are the threads of a tapestry of myths, as complex as any in the ancient sagas.

A *Gesamtkunstwerk* derives its strength from the *Volk*, according to Wagner, the common people conceptualized as an ethnic or cultural group. The Nazi era and World War II largely discredited this part of his thesis, but at the time Wagner wrote, the distinction between right-wing populism and left-wing populism was not yet clear. Wagner assumed that the common folk shared a traditional culture, and that great artists could refine it to produce the greatest works of art. This is what the builders of World of Warcraft have done. Drawing upon deep popular traditions of fantasy and science fiction, they have created a virtual world that attracts millions of ordinary folk, while at the same time posing a radical critique of the dominant culture of their society. Note that *Der Ring des Nibelungen* and World of Warcraft are saturated with supernatural phenomena but have absolutely nothing to do with Christianity. The political systems in them are feudal, with occasional hints that capitalism is wicked or distorted, and the dominant elite acts largely from selfish motives. Without granting Wagner's ideology any special privileges, I must note that World of Warcraft is the most perfect fulfillment to date of his vision of a total work of art, combining many artforms while expressing popular criticism of the existing society.

As Georg Simmel pointed out a century ago, strangers can often see a society more clearly than its members. By visiting the very strange world of WoW and making sense of what we find there, we are able to look at our own world with fresh eyes. Indeed, WoW is in great measure an allegory, so its exaggerations can call our attention to facts we tend to miss as we go about our habitual activities in the real world. Because it is a complex, functioning civilization, WoW takes account of human nature and the implicit laws of human interaction. Following Simmel, my prime research method has been to send several virtual explorers into the world of WoW, then to dialogue with them about the meaning of what they discovered and what it says about our own civilization.

Discussion Questions and Recommended Reading/Viewing

Discussion Questions

1. Lister and co-authors refer to the notorious Columbine shootings of 1999, after which "military psychologist Lt.-Col. David Grossman argues that, just as Doom is used by the US Marines as a training simulator, so it 'trained' these disturbed adolescents to kill." Journalist Paul Keegan elaborates: "That's what makes shooters unlike any form of media violence we've seen before. You're not just watching a movie, you're in the movie…you're actually pulling the trigger." Discuss these statements. Does the point of view of a violent video game, combined with these games' efficiency as learning tools, increase its players' sense of identification with violent acts? Can young people be "trained to kill" or taught aggressive behavior in this way?
2. Compare the findings of the studies on the effects of violent video games by Craig Anderson and Dmitri Williams, listed in the Recommended Readings for this section. What does each study find? Which is more persuasive, and why?
3. Discuss the difference between *ludus* and *paidia*, as described by Roger Callois. Consider both video games and conventional games through the lens of these terms. Following the discussion of the cultural importance of games and play set forth in the Lister reading, how would you describe the role or importance of video game play and "Internet play" in culture?
4. Tom Bissell is clearly conflicted about the status of video games as "art." What does Bissell believe constitutes art? What do you think about this? What is the relationship between entertainment value and artistic value? Which video games, if any, do you believe rise to the status of "art"?
5. Discuss the tension between the "framed narrative" and the "ludonarrative" of a familiar video game. How do the two interact? Bissell believes this tension is what "make story in games so unmanageable." What do you think?
6. William Sims Bainbridge calls World of Warcraft "more than a game." What does he believe sets WoW apart from conventional video games?

7. Why does Bainbridge believe it is important to study virtual worlds, especially World of Warcraft? What can WoW tell us about culture and society?

Recommended Reading

Anderson, Craig and Brad Bushman. "Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature." Psychological Science 12:5, September 2001. http://www.psychology.iastate.edu/faculty/caa/abstracts/2000-2004/01ab.pdf

Flanagan, Mary. *Critical Play: Radical Game Design*. Cambridge: MIT Press, 2009.

McGonigal, Jane. *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*. New York: Penguin Books, 2011.

Williams, Dmitri and Marko Scoric. "Internet Fantasy Violence: A Test of Aggression in an Online Game." *Communication Monographs* 72:2, June 2005. http://dmitriwilliams.com/CMWilliamsSkoric.pdf

Recommended Viewing

The Video Game Revolution. Greg Palmer. 2004. Originally aired on PBS, this documentary explores the origins and development of the video game genre and industry, as well as its influence on culture.

Section 6

Creativity and Intellectual Property in the Digital Age

The Work of Art in the Age of Mechanical Reproduction

Walter Benjamin

"Our fine arts were developed, their types and uses were established, in times very different from the present, by men whose power of action upon things was insignificant in comparison with ours. But the amazing growth of our techniques, the adaptability and precision they have attained, the ideas and habits they are creating, make it a certainty that profound changes are impending in the ancient craft of the Beautiful. In all the arts there is a physical component which can no longer be considered or treated as it used to be, which cannot remain unaffected by our modern knowledge and power. For the last twenty years neither matter nor space nor time has been what it was from time immemorial. We must expect great innovations to transform the entire technique of the arts, thereby affecting artistic invention itself and perhaps even bringing about an amazing change in our very notion of art.*

—Paul Valéry, PIÈCES SUR L'ART,
"La Conquète de l'ubiquité," Paris.

Preface

When Marx undertook his critique of the capitalistic mode of production, this mode was in its infancy. Marx directed his efforts in such a way as to give them prognostic value. He went back to the basic conditions underlying capitalistic production and through his presentation showed what could be expected of capitalism in the future The result was that one could expect it not only

Walter Benjamin; Harry Zohn, trans.; Hannah Arendt, ed., "The Work of Art in the Age of Mechanical Reproduction," *Illuminations*, pp. 217–251. Copyright © 1999 by Houghton Mifflin Harcourt Publishing Company. Reprinted with permission.

to exploit the proletariat with increasing intensity, but ultimately to create conditions which would make it possible to abolish capitalism itself.

The transformation of the superstructure, which takes place far more slowly than that of the substructure, has taken more than half a century to manifest in all areas of culture the change in the conditions of production. Only today can it be indicated what form this has taken. Certain prognostic requirements should be met by these statements. However, theses about the art of the proletariat after its assumption of power or about the art of a classless society would have less bearing on these demands than theses about the developmental tendencies of art under present conditions of production. Their dialectic is no less noticeable in the superstructure than in the economy It would therefore be wrong to underestimate the value of such theses as a weapon. They brush aside a number of outmoded concepts, such as creativity and genius, eternal value and mystery—concepts whose uncontrolled (and at present almost uncontrollable) application would lead to a processing of data in the Fascist sense. The concepts which are introduced into the theory of art in what follows differ from the more familiar terms in that they are completely useless for the purposes of Fascism. They are, on the other hand, useful for the formulation of revolutionary demands in the politics of art.

I

In principle a work of art has always been reproducible. Manmade artifacts could always be imitated by men. Replicas were made by pupils in practice of their craft, by masters for diffusing their works, and, finally, by third parties in the pursuit of gain. Mechanical reproduction of a work of art, however, represents something new. Historically, it advanced intermittently and in leaps at long intervals, but with accelerated intensity. The Greeks knew only two procedures of technically reproducing works of art: founding and stamping. Bronzes, terra cottas, and coins were the only art works which they could produce in quantity. All others were unique and could not be mechanically reproduced. With the woodcut graphic art became mechanically reproducible for the first time, long before script became reproducible by print. The enormous changes which printing, the mechanical reproduction of writing, has brought about in literature are a familiar story. However, within the phenomenon which we are here examining from the perspective of world history, print is merely a special, though particularly important, case. During the Middle Ages engraving and etching were added to the woodcut; at the beginning of the nineteenth century lithography made its appearance.

With lithography the technique of reproduction reached an essentially new stage. This much more direct process was distinguished by the tracing of the design on a stone rather than its incision on a block of wood or its etching on a copperplate and permitted graphic art for the first time to put its products on the market, not only in large numbers as hitherto, but also in daily changing forms. Lithography enabled graphic art to illustrate everyday life, and it began to keep pace with printing. But only a few decades after its invention, lithography was surpassed by photography. For the first time in the process of pictorial reproduction, photography freed the hand of the most important artistic functions which henceforth devolved only upon the eye looking into a lens. Since the eye perceives more

swiftly than the hand can draw, the process of pictorial reproduction was accelerated so enormously that it could keep pace with speech. A film operator shooting a scene in the studio captures the images at the speed of an actor's speech. Just as lithography virtually implied the illustrated newspaper, so did photography foreshadow the sound film. The technical reproduction of sound was tackled at the end of the last century. These convergent endeavors made predictable a situation which Paul Valéry pointed up in this sentence: "Just as water, gas, and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort, so we shall be supplied with visual or auditory images, which will appear and disappear at a simple movement of the hand, hardly more than a sign" (*op. cit.*, p. 226). Around 1900 technical reproduction had reached a standard that not only permitted it to reproduce all transmitted works of art and thus to cause the most profound change in their impact upon the public; it also had captured a place of its own among the artistic processes. For the study of this standard nothing is more revealing than the nature of the repercussions that these two different manifestations—the reproduction of works of art and the art of the film—have had on art in its traditional form.

II

Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence This includes the changes which it may have suffered in physical condition over the years as well as the various changes in its ownership.[1] The traces of the first can be revealed only by chemical or physical analyses which it is impossible to perform on a reproduction; changes of ownership are subject to a tradition which must be traced from the situation of the original.

The presence of the original is the prerequisite to the concept of authenticity. Chemical analyses of the patina of a bronze can help to establish this, as does the proof that a given manuscript of the Middle Ages stems from an archive of the fifteenth century. The whole sphere of authenticity is outside technical—and, of course, not only technical—reproducibility.[2] Confronted with its manual reproduction, which was usually branded as a forgery, the original preserved all its authority; not so *vis à vis* technical reproduction. The reason is twofold. First, process reproduction is more independent of the original than manual reproduction. For example, in photography, process reproduction can bring out those aspects of the original that are unattainable to the naked eye yet accessible to the lens, which is adjustable and chooses its angle at will. And photographic reproduction, with the aid of certain processes, such as enlargement or slow motion, can capture images which escape natural vision. Secondly, technical reproduction can put the copy of the original into situations which would be out of reach for the original itself. Above all, it enables the original to meet the beholder halfway, be it in the form of a photograph or a phonograph record. The cathedral leaves its locale to be received in the studio of a lover of art; the choral production, performed in an auditorium or in the open air, resounds in the drawing room.

The situations into which the product of mechanical reproduction can be brought may not touch the actual work of art, yet the quality of its presence is always depreciated. This holds not only for the art work but also, for instance, for a landscape which passes in review before the spectator in a movie. In the case of the art object, a most sensitive nucleus—namely its authenticity—is interfered with whereas no natural object is vulnerable on that score. The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced. Since the historical testimony rests on the authenticity, the former, too, is jeopardized by reproduction when substantive duration ceases to matter. And what is really jeopardized when the historical testimony is affected is the authority of the object.[3]

One might subsume the eliminated element in the term "aura" and go on to say: that which withers in the age of mechanical reproduction is the aura of the work of art. This is a symptomatic process whose significance points beyond the realm of art. One might generalize by saying: the technique of reproduction detaches the reproduced object from the domain of tradition. By making many reproductions it substitutes a plurality of copies for a unique existence. And in permitting the reproduction to meet the beholder or listener in his own particular situation, it reactivates the object reproduced. These two processes lead to a tremendous shattering of tradition which is the obverse of the contemporary crisis and renewal of mankind. Both processes are intimately connected with the contemporary mass movements. Their most powerful agent is the film. Its social significance, particularly in its most positive form, is inconceivable without its destructive, cathartic aspect, that is, the liquidation of the traditional value of the cultural heritage. This phenomenon is most palpable in the great historical films. It extends to ever new positions. In 1927 Abel Gance exclaimed enthusiastically: "Shakespeare, Rembrandt, Beethoven will make films ... all legends, all mythologies and all myths, all founders of religion, and the very religions ... await their exposed resurrection, and the heroes crowd each other at the gate."† Presumably without intending it, he issued an invitation to a far-reaching liquidation.

III

During long periods of history, the mode of human sense perception changes with humanity's entire mode of existence. The manner in which human sense perception is organized, the medium in which it is accomplished, is determined not only by nature but by historical circumstances as well. The fifth century, with its great shifts of population, saw the birth of the late Roman art industry and the Vienna Genesis, and there developed not only an art different from that of antiquity but also a new kind of perception. The scholars of the Viennese school, Riegl and Wickhoff, who resisted the weight of classical tradition under which these later art forms had been buried, were the first to draw conclusions from them concerning the organization of perception at the time. However far-reaching their insight, these scholars limited themselves to showing the significant, formal hallmark which characterized perception in late Roman times. They did not attempt—and, perhaps, saw no way—to show the social

† Abel Gance, "Le Temps de l'image est venu," *L'Art cinématographique*, Vol. 2, pp. 94 f, Paris, 1927.

transformations expressed by these changes of perception. The conditions for an analogous insight are more favorable in the present. And if changes in the medium of contemporary perception can be comprehended as decay of the aura, it is possible to show its social causes.

The concept of aura which was proposed above with reference to historical objects may usefully be illustrated with reference to the aura of natural ones. We define the aura of the latter as the unique phenomenon of a distance, however close it may be. If, while resting on a summer afternoon, you follow with your eyes a mountain range on the horizon or a branch which casts its shadow over you, you experience the aura of those mountains, of that branch. This image makes it easy to comprehend the social bases of the contemporary decay of the aura. It rests on two circumstances, both of which are related to the increasing significance of the masses in contemporary life. Namely, the desire of contemporary masses to bring things "closer" spatially and humanly, which is just as ardent as their bent toward overcoming the uniqueness of every reality by accepting its reproduction.[4] Every day the urge grows stronger to get hold of an object at verv close range by way of its likeness, its reproduction. Unmistakably, reproduction as offered by picture magazines and newsreel differs from the image seen by the unarmed eye. Uniqueness and permanence are as closely linked in the latter as are transitoriness and reproducibility in the former. To pry an object from its shell, to destroy its aura, is the mark of a perception whose "sense of the universal equality of things" has increased to such a degree that it extracts it even from a unique object by means of reproduction. Thus is manifested in the field of perception what in the theoretical sphere is noticeable in the increasing importance of statistics. The adjustment of reality to the masses and of the masses to reality is a process of unlimited scope, as much for thinking as for perception.

IV

The uniqueness of a work of art is inseparable from its being imbedded in the fabric of tradition. This tradition itself is thoroughly alive and extremely changeable. An ancient statue of Venus, for example, stood in a different traditional context with the Greeks, who made it an object of veneration, than with the clerics of the Middle Ages, who viewed it as an ominous idol. Both of them, however, were equally confronted with its uniqueness, that is, its aura. Originally the contextual integration of art in tradition found its expression in the cult. We know that the earliest art works originated in the service of a ritual—first the magical, then the religious kind. It is significant that the existence of the work of art with reference to its aura is never entirely separated from its ritual function.[5] In other words, the unique value of the "authentic" work of art has its basis in ritual, the location of its original use value. This ritualistic basis, however remote, is still recognizable as secularized ritual even in the most profane forms of the cult of beauty.[6] The secular cult of beauty, developed during the Renaissance and prevailing for three centuries, clearly showed that ritualistic basis in its decline and the first deep crisis which befell it. With the advent of the first truly revolutionary means of reproduction, photography, simultaneously with the rise of socialism, art sensed the approaching crisis which has become evident a century later. At the time, art reacted with the doctrine of *l'art pour l'art*, that is, with a theology of

art. This gave rise to what might be called a negative theology in the form of the idea of "pure" art, which not only denied any social function of art but also any categorizing by subject matter. (In poetry, Mallarme was the first to take this position.)

An analysis of art in the age of mechanical reproduction must do justice to these relationships, for they lead us to an all-important insight: for the first time in world history, mechanical reproduction emancipates the work of art from its parasitical dependence on ritual. To an ever greater degree the work of art reproduced becomes the work of art designed for reproducibility.[7] From a photographic negative, for example, one can make any number of prints; to ask for the "authentic" print makes no sense. But the instant the criterion of authenticity ceases to be applicable to artistic production, the total function of art is reversed. Instead of being based on ritual, it begins to be based on another practice—politics.

V

Works of art are received and valued on different planes. Two polar types stand out: with one, the accent is on the cult value; with the other, on the exhibition value of the work.[8] Artistic production begins with ceremonial objects destined to serve in a cult. One may assume that what mattered was their existence, not their being on view. The elk portrayed by the man of the Stone Age on the walls of his cave was an instrument of magic. He did expose it to his fellow men, but in the main it was meant for the spirits. Today the cult value would seem to demand that the work of art remain hidden. Certain statues of gods are accessible only to the priest in the cella; certain Madonnas remain covered nearly all year round; certain sculptures on medieval cathedrals are invisible to the spectator on ground level. With the emancipation of the various art practices from ritual go increasing opportunities for the exhibition of their products. It is easier to exhibit a portrait bust that can be sent here and there than to exhibit the statue of a divinity that has its fixed place in the interior of a temple. The same holds for the painting as against the mosaic or fresco that preceded it. And even though the public presentability of a mass originally may have been just as great as that of a symphony, the latter originated at the moment when its public presentability promised to surpass that of the mass.

With the different methods of technical reproduction of a work of art, its fitness for exhibition increased to such an extent that the quantitative shift between its two poles turned into a qualitative transformation of its nature. This is comparable to the situation of the work of art in prehistoric times when, by the absolute emphasis on its cult value, it was, first and foremost, an instrument of magic. Only later did it come to be recognized as a work of art. In the same way today, by the absolute emphasis on its exhibition value the work of art becomes a creation with entirely new functions, among which the one we are conscious of, the artistic function, later may be recognized as incidental.[9] This much is certain: today photography and the film are the most serviceable exemplifications of this new function.

VI

In photography, exhibition value begins to displace cult value all along the line. But cult value does not give way without resistance. It retires into an ultimate retrenchment: the human countenance. It is no accident that the portrait was the focal point of early photography. The cult of remembrance of loved ones, absent or dead, offers a last refuge for the cult value of the picture. For the last time the aura emanates from the early photographs in the fleeting expression of a human face. This is what constitutes their melancholy, incomparable beauty. But as man withdraws from the photographic image, the exhibition value for the first time shows its superiority to the ritual value. To have pinpointed this new stage constitutes the incomparable significance of Atget, who, around 1900, took photographs of deserted Paris streets. It has quite justly been said of him that he photographed them like scenes of crime. The scene of a crime, too, is deserted; it is photographed for the purpose of establishing evidence. With Atget, photographs become standard evidence for historical occurrences, and acquire a hidden political significance. They demand a specific kind of approach; free-floating contemplation is not appropriate to them. They stir the viewer; he feels challenged by them in a new way. At the same time picture magazines begin to put up signposts for him, right ones or wrong ones, no matter. For the first time, captions have become obligatory. And it is clear that they have an altogether different character than the title of a painting. The directives which the captions give to those looking at pictures in illustrated magazines soon become even more explicit and more imperative in the film where the meaning of each single picture appears to be prescribed by the sequence of all preceding ones.

VII

The nineteenth-century dispute as to the artistic value of painting versus photography today seems devious and confused. This does not diminish its importance, however; if anything, it underlines it. The dispute was in fact the symptom of a historical transformation the universal impact of which was not realized by either of the rivals. When the age of mechanical reproduction separated art from its basis in cult, the semblance of its autonomy disappeared forever. The resulting change in the function of art transcended the perspective of the century; for a long time it even escaped that of the twentieth century, which experienced the development of the film.

Earlier much futile thought had been devoted to the question of whether photography is an art. The primary question—whether the very invention of photography had not transformed the entire nature of art—was not raised. Soon the film theoreticians asked the same ill-considered question with regard to the film. But the difficulties which photography caused traditional aesthetics were mere child's play as compared to those raised by the film. Whence the insensitive and forced character of early theories of the film. Abel Gance, for instance, compares the film with hieroglyphs: "Here, by a remarkable regression, we have come back to the level of expression of the Egyptians. ... Pictorial language has not yet matured because our eyes have not yet adjusted to it. There is as yet insufficient respect for,

insufficient cult of, what it expresses."‡ Or, in the words of Severin-Mars: "What art has been granted a dream more poetical and more real at the same time! Approached in this fashion the film might represent an incomparable means of expression. Only the most high-minded persons, in the most perfect and mysterious moments of their lives, should be allowed to enter its ambience."§ Alexandre Arnoux concludes his fantasy about the silent film with the question: "Do not all the bold descriptions we have given amount to the definition of prayer?"¶ It is instructive to note how their desire to class the film among the "arts" forces these theoreticians to read ritual elements into it—with a striking lack of discretion. Yet when these speculations were published, films like *L'Opinion publique* and *The Gold Rush* had already appeared. This, however, did not keep Abel Gance from adducing hieroglyphs for purposes of comparison, nor Severin-Mars from speaking of the film as one might speak of paintings by Fra Angelico. Characteristically, even today ultrareactionary authors give the film a similar contextual significance—if not an outright sacred one, then at least a supernatural one. Commenting on Max Reinhardt's film version of *A Midsummer Night's Dream*, Werfel states that undoubtedly it was the sterile copying of the exterior world with its streets, interiors, railroad stations, restaurants, motorcars, and beaches which until now had obstructed the elevation of the film to the realm of art. "The film has not yet realized its true meaning, its real possibilities ... these consist in its unique faculty to express by natural means and with incomparable persuasiveness all that is fairylike, marvelous, supernatural."**

VIII

The artistic performance of a stage actor is definitely presented to the public by the actor in person; that of the screen actor, however, is presented by a camera, with a twofold consequence. The camera that presents the performance of the film actor to the public need not respect the performance as an integral whole. Guided by the cameraman, the camera continually changes its position with respect to the performance. The sequence of positional views which the editor composes from the material supplied him constitutes the completed film. It comprises certain factors of movement which are in reality those of the camera, not to mention special camera angles, close-ups, etc. Hence, the performance of the actor is subjected to a series of optical tests. This is the first consequence of the fact that the actor's performance is presented by means of a camera. Also, the film actor lacks the opportunity of the stage actor to adjust to the audience during his performance, since he does not present his performance to the audience in person. This permits the audience to take the position of a critic, without experiencing any personal contact with the actor. The audience's identification with the actor is really an identification with the

‡ Abel Gance, *op. cit.*, pp. 100–1.

§ Severin-Mars, quoted by Abel Gance, *op. cit.*, p. 100.

¶ Alexandre Arnoux, *Cinéma pris*, 1929, p. 28.

** Franz Werfel, "Ein Sommernachtstraum, Ein Film von Shakespeare und Reinhardt," *Neues Wiener Journal*, cited in *Lu* 15, November, 1935.

camera. Consequently the audience takes the position of the camera; its approach is that of testing.[10] This is not the approach to which cult values may be exposed.

IX

For the film, what matters primarily is that the actor represents himself to the public before the camera, rather than representing someone else. One of the first to sense the actor's metamorphosis by this form of testing was Pirandello. Though his remarks on the subject in his novel *Si Gira* were limited to the negative aspects of the question and to the silent film only, this hardly impairs their validity. For in this respect, the sound film did not change anything essential What matters is that the part is acted not for an audience but for a mechanical contrivance—in the case of the sound film, for two of them. "The film actor," wrote Pirandello, "feels as if in exile—exiled not only from the stage but also from himself. With a vague sense of discomfort he feels inexplicable emptiness: his body loses its corporeality, it evaporates, it is deprived of reality, life, voice, and the noises caused by his moving about, in order to be changed into a mute image, flickering an instant on the screen, then vanishing into silence. ... The projector will play with his shadow before the public, and he himself must be content to play before the camera."†† This situation might also be characterized as follows: for the first time—and this is the effect of the film—man has to operate with his whole living person, yet forgoing its aura. For aura is tied to his presence; there can be no replica of it. The aura which, on the stage, emanates from Macbeth, cannot be separated for the spectators from that of the actor. However, the singularity of the shot in the studio is that the camera is substituted for the public. Consequently, the aura that envelops the actor vanishes, and with it the aura of the figure he portrays.

It is not surprising that it should be a dramatist such as Pirandello who, in characterizing the film, inadvertently touches on the very crisis in which we see the theater. Any thorough study proves that there is indeed no greater contrast than that of the stage play to a work of art that is completely subject to or, like the film, founded in, mechanical reproduction. Experts have long recognized that in the film "the greatest effects are almost always obtained by 'acting' as little as possible ..." In 1932 Rudolf Arnheim saw "the latest trend ... in treating the actor as a stage prop chosen for its characteristics and ... inserted at the proper place."[11] With this idea something else is closely connected. The stage actor identifies himself with the character of his role. The film actor very often is denied this opportunity. His creation is by no means all of a piece; it is composed of many separate performances. Besides certain fortuitous considerations, such as cost of studio, availability of fellow players, decor, etc., there are elementary necessities of equipment that split the actor's work into a series of mountable episodes. In particular, lighting and its installation require the presentation of an event that, on the screen, unfolds as a rapid and unified scene, in a sequence of separate shootings which may take hours at the studio; not to mention more obvious montage. Thus a jump from the window can be shot in the studio as a

†† Luigi Pirandello, *Si Gira*, quoted by Léon Pierre-Quint, "Signification du cinéma," *L'Art cinématographique*, *op. cit.*, pp. 14–15.

jump from a scaffold, and the ensuing flight, if need be, can be shot weeks later when outdoor scenes are taken. Far more paradoxical cases can easily be construed. Let us assume that an actor is supposed to be startled by a knock at the door. If his reaction is not satisfactory, the director can resort to an expedient: when the actor happens to be at the studio again he has a shot fired behind him without his being forewarned of it. The frightened reaction can be shot now and be cut into the screen version. Nothing more strikingly shows that art has left the realm of the "beautiful semblance" which, so far, had been taken to be the only sphere where art could thrive.

X

The feeling of strangeness that overcomes the actor before the camera, as Pirandello describes it, is basically of the same kind as the estrangement felt before one's own image in the mirror. But now the reflected image has become separable, transportable. And where is it transported? Before the public.[12] Never for a moment does the screen actor cease to be conscious of this fact. While facing the camera he knows that ultimately he will face the public, the consumers who constitute the market. This market, where he offers not only his labor but also his whole self, his heart and soul, is beyond his reach. During the shooting he has as little contact with it as any article made in a factory. This may contribute to that oppression, that new anxiety which, according to Pirandello, grips the actor before the camera. The film responds to the shriveling of the aura with an artificial build-up of the "personality" outside the studio. The cult of the movie star, fostered by the money of the film industry, preserves not the unique aura of the person but the "spell of the personality," the phony spell of a commodity. So long as the movie-makers' capital sets the fashion, as a rule no other revolutionary merit can be accredited to today's film than the promotion of a revolutionary criticism of traditional concepts of art. We do not deny that in some cases today's films can also promote revolutionary criticism of social conditions, even of the distribution of property. However, our present study is no more specifically concerned with this than is the film production of Western Europe.

It is inherent in the technique of the film as well as that of sports that everybody who witnesses its accomplishments is somewhat of an expert. This is obvious to anyone listening to a group of newspaper boys leaning on their bicycles and discussing the outcome of a bicycle race. It is not for nothing that newspaper publishers arrange races for their delivery boys. These arouse great interest among the participants, for the victor has an opportunity to rise from delivery boy to professional racer. Similarly, the newsreel offers everyone the opportunity to rise from passer-by to movie extra. In this way any man might even find himself part of a work of art, as witness Vertoff's *Three Songs About Lenin* or Ivens' *Borinage*. Any man today can lay claim to being filmed. This claim can best be elucidated by a comparative look at the historical situation of contemporary literature.

For centuries a small number of writers were confronted by many thousands of readers. This changed toward the end of the last century. With the increasing extension of the press, which kept placing new political religious, scientific, professional, and local organs before the readers, an increasing number of readers became writers—at first, occasional ones. It began with the daily press opening to

its readers space for "letters to the editor." And today there is hardly a gainfully employed European who could not, in principle, find an opportunity to publish somewhere or other comments on his work, grievances, documentary reports, or that sort of thing. Thus, the distinction between author and public is about to lose its basic character. The difference becomes merely functional; it may vary from case to case. At any moment the reader is ready to turn into a writer. As expert, which he had to become willy-nilly in an extremely specialized work process, even if only in some minor respect, the reader gains access to authorship. In the Soviet Union work itself is given a voice. To present it verbally is part of a man's ability to perform the work. Literary license is now founded on polytechnic rather than specialized training and thus becomes common property.[13]

All this can easily be applied to the film, where transitions that in literature took centuries have come about in a decade. In cinematic practice, particularly in Russia, this change-over has partially become established reality. Some of the players whom we meet in Russian films are not actors in our sense but people who portray themselves—and primarily in their own work process. In Western Europe the capitalistic exploitation of the film denies consideration to modern man's legitimate claim to being reproduced. Under these circumstances the film industry is trying hard to spur the interest of the masses through illusion-promoting spectacles and dubious speculations.

XI

The shooting of a film, especially of a sound film, affords a spectacle unimaginable anywhere at any time before this. It presents a process in which it is impossible to assign to a spectator a viewpoint which would exclude from the actual scene such extraneous accessories as camera equipment, lighting machinery, staff assistants, etc.—unless his eye were on a line parallel with the lens. This circumstance, more than any other, renders superficial and insignificant any possible similarity between a scene in the studio and one on the stage. In the theater one is well aware of the place from which the play cannot immediately be detected as illusionary. There is no such place for the movie scene that is being shot. Its illusionary nature is that of the second degree, the result of cutting. That is to say, in the studio the mechanical equipment has penetrated so deeply into reality that its pure aspect freed from the foreign substance of equipment is the result of a special procedure, namely, the shooting by the specially adjusted camera and the mounting of the shot together with other similar ones. The equipment-free aspect of reality here has become the height of artifice; the sight of immediate reality has become an orchid in the land of technology.

Even more revealing is the comparison of these circumstances, which differ so much from those of the theater, with the situation in painting. Here the question is: How does the cameraman compare with the painter? To answer this we take recourse to an analogy with a surgical operation. The surgeon represents the polar opposite of the magician. The magician heals a sick person by the laying on of hands; the surgeon cuts into the patient's body. The magician maintains the natural distance between the patient and himself; though he reduces it very slightly by the laying on of hands, he greatly increases it by virtue of his authority. The surgeon does exactly the reverse; he greatly diminishes the distance

between himself and the patient by penetrating into the patient's body, and increases it but little by the caution with which his hand moves among the organs. In short, in contrast to the magician—who is still hidden in the medical practitioner—the surgeon at the decisive moment abstains from facing the patient man to man; rather, it is through the operation that he penetrates into him.

Magician and surgeon compare to painter and cameraman. The painter maintains in his work a natural distance from reality, the cameraman penetrates deeply into its web.[14] There is a tremendous difference between the pictures they obtain. That of the painter is a total one, that of the cameraman consists of multiple fragments which are assembled under a new law. Thus, for contemporary man the representation of reality by the film is incomparably more significant than that of the painter, since it offers, precisely because of the thoroughgoing permeation of reality with mechanical equipment, an aspect of reality which is free of all equipment. And that is what one is entitled to ask from a work of art.

XII

Mechanical reproduction of art changes the reaction of the masses toward art. The reactionary attitude toward a Picasso painting changes into the progressive reaction toward a Chaplin movie. The progressive reaction is characterized by the direct, intimate fusion of visual and emotional enjoyment with the orientation of the expert. Such fusion is of great social significance. The greater the decrease in the social significance of an art form, the sharper the distinction between criticism and enjoyment by the public. The conventional is uncritically enjoyed, and the truly new is criticized with aversion. With regard to the screen, the critical and the receptive attitudes of the public coincide. The decisive reason for this is that individual reactions are predetermined by the mass audience response they are about to produce, and this is nowhere more pronounced than in the film. The moment these responses become manifest they control each other. Again, the comparison with painting is fruitful. A painting has always had an excellent chance to be viewed by one person or by a few. The simultaneous contemplation of paintings by a large public, such as developed in the nineteenth century, is an early symptom of the crisis of painting, a crisis which was by no means occasioned exclusively by photography but rather in a relatively independent manner by the appeal of art works to the masses.

Painting simply is in no position to present an object for simultaneous collective experience, as it was possible for architecture at all times, for the epic poem in the past, and for the movie today. Although this circumstance in itself should not lead one to conclusions about the social role of painting, it does constitute a serious threat as soon as painting, under special conditions and, as it were, against its nature, is confronted directly by the masses. In the churches and monasteries of the Middle Ages and at the princely courts up to the end of the eighteenth century, a collective reception of paintings did not occur simultaneously, but by graduated and hierarchized mediation. The change that has come about is an expression of the particular conflict in which painting was implicated by the mechanical reproducibility of paintings. Although paintings began to be publicly exhibited in galleries and salons, there was no way for the masses to organize, and control themselves in their reception.[15] Thus the

same public which responds in a progressive manner toward a grotesque film is bound to respond in a reactionary manner to surrealism.

XIII

The characteristics of the film lie not only in the manner in which man presents himself to mechanical equipment but also in the manner in which, by means of this apparatus, man can represent his environment. A glance at occupational psychology illustrates the testing capacity of the equipment. Psychoanalysis illustrates it in a different perspective. The film has enriched our field of perception with methods which can be illustrated by those of Freudian theory. Fifty years ago, a slip of the tongue passed more or less unnoticed. Only exceptionally may such a slip have revealed dimensions of depth in a conversation which had seemed to be taking its course on the surface. Since the *Psychopathology of Everyday Life* things have changed. This book isolated and made analyzable things which had heretofore floated along unnoticed in the broad stream of perception. For the entire spectrum of optical, and now also acoustical, perception the film has brought about a similar deepening of apperception. It is only an obverse of this fact that behavior items shown in a movie can be analyzed much more precisely and from more points of view than those presented on paintings or on the stage. As compared with painting, filmed behavior lends itself more readily to analysis because of its incomparably more precise statements of the situation. In comparison with the stage scene, the filmed behavior item lends itself more readily to analysis because it can be isolated more easily. This circumstance derives its chief importance from its tendency to promote the mutual penetration of art and science. Actually, of a screened behavior item which is neatly brought out in a certain situation, like a muscle of a body, it is difficult to say which is more fascinating, its artistic value or its value for science. To demonstrate the identity of the artistic and scientific uses of photography which heretofore usually were separated will be one of the revolutionary functions of the film.[16]

By close-ups of the things around us, by focusing on hidden details of familiar objects, by exploring commonplace milieus under the ingenious guidance of the camera, the film, on the one hand, extends our comprehension of the necessities which rule our lives; on the other hand, it manages to assure us of an immense and unexpected field of action. Our taverns and our metropolitan streets, our offices and furnished rooms, our railroad stations and our factories appeared to have us locked up hopelessly. Then came the film and burst this prison-world asunder by the dynamite of the tenth of a second, so that now, in the midst of its far-flung ruins and debris, we calmly and adventurously go traveling. With the close-up, space expands; with slow motion, movement is extended. The enlargement of a snapshot does not simply render more precise what in any case was visible, though unclear: it reveals entirely new structural formations of the subject. So, too, slow motion not only presents familiar qualities of movement but reveals in them entirely unknown ones "which, far from looking like retarded rapid movements, give the effect of singularly gliding, floating, supernatural motions."‡‡ Evidently a different

‡‡ Rudolf Arnheim, *loc cit.*, p. 138.

nature opens itself to the camera than opens to the naked eye—if only because an unconsciously penetrated space is substituted for a space consciously explored by man. Even if one has a general knowledge of the way people walk, one knows nothing of a person's posture during the fractional second of a stride. The act of reaching for a lighter or a spoon is familiar routine, yet we hardly know what really goes on between hand and metal, not to mention how this fluctuates with our moods. Here the camera intervenes with the resources of its lowerings and liftings, its interruptions and isolations, its extensions and accelerations, its enlargements and reductions. The camera introduces us to unconscious optics as does psychoanalysis to unconscious impulses.

XIV

One of the foremost tasks of art has always been the creation of a demand which could be fully satisfied only later.[17] The history of every art form shows critical epochs in which a certain art form aspires to effects which could be fully obtained only with a changed technical standard, that is to say, in a new art form. The extravagances and crudities of art which thus appear, particularly in the so-called decadent epochs, actually arise from the nucleus of its richest historical energies. In recent years, such barbarisms were abundant in Dadaism. It is only now that its impulse becomes discernible: Dadaism attempted to create by pictorial—and literary—means the effects which the public today seeks in the film.

Every fundamentally new, pioneering creation of demands will carry beyond its goal. Dadaism did so to the extent that it sacrificed the market values which are so characteristic of the film in favor of higher ambitions—though of course it was not conscious of such intentions as here described. The Dadaists attached much less importance to the sales value of their work than to its uselessness for contemplative immersion. The studied degradation of their material was not the least of their means to achieve this uselessness. Their poems are "word salad" containing obscenities and every imaginable waste product of language. The same is true of their paintings, on which they mounted buttons and tickets. What they intended and achieved was a relentless destruction of the aura of their creations, which they branded as reproductions with the very means of production. Before a painting of Arp's or a poem by August Stramm it is impossible to take time for contemplation and evaluation as one would before a canvas of Derain's or a poem by Rilke. In the decline of middle- class society, contemplation became a school for asocial behavior; it was countered by distraction as a variant of social conduct.[18] Dadaistic activities actually assured a rather vehement distraction by making works of art the center of scandal. One requirement was foremost: to outrage the public.

From an alluring appearance or persuasive structure of sound the work of art of the Dadaists became an instrument of ballistics. It hit the spectator like a bullet, it happened to him, thus acquiring a tactile quality. It promoted a demand for the film, the distracting element of which is also primarily tactile, being based on changes of place and focus which periodically assail the spectator. Let us compare the screen on which a film unfolds with the canvas of a painting. The painting invites the spectator to contemplation; before it the spectator can abandon himself to his associations. Before the movie frame he cannot do so. No sooner has his eye grasped a scene than it is already changed. It cannot be

arrested. Duhamel, who detests the film and knows nothing of its significance, though something of its structure, notes this circumstance as follows: "I can no longer think what I want to think. My thoughts have been replaced by moving images."§§ The spectator's process of association in view of these images is indeed interrupted by their constant, sudden change. This constitutes the shock effect of the film, which, like all shocks, should be cushioned by heightened presence of mind.[19] By means of its technical structure, the film has taken the physical shock effect out of the wrappers in which Dadaism had, as it were, kept it inside the moral shock effect.[20]

XV

The mass is a matrix from which all traditional behavior toward works of art issues today in a new form. Quantity has been transmuted into quality. The greatly increased mass of participants has produced a change in the mode of participation. The fact that the new mode of participation first appeared in a disreputable form must not confuse the spectator. Yet some people have launched spirited attacks against precisely this superficial aspect. Among these, Duhamel has expressed himself in the most radical manner. What he objects to most is the kind of participation which the movie elicits from the masses. Duhamel calls the movie "a pastime for helots, a diversion for uneducated, wretched, worn-out creatures who are consumed by their worries ... , a spectacle which requires no concentration and presupposes no intelligence ... , which kindles no light in the heart and awakens no hope other than the ridiculous one of someday becoming a 'star' in Los Angeles."¶¶ Clearly, this is at bottom the same ancient lament that the masses seek distraction whereas art demands concentration from the spectator. That is a commonplace. The question remains whether it provides a platform for the analysis of the film. A closer look is needed here. Distraction and concentration form polar opposites which may be stated as follows: A man who concentrates before a work of art is absorbed by it. He enters into this work of art the way legend tells of the Chinese painter when he viewed his finished painting. In contrast, the distracted mass absorbs the work of art. This is most obvious with regard to buildings. Architecture has always represented the prototype of a work of art the reception of which is consummated by a collectivity in a state of distraction. The laws of its reception are most instructive.

Buildings have been man's companions since primeval times. Many art forms have developed and perished. Tragedy begins with the Greeks, is extinguished with them, and after centuries its "rules" only are revived. The epic poem, which had its origin in the youth of nations, expires in Europe at the end of the Renaissance. Panel painting is a creation of the Middle Ages, and nothing guarantees its uninterrupted existence. But the human need for shelter is lasting. Architecture has never been idle. Its history is more ancient than that of any other art, and its claim to being a living force has significance in every attempt to comprehend the relationship of the masses to art. Buildings are appropriated in a twofold manner: by use and by perception—or rather, by touch and sight. Such appropriation cannot be

§§ Georges Duhamel, *Scènes de la vie future*, Paris, 1930, p. 52.

¶¶ Duhamel, *op. cit.*, p. 58.

understood in terms of the attentive concentration of a tourist before a famous building. On the tactile side there is no counterpart to contemplation on the optical side. Tactile appropriation is accomplished not so much by attention as by habit. As regards architecture, habit determines to a large extent even optical reception. The latter, too, occurs much less through rapt attention than by noticing the object in incidental fashion. This mode of appropriation, developed with reference to architecture, in certain circumstances acquires canonical value. For the tasks which face the human apparatus of perception at the turning points of history cannot be solved by optical means, that is, by contemplation, alone. They are mastered gradually by habit, under the guidance of tactile appropriation.

The distracted person, too, can form habits. More, the ability to master certain tasks in a state of distraction proves that their solution has become a matter of habit. Distraction as provided by art presents a covert control of the extent to which new tasks have become soluble by apperception. Since, moreover, individuals are tempted to avoid such tasks, art will tackle the most difficult and most important ones where it is able to mobilize the masses. Today it does so in the film. Reception in a state of distraction, which is increasing noticeably in all fields of art and is symptomatic of profound changes in apperception, finds in the film its true means of exercise. The film with its shock effect meets this mode of reception halfway. The film makes the cult value recede into the background not only by putting the public in the position of the critic, but also by the fact that at the movies this position requires no attention. The public is an examiner, but an absent-minded one.

Epilogue

The growing proletarianization of modern man and the increasing formation of masses are two aspects of the same process. Fascism attempts to organize the newly created proletarian masses without affecting the property structure which the masses strive to eliminate. Fascism sees its salvation in giving these masses not their right, but instead a chance to express themselves.[21] The masses have a right to change property relations; Fascism seeks to give them an expression while preserving property. The logical result of Fascism is the introduction of aesthetics into political life. The violation of the masses, whom Fascism, with its *Führer* cult, forces to their knees, has its counterpart in the violation of an apparatus which is pressed into the production of ritual values.

All efforts to render politics aesthetic culminate in one thing: war. War and war only can set a goal for mass movements on the largest scale while respecting the traditional property system. This is the political formula for the situation. The technological formula may be stated as follows: Only war makes it possible to mobilize all of today's technical resources while maintaining the property system. It goes without saying that the Fascist apotheosis of war does not employ such arguments. Still, Marinetti says in his manifesto on the Ethiopian colonial war: "For twenty- seven years we Futurists have rebelled against the branding of war as antiaesthetic. ... Accordingly we state: ... War is beautiful because it establishes man's dominion over the subjugated machinery by means of gas masks, terrifying megaphones, flame throwers, and small tanks. War is beautiful because it initiates the dreamt-of metalization of the human body. War is beautiful because it enriches a flowering meadow with the fiery orchids of machine guns.

War is beautiful because it combines the gunfire, the cannonades, the cease-fire, the scents, and the stench of putrefaction into a symphony. War is beautiful because it creates new architecture, like that of the big tanks, the geometrical formation flights, the smoke spirals from burning villages, and many others. ... Poets and artists of Futurism! ... remember these principles of an aesthetics of war so that your struggle for a new literature and a new graphic art ... may be illumined by them!"

This manifesto has the virtue of clarity. Its formulations deserve to be accepted by dialecticians. To the latter, the aesthetics of today's war appears as follows: If the natural utilization of productive forces is impeded by the property system, the increase in technical devices, in speed, and in the sources of energy will press for an unnatural utilization, and this is found in war. The destructiveness of war furnishes proof that society has not been mature enough to incorporate technology as its organ, that technology has not been sufficiently developed to cope with the elemental forces of society. The horrible features of imperialistic warfare are attributable to the discrepancy between the tremendous means of production and their inadequate utilization in the process of production—in other words, to unemployment and the lack of markets. Imperialistic war is a rebellion of technology which collects, in the form of "human material," the claims to which society has denied its natural material. Instead of draining rivers, society directs a human stream into a bed of trenches; instead of dropping seeds from airplanes, it drops incendiary bombs over cities; and through gas warfare the aura is abolished in a new way.

"*Fiat ars—pereat mundus,*" says Fascism, and, as Marinetti admits, expects war to supply the artistic gratification of a sense perception that has been changed by technology. This is evidently the consummation of "*l'art pour l'art.*" Mankind, which in Homer's time was an object of contemplation for the Olympian gods, now is one for itself. Its self-alienation has reached such a degree that it can experience its own destruction as an aesthetic pleasure of the first order. This is the situation of politics which Fascism is rendering aesthetic. Communism responds by politicizing art.

Notes

1. Of course, the history of a work of art encompasses more than this. The history of the "Mona Lisa," for instance, encompasses the kind and number of its copies made in the 17th, 18th, and 19th centuries.
2. Precisely because authenticity is not reproducible, the intensive penetration of certain (mechanical) processes of reproduction was instrumental in differentiating and grading authenticity. To develop such differentiations was an important function of the trade in works of art. The invention of the woodcut may be said to have struck at the root of the quality of authenticity even before its late flowering. To be sure, at the time of its origin a medieval picture of the Madonna could not yet be said to be "authentic." It became "authentic" only during the succeeding centuries and perhaps most strikingly so during the last one.
3. The poorest provincial staging of *Faust* is superior to a Faust film in that, ideally, it competes with the first performance at Weimar. Before the screen it is unprofitable to remember traditional contents which might come to mind before the stage—for instance, that Goethe's friend Johann Heinrich Merck is hidden in Mephisto, and the like.

4. To satisfy the human interest of the masses may mean to have one's social function removed from the field of vision. Nothing guarantees that a portraitist of today, when painting a famous surgeon at the breakfast table in the midst of his family, depicts his social function more precisely than a painter of the 17th century who portrayed his medical doctors as representing this profession, like Rembrandt in his "Anatomy Lesson."
5. The definition of the aura as a "unique phenomenon of a distance however close it may be" represents nothing but the formulation of the cult value of the work of art in categories of space and time perception. Distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. True to its nature, it remains "distant, however close it may be." The closeness which one may gain from its subject matter does not impair the distance which it retains in its appearance.
6. To the extent to which the cult value of the painting is secularized the ideas of its fundamental uniqueness lose distinctness. In the imagination of the beholder the uniqueness of the phenomena which hold sway in the cult image is more and more displaced by the empirical uniqueness of the creator or of his creative achievement. To be sure, never completely so; the concept of authenticity always transcends mere genuineness. (This is particularly apparent in the collector who always retains some traces of the fetishist and who, by owning the work of art, shares in its ritual power.) Nevertheless, the function of the concept of authenticity remains determinate in the evaluation of art; with the secularization of art, authenticity displaces the cult value of the work.
7. In the case of films, mechanical reproduction is not, as with literature and painting, an external condition for mass distribution. Mechanical reproduction is inherent in the very technique of film production. This technique not only permits in the most direct way but virtually causes mass distribution. It enforces distribution because the production of a film is so expensive that an individual who, for instance, might afford to buy a painting no longer can afford to buy a film. In 1927 it was calculated that a major film, in order to pay its way, had to reach an audience of nine million. With the sound film, to be sure, a setback in its international distribution occurred at first: audiences became limited by language barriers. This coincided with the Fascist emphasis on national interests. It is more important to focus on this connection with Fascism than on this setback, which was soon minimized by synchronization. The simultaneity of both phenomena is attributable to the depression. The same disturbances which, on a larger scale, led to an attempt to maintain the existing property structure by sheer force led the endangered film capital to speed up the development of the sound film. The introduction of the sound film brought about a temporary relief, not only because it again brought the masses into the theaters but also because it merged new capital from the electrical industry with that of the film industry. Thus, viewed from the outside, the sound film promoted national interests, but seen from the inside it helped to internationalize film production even more than previously.
8. This polarity cannot come into its own in the aesthetics of Idealism. Its idea of beauty comprises these polar opposites without differentiating between them and consequently excludes their polarity. Yet in Hegel this polarity announces itself as clearly as possible within the limits of Idealism. We quote from his *Philosophy of History*:

> "Images were known of old. Piety at an early time required them for worship, but it could do without beautiful images. These might even be disturbing. In every beautiful painting there is also something nonspiritual, merely external, but its spirit speaks to man through its beauty. Worshipping, conversely, is concerned with the work as an object, for it is but a spiritless stupor of the soul. ... Fine art has arisen ... in the church ... , although it has already gone beyond its principle as art."

Likewise, the following passage from *The Philosophy of Fine Art* indicates that Hegel sensed a problem here.

> "We are beyond the stage of reverence for works of art as divine and objects deserving our worship. The impression they produce is one of a more reflective kind, and the emotions they arouse require a higher test. ..."—G. W. F. Hegel, *The Philosophy of Fine Art*, trans., with notes, by F. P. B. Osmaston, Vol. 1, p. 12, London, 1920.

The transition from the first kind of artistic reception to the second characterizes the history of artistic reception in general. Apart from that, a certain oscillation between these two polar modes of reception can be demonstrated for each work of art. Take the Sistine Madonna. Since Hubert Grimme's research it has been known that the Madonna originally was painted for the purpose of exhibition. Grimme's research was inspired by the question: What is the purpose of the molding in the foreground of the painting which the two cupids lean upon? How, Grimme asked further, did Raphael come to furnish the sky with two draperies? Research proved that the Madonna had been commissioned for the public lying-in-state of Pope Sixtus. The Popes lay in state in a certain side chapel of St. Peter's. On that occasion Raphael's picture had been fastened in a nichelike background of the chapel, supported by the coffin. In this picture Raphael portrays the Madonna approaching the papal coffin in clouds from the background of the niche, which was demarcated by green drapes. At the obsequies of Sixtus a pre-eminent exhibition value of Raphael's picture was taken advantage of. Some time later it was placed on the high altar in the church of the Black Friars at Piacenza. The reason for this exile is to be found in the Roman rites which forbid the use of paintings exhibited at obsequies as cult objects on the high altar. This regulation devalued Raphael's picture to some degree. In order to obtain an adequate price nevertheless, the Papal See resolved to add to the bargain the tacit toleration of the picture above the high altar. To avoid attention the picture was given to the monks of the far-off provincial town.

9. Bertolt Brecht, on a different level, engaged in analogous reflections: "If the concept of 'work of art' can no longer be applied to the thing that emerges once the work is transformed into a commodity, we have to eliminate this concept with cautious care but without fear, lest we liquidate the function of the very thing as well. For it has to go through this phase without mental reservation, and not as noncommittal deviation from the straight path; rather, what happens here with the work of art will change it fundamentally and erase its past to such an extent that should the old concept be taken up again—and it will, why not?—it will no longer stir any memory of the thing it once designated."
10. "The film ... provides—or could provide—useful insight into the details of human actions. ... Character is never used as a source of motivation; the inner life of the persons never supplies the principal cause of the plot and seldom is its main result." (Bertolt Brecht, *Versuche*, "Der Dreigroschenprozess," p. 268.) The expansion of the field of the testable which mechanical equipment brings about for the actor corresponds to the extraordinary expansion of the field of the testable brought about for the individual through economic conditions. Thus, vocational aptitude tests become constantly more important. What matters in these tests are segmental performances of the individual. The film shot and the vocational aptitude test are taken before a committee of experts. The camera director in the studio occupies a place identical with that of the examiner during aptitude tests.
11. Rudolf Arnheim, *Film als Kunst*, Berlin, 1932, pp. 176 f. In this context certain seemingly unimportant details in which the film director deviates from stage practices gain in interest. Such is the attempt to let the actor play

without make-up, as made among others by Dreyer in his *Jeanne d'Arc*. Dreyer spent months seeking the forty actors who constitute the Inquisitors ' tribunal. The search for these actors resembled that for stage properties that are hard to come by. Dreyer made every effort to avoid resemblances of age, build, and physiognomy. If the actor thus becomes a stage property, this latter, on the other hand, frequently functions as actor. At least it is not unusual for the film to assign a role to the stage property.

Instead of choosing at random from a great wealth of examples, let us concentrate on a particularly convincing one. A clock that is working will always be a disturbance on the stage. There it cannot be permitted its function of measuring time. Even in a naturalistic play, astronomical time would clash with theatrical time. Under these circumstances it is highly revealing that the film can, whenever appropriate, use time as measured by a clock. From this more than from many other touches it may clearly be recognized that under certain circumstances each and every prop in a film may assume important functions. From here it is but one step to Pudovkin's statement that "the playing of an actor which is connected with an object and is built around it ... is always one of the strongest methods of cinematic construction." (W. Pudovkin, *Filmregie und Filmmanuskript*, Berlin, 1928, p. 126.) The film is the first art form capable of demonstrating how matter plays tricks on man. Hence, films can be an excellent means of materialistic representation.

12. The change noted here in the method of exhibition caused by mechanical reproduction applies to politics as well. The present crisis of the bourgeois democracies comprises a crisis of the conditions which determine the public presentation of the rulers. Democracies exhibit a member of government directly and personally before the nation's representatives. Parliament is his public. Since the innovations of camera and recording equipment make it possible for the orator to become audible and visible to an unlimited number of persons, the presentation of the man of politics before camera and recording equipment becomes paramount. Parliaments, as much as theaters, are deserted. Radio and film not only affect the function of the professional actor but likewise the function of those who also exhibit themselves before this mechanical equipment, those who govern. Though their tasks may be different, the change affects equally the actor and the ruler. The trend is toward establishing controllable and transferrable skills under certain social conditions. This results in a new selection, a selection before the equipment from which the star and the dictator emerge victorious.
13. The privileged character of the respective techniques is lost. Aldous Huxley writes:

> "Advances in technology have led ... to vulgarity. ... Process reproduction and the rotary press have made possible the indefinite multiplication of writing and pictures. Universal education and relatively high wages have created an enormous public who know how to read and can afford to buy reading and pictorial matter. A great industry has been called into existence in order to supply these commodities. Now, artistic talent is a very rare phenomenon; whence it follows ... that, at every epoch and in all countries, most art has been bad. But the proportion of trash in the total artistic output is greater now than at any other period. That it must be so is a matter of simple arithmetic. The population of Western Europe has a little more than doubled during the last century. But the amount of reading—and seeing—matter has increased, I should imagine, at least twenty and possibly fifty or even a hundred times. If there were n men of talent in a population of x millions, there will presumably be 2n men of talent among 2x millions. The situation may be summed up thus. For every page of print and pictures published a century ago, twenty or perhaps even a hundred pages are published today. But for every man of talent then living, there are now only two men

of talent. It may be of course that, thanks to universal education, many potential talents which in the past would have been stillborn are now enabled to realize themselves. Let us assume, then, that there are now three or even four men of talent to every one of earlier times. It still remains true to say that the consumption of reading—and seeing—matter has far outstripped the natural production of gifted writers and draughtsmen. It is the same with hearing-matter. Prosperity, the gramophone and the radio have created an audience of hearers who consume an amount of hearing-matter that has increased out of all proportion to the increase of population and the consequent natural increase of talented musicians. It follows from all this that in all the arts the output of trash is both absolutely and relatively greater than it was in the past; and that it must remain greater for just so long as the world continues to consume the present inordinate quantities of reading-matter, seeing-matter, and hearing-matter."—Aldous Huxley, *Beyond the Mexique Bay. A Traveller's Journal*, London, 1949, pp. 274 ff. First published in 1934.

This mode of observation is obviously not progressive.

14. The boldness of the cameraman is indeed comparable to that of the surgeon. Luc Durtain lists among specific technical sleights of hand those "which are required in surgery in the case of certain difficult operations. I choose as an example a case from oto-rhino-laryngology; ... the so-called endonasal perspective procedure; or I refer to the acrobatic tricks of larynx surgery which have to be performed following the reversed picture in the laryngoscope. I might also speak of ear surgery which suggests the precision work of watchmakers. What range of the most subtle muscular acrobatics is required from the man who wants to repair or save the human body! We have only to think of the couching of a cataract where there is virtually a debate of steel with nearly fluid tissue, or of the major abdominal operations (laparotomy)."—Luc Durtain, *op. cit.*
15. This mode of observation may seem crude, but as the great theoretician Leonardo has shown, crude modes of observation may at times be usefully adduced. Leonardo compares painting and music as follows: "Painting is superior to music because, unlike unfortunate music, it does not have to die as soon as it is born. ... Music which is consumed in the very act of its birth is inferior to painting which the use of varnish has rendered eternal." (Trattato I, 29.)
16. Renaissance painting offers a revealing analogy to this situation. The incomparable development of this art and its significance rested not least on the integration of a number of new sciences, or at least of new scientific data. Renaissance painting made use of anatomy and perspective, of mathematics, meteorology, and chromatology. Valéry writes: "What could be further from us than the strange claim of a Leonardo to whom painting was a supreme goal and the ultimate demonstration of knowledge? Leonardo was convinced that painting demanded universal knowledge, and he did not even shrink from a theoretical analysis which to us is stunning because of its very depth and precision. ..."—Paul Valéry, *Pièces sur l'art*, "Autour de Corot," Paris, p. 191.
17. "The work of art," says André Breton, "is valuable only in so far as it is vibrated by the reflexes of the future." Indeed, every developed art form intersects three lines of development. Technology works toward a certain form of art. Before the advent of the film there were photo booklets with pictures which flitted by the onlooker upon pressure of the thumb, thus portraying a boxing bout or a tennis match. Then there were the slot machines in bazaars; their picture sequences were produced by the turning of a crank.

Secondly, the traditional art forms in certain phases of their development strenuously work toward effects which later are effortlessly attained by the new ones. Before the rise of the movie the Dadaists' performances tried to create an audience reaction which Chaplin later evoked in a more natural way.

Thirdly, unspectacular social changes often promote a change in receptivity which will benefit the new art form. Before the movie had begun to create its public, pictures that were no longer immobile captivated an assembled audience in the so-called Kaiser panorama. Here the public assembled before a screen into which stereoscopes were mounted, one to each beholder. By a mechanical process individual pictures appeared briefly before the stereoscopes, then made way for others. Edison still had to use similar devices in presenting the first movie strip before the film screen and projection were known. This strip was presented to a small public which stared into the apparatus in which the succession of pictures was reeling off. Incidentally, the institution of the Kaiser panorama shows very clearly a dialectic of the development. Shortly before the movie turned the reception of pictures into a collective one, the individual viewing of pictures in these swiftly outmoded establishments came into play once more with an intensity comparable to that of the ancient priest beholding the statue of a divinity in the cella.

18. The theological archetype of this contemplation is the awareness of being alone with one's God. Such awareness, in the heyday of the bourgeoisie, went to strengthen the freedom to shake off clerical tutelage. During the decline of the bourgeoisie this awareness had to take into account the hidden tendency to withdraw from public affairs those forces which the individual draws upon in his communion with God.
19. The film is the art form that is in keeping with the increased threat to his life which modern man has to face. Man's need to expose himself to shock effects is his adjustment to the dangers threatening him. The film corresponds to profound changes in the apperceptive apparatus—changes that are experienced on an individual scale by the man in the street in big-city traffic, on a historical scale by every present-day citizen.
20. As for Dadaism, insights important for Cubism and Futurism are to be gained from the movie. Both appear as deficient attempts of art to accommodate the pervasion of reality by the apparatus. In contrast to the film, these schools did not try to use the apparatus as such for the artistic presentation of reality, but aimed at some sort of alloy in the joint presentation of reality and apparatus. In Cubism, the premonition that this apparatus will be structurally based on optics plays a dominant part; in Futurism, it is the premonition of the effects of this apparatus which are brought out by the rapid sequence of the film strip.
21. One technical feature is significant here, especially with regard to newsreels, the propagandist importance of which can hardly be overestimated. Mass reproduction is aided especially by the reproduction of masses. In big parades and monster rallies, in sports events, and in war, all of which nowadays are captured by camera and sound recording, the masses are brought face to face with themselves. This process, whose significance need not be stressed, is intimately connected with the development of the techniques of reproduction and photography. Mass movements are usually discerned more clearly by a camera than by the naked eye. A bird's-eye view best captures gatherings of hundreds of thousands. And even though such a view may be as accessible to the human eye as it is to the camera, the image received by the eye cannot be enlarged the way a negative is enlarged. This means that mass movements, including war, constitute a form of human behavior which particularly favors mechanical equipment.

Free Culture

"Piracy"

Lawrence Lessig

Since the inception of the law regulating creative property, there has been a war against "piracy." The precise contours of this concept, "piracy," are hard to sketch, but the animating injustice is easy to capture. As Lord Mansfield wrote in a case that extended the reach of English copyright law to include sheet music,

> A person may use the copy by playing it, but he has no right to rob the author of the profit, by multiplying copies and disposing of them for his own use.

Today we are in the middle of another "war" against "piracy." The Internet has provoked this war. The Internet makes possible the efficient spread of content. Peer-to-peer (p2p) file sharing is among the most efficient of the efficient technologies the Internet enables. Using distributed intelligence, p2p systems facilitate the easy spread of content in a way unimagined a generation ago.

This efficiency does not respect the traditional lines of copyright. The network doesn't discriminate between the sharing of copyrighted and uncopyrighted content. Thus has there been a vast amount of sharing of copyrighted content. That sharing in turn has excited the war, as copyright owners fear the sharing will "rob the author of the profit."

The warriors have turned to the courts, to the legislatures, and increasingly to technology to defend their "property" against this "piracy." A generation of Americans, the warriors warn, is being raised to believe that "property" should be "free." Forget tattoos, never mind body piercing—our kids are becoming *thieves*!

There's no doubt that "piracy" is wrong, and that pirates should be punished. But before we summon the executioners, we should put this notion of "piracy" in some context. For as the concept is increasingly used, at its core is an extraordinary idea that is almost certainly wrong. The idea goes something like this:

> Creative work has value; whenever I use, or take, or build upon the creative work of others, I am taking from them something of value. Whenever I take something of value from someone

Lawrence Lessig, "Piracy," *Free Culture: The Nature and Future of Creativity*, pp. 17–34, 282–292. Copyright © 2004 by Penguin Group (USA) Inc. Reprinted with permission.

> else, I should have their permission. The taking of something of value from someone else without permission is wrong. It is a form of piracy.

This view runs deep within the current debates. It is what NYU law professor Rochelle Dreyfuss criticizes as the "if value, then right" theory of creative property—if there is value, then someone must have a right to that value. It is the perspective that led a composers' rights organization, ASCAP, to sue the Girl Scouts for failing to pay for the songs that girls sang around Girl Scout campfires. There was "value" (the songs) so there must have been a "right"—even against the Girl Scouts.

This idea is certainly a possible understanding of how creative property should work. It might well be a possible design for a system of law protecting creative property. But the "if value, then right" theory of creative property has never been America's theory of creative property. It has never taken hold within our law.

Instead, in our tradition, intellectual property is an instrument. It sets the groundwork for a richly creative society but remains subservient to the value of creativity. The current debate has this turned around. We have become so concerned with protecting the instrument that we are losing sight of the value.

The source of this confusion is a distinction that the law no longer takes care to draw—the distinction between republishing someone's work on the one hand and building upon or transforming that work on the other. Copyright law at its birth had only publishing as its concern; copyright law today regulates both.

Before the technologies of the Internet, this conflation didn't matter all that much. The technologies of publishing were expensive; that meant the vast majority of publishing was commercial. Commercial entities could bear the burden of the law—even the burden of the Byzantine complexity that copyright law has become. It was just one more expense of doing business.

But with the birth of the Internet, this natural limit to the reach of the law has disappeared. The law controls not just the creativity of commercial creators but effectively that of anyone. Although that expansion would not matter much if copyright law regulated only "copying," when the law regulates as broadly and obscurely as it does, the extension matters a lot. The burden of this law now vastly outweighs any original benefit—certainly as it affects noncommercial creativity, and increasingly as it affects commercial creativity as well. Thus, as we'll see more clearly in the chapters below, the law's role is less and less to support creativity, and more and more to protect certain industries against competition. Just at the time digital technology could unleash an extraordinary range of commercial and noncommercial creativity, the law burdens this creativity with insanely complex and vague rules and with the threat of obscenely severe penalties. We may be seeing, as Richard Florida writes, the "Rise of the Creative Class." Unfortunately, we are also seeing an extraordinary rise of regulation of this creative class.

These burdens make no sense in our tradition. We should begin by understanding that tradition a bit more and by placing in their proper context the current battles about behavior labeled "piracy."

Creators

In 1928, a cartoon character was born. An early Mickey Mouse made his debut in May of that year, in a silent flop called *Plane Crazy*. In November, in New York City's Colony Theater, in the first widely distributed cartoon synchronized with sound, *Steamboat Willie* brought to life the character that would become Mickey Mouse.

Synchronized sound had been introduced to film a year earlier in the movie *The Jazz Singer*. That success led Walt Disney to copy the technique and mix sound with cartoons. No one knew whether it would work or, if it did work, whether it would win an audience. But when Disney ran a test in the summer of 1928, the results were unambiguous. As Disney describes that first experiment,

> A couple of my boys could read music, and one of them could play a mouth organ. We put them in a room where they could not see the screen and arranged to pipe their sound into the room where our wives and friends were going to see the picture.
>
> The boys worked from a music and sound-effects score. After several false starts, sound and action got off with the gun. The mouth organist played the tune, the rest of us in the sound department bammed tin pans and blew slide whistles on the beat. The synchronization was pretty close.
>
> The effect on our little audience was nothing less than electric. They responded almost instinctively to this union of sound and motion. I thought they were kidding me. So they put me in the audience and ran the action again. It was terrible, but it was wonderful! And it was something new!

Disney's then partner, and one of animation's most extraordinary talents, Ub Iwerks, put it more strongly: "I have never been so thrilled in my life. Nothing since has ever equaled it."

Disney had created something very new, based upon something relatively new. Synchronized sound brought life to a form of creativity that had rarely—except in Disney's hands—been anything more than filler for other films. Throughout animation's early history, it was Disney's invention that set the standard that others struggled to match. And quite often, Disney's great genius, his spark of creativity, was built upon the work of others.

This much is familiar. What you might not know is that 1928 also marks another important transition. In that year, a comic (as opposed to cartoon) genius created his last independently produced silent film. That genius was Buster Keaton. The film was *Steamboat Bill, Jr.* Keaton was born into a vaudeville family in 1895. In the era of silent film, he had mastered using broad physical comedy as a way to spark uncontrollable laughter from his audience. *Steamboat Bill, Jr.* was a classic of this form, famous among film buffs for its incredible stunts. The film was classic Keaton—wildly popular and among the best of its genre.

Steamboat Bill, Jr. appeared before Disney's cartoon *Steamboat Willie*. The coincidence of titles is not coincidental. Steamboat Willie is a direct cartoon parody of Steamboat Bill, and both are built upon a common song as a source. It is not just from the invention of synchronized sound in *The Jazz*

Singer that we get *Steamboat Willie*. It is also from Buster Keaton's invention of Steamboat Bill, Jr., itself inspired by the song "Steamboat Bill," that we get Steamboat Willie, and then from Steamboat Willie, Mickey Mouse.

This "borrowing" was nothing unique, either for Disney or for the industry. Disney was always parroting the feature-length mainstream films of his day. So did many others. Early cartoons are filled with knockoffs—slight variations on winning themes; retellings of ancient stories. The key to success was the brilliance of the differences. With Disney, it was sound that gave his animation its spark. Later, it was the quality of his work relative to the production-line cartoons with which he competed. Yet these additions were built upon a base that was borrowed. Disney added to the work of others before him, creating something new out of something just barely old.

Sometimes this borrowing was slight. Sometimes it was significant. Think about the fairy tales of the Brothers Grimm. If you're as oblivious as I was, you're likely to think that these tales are happy, sweet stories, appropriate for any child at bedtime. In fact, the Grimm fairy tales are, well, for us, grim. It is a rare and perhaps overly ambitious parent who would dare to read these bloody, moralistic stories to his or her child, at bedtime or anytime.

Disney took these stories and retold them in a way that carried them into a new age. He animated the stories, with both characters and light. Without removing the elements of fear and danger altogether, he made funny what was dark and injected a genuine emotion of compassion where before there was fear. And not just with the work of the Brothers Grimm. Indeed, the catalog of Disney work drawing upon the work of others is astonishing when set together: *Snow White* (1937), *Fantasia* (1940), *Pinocchio* (1940), *Dumbo* (1941), *Bambi* (1942), *Song of the South* (1946), *Cinderella* (1950), *Alice in Wonderland* (1951), *Robin Hood* (1952), *Peter Pan* (1953), *Lady and the Tramp* (1955), *Mulan* (1998), *Sleeping Beauty* (1959), *101 Dalmatians* (1961), *The Sword in the Stone* (1963), and *The Jungle Book* (1967)—not to mention a recent example that we should perhaps quickly forget, *Treasure Planet* (2003). In all of these cases, Disney (or Disney, Inc.) ripped creativity from the culture around him, mixed that creativity with his own extraordinary talent, and then burned that mix into the soul of his culture. Rip, mix, and burn.

This is a kind of creativity. It is a creativity that we should remember and celebrate. There are some who would say that there is no creativity except this kind. We don't need to go that far to recognize its importance. We could call this "Disney creativity," though that would be a bit misleading. It is, more precisely, "Walt Disney creativity"—a form of expression and genius that builds upon the culture around us and makes it something different.

In 1928, the culture that Disney was free to draw upon was relatively fresh. The public domain in 1928 was not very old and was therefore quite vibrant. The average term of copyright was just around thirty years—for that minority of creative work that was in fact copyrighted. That means that for thirty years, on average, the authors or copyright holders of a creative work had an "exclusive right" to control certain uses of the work. To use this copyrighted work in limited ways required the permission of the copyright owner.

At the end of a copyright term, a work passes into the public domain. No permission is then needed to draw upon or use that work. No permission and, hence, no lawyers. The public domain is

a "lawyer-free zone." Thus, most of the content from the nineteenth century was free for Disney to use and build upon in 1928. It was free for anyone— whether connected or not, whether rich or not, whether approved or not—to use and build upon.

This is the ways things always were—until quite recently. For most of our history, the public domain was just over the horizon. From 1790 until 1978, the average copyright term was never more than thirty-two years, meaning that most culture just a generation and a half old was free for anyone to build upon without the permission of anyone else. Today's equivalent would be for creative work from the 1960s and 1970s to now be free for the next Walt Disney to build upon without permission. Yet today, the public domain is presumptive only for content from before the Great Depression.

Of course, Walt Disney had no monopoly on "Walt Disney creativity." Nor does America. The norm of free culture has, until recently, and except within totalitarian nations, been broadly exploited and quite universal.

Consider, for example, a form of creativity that seems strange to many Americans but that is inescapable within Japanese culture: *manga*, or comics. The Japanese are fanatics about comics. Some 40 percent of publications are comics, and 30 percent of publication revenue derives from comics. They are everywhere in Japanese society, at every magazine stand, carried by a large proportion of commuters on Japan's extraordinary system of public transportation.

Americans tend to look down upon this form of culture. That's an unattractive characteristic of ours. We're likely to misunderstand much about manga, because few of us have ever read anything close to the stories that these "graphic novels" tell. For the Japanese, manga cover every aspect of social life. For us, comics are "men in tights." And anyway, it's not as if the New York subways are filled with readers of Joyce or even Hemingway. People of different cultures distract themselves in different ways, the Japanese in this interestingly different way.

But my purpose here is not to understand manga. It is to describe a variant on manga that from a lawyer's perspective is quite odd, but from a Disney perspective is quite familiar.

This is the phenomenon of *doujinshi*. Doujinshi are also comics, but they are a kind of copycat comic. A rich ethic governs the creation of doujinshi. It is not doujinshi if it is *just* a copy; the artist must make a contribution to the art he copies, by transforming it either subtly or significantly. A doujinshi comic can thus take a mainstream comic and develop it differently—with a different story line. Or the comic can keep the character in character but change its look slightly. There is no formula for what makes the doujinshi sufficiently "different." But they must be different if they are to be considered true doujinshi. Indeed, there are committees that review doujinshi for inclusion within shows and reject any copycat comic that is merely a copy.

These copycat comics are not a tiny part of the manga market. They are huge. More than 33,000 "circles" of creators from across Japan produce these bits of Walt Disney creativity. More than 450,000 Japanese come together twice a year, in the largest public gathering in the country, to exchange and sell them. This market exists in parallel to the mainstream commercial manga market. In some ways, it obviously competes with that market, but there is no sustained effort by those who control the

commercial manga market to shut the doujinshi market down. It flourishes, despite the competition and despite the law.

The most puzzling feature of the doujinshi market, for those trained in the law, at least, is that it is allowed to exist at all. Under Japanese copyright law, which in this respect (on paper) mirrors American copyright law, the doujinshi market is an illegal one. Doujinshi are plainly "derivative works." There is no general practice by doujinshi artists of securing the permission of the manga creators. Instead, the practice is simply to take and modify the creations of others, as Walt Disney did with *Steamboat Bill, Jr.* Under both Japanese and American law, that "taking" without the permission of the original copyright owner is illegal. It is an infringement of the original copyright to make a copy or a derivative work without the original copyright owner's permission.

Yet this illegal market exists and indeed flourishes in Japan, and in the view of many, it is precisely because it exists that Japanese manga flourish. As American graphic novelist Judd Winick said to me, "The early days of comics in America are very much like what's going on in Japan now. ... American comics were born out of copying each other. ... That's how [the artists] learn to draw—by going into comic books and not tracing them, but looking at them and copying them" and building from them.

American comics now are quite different, Winick explains, in part because of the legal difficulty of adapting comics the way doujinshi are allowed. Speaking of Superman, Winick told me, "there are these rules and you have to stick to them." There are things Superman "cannot" do. "As a creator, it's frustrating having to stick to some parameters which are fifty years old."

The norm in Japan mitigates this legal difficulty. Some say it is precisely the benefit accruing to the Japanese manga market that explains the mitigation. Temple University law professor Salil Mehra, for example, hypothesizes that the manga market accepts these technical violations because they spur the manga market to be more wealthy and productive. Everyone would be worse off if doujinshi were banned, so the law does not ban doujinshi.

The problem with this story, however, as Mehra plainly acknowledges, is that the mechanism producing this laissez faire response is not clear. It may well be that the market as a whole is better off if doujinshi are permitted rather than banned, but that doesn't explain why individual copyright owners don't sue nonetheless. If the law has no general exception for doujinshi, and indeed in some cases individual manga artists have sued doujinshi artists, why is there not a more general pattern of blocking this "free taking" by the doujinshi culture?

I spent four wonderful months in Japan, and I asked this question as often as I could. Perhaps the best account in the end was offered by a friend from a major Japanese law firm. "We don't have enough lawyers," he told me one afternoon. There "just aren't enough resources to prosecute cases like this."

This is a theme to which we will return: that regulation by law is a function of both the words on the books and the costs of making those words have effect. For now, focus on the obvious question that is begged: Would Japan be better off with more lawyers? Would manga be richer if doujinshi artists were regularly prosecuted? Would the Japanese gain something important if they could end this practice of uncompensated sharing? Does piracy here hurt the victims of the piracy, or does it help them? Would lawyers fighting this piracy help their clients or hurt them?

Let's pause for a moment.

If you're like I was a decade ago, or like most people are when they first start thinking about these issues, then just about now you should be puzzled about something you hadn't thought through before.

We live in a world that celebrates "property." I am one of those celebrants. I believe in the value of property in general, and I also believe in the value of that weird form of property that lawyers call "intellectual property." A large, diverse society cannot survive without property; a large, diverse, and modern society cannot flourish without intellectual property.

But it takes just a second's reflection to realize that there is plenty of value out there that "property" doesn't capture. I don't mean "money can't buy you love," but rather, value that is plainly part of a process of production, including commercial as well as noncommercial production. If Disney animators had stolen a set of pencils to draw Steamboat Willie, we'd have no hesitation in condemning that taking as wrong—even though trivial, even if unnoticed. Yet there was nothing wrong, at least under the law of the day, with Disney's taking from Buster Keaton or from the Brothers Grimm. There was nothing wrong with the taking from Keaton because Disney's use would have been considered "fair." There was nothing wrong with the taking from the Grimms because the Grimms' work was in the public domain.

Thus, even though the things that Disney took—or more generally, the things taken by anyone exercising Walt Disney creativity—are valuable, our tradition does not treat those takings as wrong. Some things remain free for the taking within a free culture, and that freedom is good.

The same with the doujinshi culture. If a doujinshi artist broke into a publisher's office and ran off with a thousand copies of his latest work—or even one copy—without paying, we'd have no hesitation in saying the artist was wrong. In addition to having trespassed, he would have stolen something of value. The law bans that stealing in whatever form, whether large or small.

Yet there is an obvious reluctance, even among Japanese lawyers, to say that the copycat comic artists are "stealing." This form of Walt Disney creativity is seen as fair and right, even if lawyers in particular find it hard to say why.

It's the same with a thousand examples that appear everywhere once you begin to look. Scientists build upon the work of other scientists without asking or paying for the privilege. ("Excuse me, Professor Einstein, but may I have permission to use your theory of relativity to show that you were wrong about quantum physics?") Acting companies perform adaptations of the works of Shakespeare without securing permission from anyone. (Does *anyone* believe Shakespeare would be better spread within our culture if there were a central Shakespeare rights clearinghouse that all productions of Shakespeare must appeal to first?) And Hollywood goes through cycles with a certain kind of movie: five asteroid films in the late 1990s; two volcano disaster films in 1997.

Creators here and everywhere are always and at all times building upon the creativity that went before and that surrounds them now. That building is always and everywhere at least partially done without permission and without compensating the original creator. No society, free or controlled, has ever demanded that every use be paid for or that permission for Walt Disney creativity must always be sought. Instead, every society has left a certain bit of its culture free for the taking—free societies more fully than unfree, perhaps, but all societies to some degree.

The hard question is therefore not *whether* a culture is free. All cultures are free to some degree. The hard question instead is "*How* free is this culture?" How much, and how broadly, is the culture free for others to take and build upon? Is that freedom limited to party members? To members of the royal family? To the top ten corporations on the New York Stock Exchange? Or is that freedom spread broadly? To artists generally, whether affiliated with the Met or not? To musicians generally, whether white or not? To filmmakers generally, whether affiliated with a studio or not?

Free cultures are cultures that leave a great deal open for others to build upon; unfree, or permission, cultures leave much less. Ours was a free culture. It is becoming much less so.

Mere Copyists

In 1839, Louis Daguerre invented the first practical technology for producing what we would call "photographs." Appropriately enough, they were called "daguerreotypes." The process was complicated and expensive, and the field was thus limited to professionals and a few zealous and wealthy amateurs. (There was even an American Daguerre Association that helped regulate the industry, as do all such associations, by keeping competition down so as to keep prices up.)

Yet despite high prices, the demand for daguerreotypes was strong. This pushed inventors to find simpler and cheaper ways to make "automatic pictures." William Talbot soon discovered a process for making "negatives." But because the negatives were glass, and had to be kept wet, the process still remained expensive and cumbersome. In the 1870s, dry plates were developed, making it easier to separate the taking of a picture from its developing. These were still plates of glass, and thus it was still not a process within reach of most amateurs.

The technological change that made mass photography possible didn't happen until 1888, and was the creation of a single man. George Eastman, himself an amateur photographer, was frustrated by the technology of photographs made with plates. In a flash of insight (so to speak), Eastman saw that if the film could be made to be flexible, it could be held on a single spindle. That roll could then be sent to a developer, driving the costs of photography down substantially. By lowering the costs, Eastman expected he could dramatically broaden the population of photographers.

Eastman developed flexible, emulsion-coated paper film and placed rolls of it in small, simple cameras: the Kodak. The device was marketed on the basis of its simplicity. "You press the button and we do the rest." As he described in The Kodak Primer:

> The principle of the Kodak system is the separation of the work that any person whomsoever can do in making a photograph, from the work that only an expert can do. ... We furnish anybody, man, woman or child, who has sufficient intelligence to point a box straight and press a button, with an instrument which altogether removes from the practice of photography the necessity for exceptional facilities or, in fact, any special knowledge of the art. It can be employed without preliminary study, without a darkroom and without chemicals.

For $25, anyone could make pictures. The camera came preloaded with film, and when it had been used, the camera was returned to an Eastman factory, where the film was developed. Over time, of course, the cost of the camera and the ease with which it could be used both improved. Roll film thus became the basis for the explosive growth of popular photography. Eastman's camera first went on sale in 1888; one year later, Kodak was printing more than six thousand negatives a day. From 1888 through 1909, while industrial production was rising by 4.7 percent, photographic equipment and material sales increased by 11 percent. Eastman Kodak's sales during the same period experienced an average annual increase of over 17 percent.

The real significance of Eastman's invention, however, was not economic. It was social. Professional photography gave individuals a glimpse of places they would never otherwise see. Amateur photography gave them the ability to record their own lives in a way they had never been able to do before. As author Brian Coe notes, "For the first time the snapshot album provided the man on the street with a permanent record of his family and its activities. ... For the first time in history there exists an authentic visual record of the appearance and activities of the common man made without [literary] interpretation or bias."

In this way, the Kodak camera and film were technologies of expression. The pencil or paintbrush was also a technology of expression, of course. But it took years of training before they could be deployed by amateurs in any useful or effective way. With the Kodak, expression was possible much sooner and more simply. The barrier to expression was lowered. Snobs would sneer at its "quality"; professionals would discount it as irrelevant. But watch a child study how best to frame a picture and you get a sense of the experience of creativity that the Kodak enabled. Democratic tools gave ordinary people a way to express themselves more easily than any tools could have before.

What was required for this technology to flourish? Obviously, Eastman's genius was an important part. But also important was the legal environment within which Eastman's invention grew. For early in the history of photography, there was a series of judicial decisions that could well have changed the course of photography substantially. Courts were asked whether the photographer, amateur or professional, required permission before he could capture and print whatever image he wanted. Their answer was no.

The arguments in favor of requiring permission will sound surprisingly familiar. The photographer was "taking" something from the person or building whose photograph he shot—pirating something of value. Some even thought he was taking the target's soul. Just as Disney was not free to take the pencils that his animators used to draw Mickey, so, too, should these photographers not be free to take images that they thought valuable.

On the other side was an argument that should be familiar, as well. Sure, there may be something of value being used. But citizens should have the right to capture at least those images that stand in public view. (Louis Brandeis, who would become a Supreme Court Justice, thought the rule should be different for images from private spaces.) It may be that this means that the photographer gets something for nothing. Just as Disney could take inspiration from *Steamboat Bill, Jr.* or the Brothers Grimm, the photographer should be free to capture an image without compensating the source.

Fortunately for Mr. Eastman, and for photography in general, these early decisions went in favor of the pirates. In general, no permission would be required before an image could be captured and shared with others. Instead, permission was presumed. Freedom was the default. (The law would eventually craft an exception for famous people: commercial photographers who snap pictures of famous people for commercial purposes have more restrictions than the rest of us. But in the ordinary case, the image can be captured without clearing the rights to do the capturing.)

We can only speculate about how photography would have developed had the law gone the other way. If the presumption had been against the photographer, then the photographer would have had to demonstrate permission. Perhaps Eastman Kodak would have had to demonstrate permission, too, before it developed the film upon which images were captured. After all, if permission were not granted, then Eastman Kodak would be benefiting from the "theft" committed by the photographer. Just as Napster benefited from the copyright infringements committed by Napster users, Kodak would be benefiting from the "image-right" infringement of its photographers. We could imagine the law then requiring that some form of permission be demonstrated before a company developed pictures. We could imagine a system developing to demonstrate that permission.

Rebuilding Free Culture: One Idea

The same strategy could be applied to culture, as a response to the increasing control effected through law and technology.

Enter the Creative Commons. The Creative Commons is a nonprofit corporation established in Massachusetts, but with its home at Stanford University. Its aim is to build a layer of *reasonable* copyright on top of the extremes that now reign. It does this by making it easy for people to build upon other people's work, by making it simple for creators to express the freedom for others to take and build upon their work. Simple tags, tied to human-readable descriptions, tied to bulletproof licenses, make this possible.

Simple—which means without a middleman, or without a lawyer. By developing a free set of licenses that people can attach to their content, Creative Commons aims to mark a range of content that can easily, and reliably, be built upon. These tags are then linked to machine-readable versions of the license that enable computers automatically to identify content that can easily be shared. These three expressions together—a legal license, a human-readable description, and machine-readable tags—constitute a Creative Commons license. A Creative Commons license constitutes a grant of freedom to anyone who accesses the license, and more importantly, an expression of the ideal that the person associated with the license believes in something different than the "All" or "No" extremes. Content is marked with the CC mark, which does not mean that copyright is waived, but that certain freedoms are given.

These freedoms are beyond the freedoms promised by fair use. Their precise contours depend upon the choices the creator makes. The creator can choose a license that permits any use, so long as attribution is given. She can choose a license that permits only noncommercial use. She can choose

a license that permits any use so long as the same freedoms are given to other uses ("share and share alike"). Or any use so long as no derivative use is made. Or any use at all within developing nations. Or any sampling use, so long as full copies are not made. Or lastly, any educational use.

These choices thus establish a range of freedoms beyond the default of copyright law. They also enable freedoms that go beyond traditional fair use. And most importantly, they express these freedoms in a way that subsequent users can use and rely upon without the need to hire a lawyer. Creative Commons thus aims to build a layer of content, governed by a layer of reasonable copyright law, that others can build upon. Voluntary choice of individuals and creators will make this content available. And that content will in turn enable us to rebuild a public domain.

This is just one project among many within the Creative Commons. And of course, Creative Commons is not the only organization pursuing such freedoms. But the point that distinguishes the Creative Commons from many is that we are not interested only in talking about a public domain or in getting legislators to help build a public domain. Our aim is to build a movement of consumers and producers of content ("content conducers," as attorney Mia Garlick calls them) who help build the public domain and, by their work, demonstrate the importance of the public domain to other creativity.

The aim is not to fight the "All Rights Reserved" sorts. The aim is to complement them. The problems that the law creates for us as a culture are produced by insane and unintended consequences of laws written centuries ago, applied to a technology that only Jefferson could have imagined. The rules may well have made sense against a background of technologies from centuries ago, but they do not make sense against the background of digital technologies. New rules—with different freedoms, expressed in ways so that humans without lawyers can use them—are needed. Creative Commons gives people a way effectively to begin to build those rules.

Why would creators participate in giving up total control? Some participate to better spread their content. Cory Doctorow, for example, is a science fiction author. His first novel, *Down and Out in the Magic Kingdom*, was released on-line and for free, under a Creative Commons license, on the same day that it went on sale in bookstores.

Why would a publisher ever agree to this? I suspect his publisher reasoned like this: There are two groups of people out there: (1) those who will buy Cory's book whether or not it's on the Internet, and (2) those who may never hear of Cory's book, if it isn't made available for free on the Internet. Some part of (1) will download Cory's book instead of buying it. Call them bad-(1)s. Some part of (2) will download Cory's book, like it, and then decide to buy it. Call them (2)-goods. If there are more (2)-goods than bad-(1)s, the strategy of releasing Cory's book free on-line will probably *increase* sales of Cory's book.

Indeed, the experience of his publisher clearly supports that conclusion. The book's first printing was exhausted months before the publisher had expected. This first novel of a science fiction author was a total success.

The idea that free content might increase the value of nonfree content was confirmed by the experience of another author. Peter Wayner, who wrote a book about the free software movement titled *Free for All*, made an electronic version of his book free on-line under a Creative Commons license after the

book went out of print. He then monitored used book store prices for the book. As predicted, as the number of downloads increased, the used book price for his book increased, as well.

These are examples of using the Commons to better spread proprietary content. I believe that is a wonderful and common use of the Commons. There are others who use Creative Commons licenses for other reasons. Many who use the "sampling license" do so because anything else would be hypocritical. The sampling license says that others are free, for commercial or noncommercial purposes, to sample content from the licensed work; they are just not free to make full copies of the licensed work available to others. This is consistent with their own art—they, too, sample from others. Because the *legal* costs of sampling are so high (Walter Leaphart, manager of the rap group Public Enemy, which was born sampling the music of others, has stated that he does not "allow" Public Enemy to sample anymore, because the legal costs are so high), these artists release into the creative environment content that others can build upon, so that their form of creativity might grow.

Finally, there are many who mark their content with a Creative Commons license just because they want to express to others the importance of balance in this debate. If you just go along with the system as it is, you are effectively saying you believe in the "All Rights Reserved" model. Good for you, but many do not. Many believe that however appropriate that rule is for Hollywood and freaks, it is not an appropriate description of how most creators view the rights associated with their content. The Creative Commons license expresses this notion of "Some Rights Reserved," and gives many the chance to say it to others.

In the first six months of the Creative Commons experiment, over 1 million objects were licensed with these free-culture licenses. The next step is partnerships with middleware content providers to help them build into their technologies simple ways for users to mark their content with Creative Commons freedoms. Then the next step is to watch and celebrate creators who build content based upon content set free.

These are first steps to rebuilding a public domain. They are not mere arguments; they are action. Building a public domain is the first step to showing people how important that domain is to creativity and innovation. Creative Commons relies upon voluntary steps to achieve this rebuilding. They will lead to a world in which more than voluntary steps are possible.

Creative Commons is just one example of voluntary efforts by individuals and creators to change the mix of rights that now govern the creative field. The project does not compete with copyright; it complements it. Its aim is not to defeat the rights of authors, but to make it easier for authors and creators to exercise their rights more flexibly and cheaply. That difference, we believe, will enable creativity to spread more easily.

Them, Soon

We will not reclaim a free culture by individual action alone. It will also take important reforms of laws. We have a long way to go before the politicians will listen to these ideas and implement these reforms. But that also means that we have time to build awareness around the changes that we need.

In this chapter, I outline five kinds of changes: four that are general, and one that's specific to the most heated battle of the day, music. Each is a step, not an end. But any of these steps would carry us a long way to our end.

1. More Formalities

If you buy a house, you have to record the sale in a deed. If you buy land upon which to build a house, you have to record the purchase in a deed. If you buy a car, you get a bill of sale and register the car. If you buy an airplane ticket, it has your name on it.

These are all formalities associated with property. They are requirements that we all must bear if we want our property to be protected.

In contrast, under current copyright law, you automatically get a copyright, regardless of whether you comply with any formality. You don't have to register. You don't even have to mark your content. The default is control, and "formalities" are banished.

Why?

As I suggested in chapter 10, the motivation to abolish formalities was a good one. In the world before digital technologies, formalities imposed a burden on copyright holders without much benefit. Thus, it was progress when the law relaxed the formal requirements that a copyright owner must bear to protect and secure his work. Those formalities were getting in the way.

But the Internet changes all this. Formalities today need not be a burden. Rather, the world without formalities is the world that burdens creativity. Today, there is no simple way to know who owns what, or with whom one must deal in order to use or build upon the creative work of others. There are no records, there is no system to trace—there is no simple way to know how to get permission. Yet given the massive increase in the scope of copyright's rule, getting permission is a necessary step for any work that builds upon our past. And thus, the lack of formalities forces many into silence where they otherwise could speak.

The law should therefore change this requirement—but it should not change it by going back to the old, broken system. We should require formalities, but we should establish a system that will create the incentives to minimize the burden of these formalities.

The important formalities are three: marking copyrighted work, registering copyrights, and renewing the claim to copyright. Traditionally, the first of these three was something the copyright owner did; the second two were something the government did. But a revised system of formalities would banish the government from the process, except for the sole purpose of approving standards developed by others.

Registration and Renewal

Under the old system, a copyright owner had to file a registration with the Copyright Office to register or renew a copyright. When filing that registration, the copyright owner paid a fee. As with most government agencies, the Copyright Office had little incentive to minimize the burden of registration;

it also had little incentive to minimize the fee. And as the Copyright Office is not a main target of government policymaking, the office has historically been terribly underfunded. Thus, when people who know something about the process hear this idea about formalities, their first reaction is panic—nothing could be worse than forcing people to deal with the mess that is the Copyright Office.

Yet it is always astonishing to me that we, who come from a tradition of extraordinary innovation in governmental design, can no longer think innovatively about how governmental functions can be designed. Just because there is a public purpose to a government role, it doesn't follow that the government must actually administer the role. Instead, we should be creating incentives for private parties to serve the public, subject to standards that the government sets.

In the context of registration, one obvious model is the Internet. There are at least 32 million Web sites registered around the world. Domain name owners for these Web sites have to pay a fee to keep their registration alive. In the main top-level domains (.com, .org, .net), there is a central registry. The actual registrations are, however, performed by many competing registrars. That competition drives the cost of registering down, and more importantly, it drives the ease with which registration occurs up.

We should adopt a similar model for the registration and renewal of copyrights. The Copyright Office may well serve as the central registry, but it should not be in the registrar business. Instead, it should establish a database, and a set of standards for registrars. It should approve registrars that meet its standards. Those registrars would then compete with one another to deliver the cheapest and simplest systems for registering and renewing copyrights. That competition would substantially lower the burden of this formality—while producing a database of registrations that would facilitate the licensing of content.

Marking

It used to be that the failure to include a copyright notice on a creative work meant that the copyright was forfeited. That was a harsh punishment for failing to comply with a regulatory rule—akin to imposing the death penalty for a parking ticket in the world of creative rights. Here again, there is no reason that a marking requirement needs to be enforced in this way. And more importantly, there is no reason a marking requirement needs to be enforced uniformly across all media.

The aim of marking is to signal to the public that this work is copyrighted and that the author wants to enforce his rights. The mark also makes it easy to locate a copyright owner to secure permission to use the work.

One of the problems the copyright system confronted early on was that different copyrighted works had to be differently marked. It wasn't clear how or where a statue was to be marked, or a record, or a film. A new marking requirement could solve these problems by recognizing the differences in media, and by allowing the system of marking to evolve as technologies enable it to. The system could enable a special signal from the failure to mark—not the loss of the copyright, but the loss of the right to punish someone for failing to get permission first.

Let's start with the last point. If a copyright owner allows his work to be published without a copyright notice, the consequence of that failure need not be that the copyright is lost. The consequence

could instead be that anyone has the right to use this work, until the copyright owner complains and demonstrates that it is his work and he doesn't give permission. The meaning of an unmarked work would therefore be "use unless someone complains." If someone does complain, then the obligation would be to stop using the work in any new work from then on though no penalty would attach for existing uses. This would create a strong incentive for copyright owners to mark their work.

That in turn raises the question about how work should best be marked. Here again, the system needs to adjust as the technologies evolve. The best way to ensure that the system evolves is to limit the Copyright Office's role to that of approving standards for marking content that have been crafted elsewhere.

For example, if a recording industry association devises a method for marking CDs, it would propose that to the Copyright Office. The Copyright Office would hold a hearing, at which other proposals could be made. The Copyright Office would then select the proposal that it judged preferable, and it would base that choice solely upon the consideration of which method could best be integrated into the registration and renewal system. We would not count on the government to innovate; but we would count on the government to keep the product of innovation in line with its other important functions.

Finally, marking content clearly would simplify registration requirements. If photographs were marked by author and year, there would be little reason not to allow a photographer to reregister, for example, all photographs taken in a particular year in one quick step. The aim of the formality is not to burden the creator; the system itself should be kept as simple as possible.

The objective of formalities is to make things clear. The existing system does nothing to make things clear. Indeed, it seems designed to make things unclear.

If formalities such as registration were reinstated, one of the most difficult aspects of relying upon the public domain would be removed. It would be simple to identify what content is presumptively free; it would be simple to identify who controls the rights for a particular kind of content; it would be simple to assert those rights, and to renew that assertion at the appropriate time.

2. Shorter Terms

The term of copyright has gone from fourteen years to ninety-five years for corporate authors, and life of the author plus seventy years for natural authors.

In *The Future of Ideas*, I proposed a seventy-five-year term, granted in five-year increments with a requirement of renewal every five years. That seemed radical enough at the time. But after we lost *Eldred* v. *Ashcroft*, the proposals became even more radical. *The Economist* endorsed a proposal for a fourteen-year copyright term. Others have proposed tying the term to the term for patents.

I agree with those who believe that we need a radical change in copyright's term. But whether fourteen years or seventy-five, there are four principles that are important to keep in mind about copyright terms.

(1) *Keep it short*: The term should be as long as necessary to give incentives to create, but no longer. If it were tied to very strong protections for authors (so authors were able to reclaim rights from publishers), rights to the same work (not derivative works) might be extended further. The key is not to tie the work up with legal regulations when it no longer benefits an author.

(2) *Keep it simple*: The line between the public domain and protected content must be kept clear. Lawyers like the fuzziness of "fair use," and the distinction between "ideas" and "expression." That kind of law gives them lots of work. But our framers had a simpler idea in mind: protected versus unprotected. The value of short terms is that there is little need to build exceptions into copyright when the term itself is kept short. A clear and active "lawyer-free zone" makes the complexities of "fair use" and "idea/expression" less necessary to navigate.



Discussion Questions and Recommended Reading

Discussion Questions

1. Conduct some research into the critic Walter Benjamin: his life, the social context in which he wrote "The Work of Art in the Age of Mechanical Reproduction." Define "superstructure" and "substructure" in Marxist terms.
2. Benjamin describes one version of the history of art, the venues in which art is presented, its purposes, and the audience to which art was made available. Describe and discuss this progression. How does mechanical reproduction change all this?
3. What is the "aura" of a work of art? How does mechanical reproduction affect this "aura"? How does this change the way we perceive and consume art?
4. Benjamin believes that the widespread adoption of film technology and film as popular entertainment has had profound cultural and political implications, as well as effects on the viewer/audience. What are they? If Benjamin were to add a section on the reception of art and media in the Internet age and its effects on politics, society, culture, and the individual, what would he say?
5. Conduct research into the following terms and concepts of intellectual property law: length of copyright term, and how it has changed; fair use and the four-part fair use test; the public domain; digital rights management; the Digital Millennium Copyright Act. Define and discuss.
6. Lawrence Lessig says of intellectual property law, "We have become so concerned with protecting the instrument that we are losing sight of the value…Just at the time digital technology could unleash an extraordinary range of commercial and noncommercial creativity, the law burdens this creativity with insanely complex and vague rules and with the threat of obscenely severe penalties." What does he mean? What does he suggest as a solution to this problem? Discuss, with reference to the terms mentioned in #5.

Recommended Reading

Hayles, N. Katherine. *Electronic Literature: New Horizons for the Literary*. Notre Dame, IN: University of Notre Dame Press, 2008.

Lessig, Lawrence. *Remix: Making Art and Commerce Thrive in the Hybrid Economy*. New York: Penguin Books, 2009.

Section 7

Beyond the Body: Theories and Theorists of Cyberculture

Cyborgs, Cyberfeminism and the Posthuman

Martin Lister et al.

Cyborgs

> A cyborg is a rather slippery thing.
>
> (Kember 1998: 109)

> Donna Haraway's influential essay 'A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s' is a thorough postmodernist interrogation of binary oppositions, identifying: self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/made, active/passive, right/wrong, truth/illusion … [as dualisms] systemic to the domination of women, people of color, nature, workers, animals.
>
> (Haraway 1990: 218)

These categories are not only excluded from, and dominated by, the universalising myth of the Western subject; importantly, they are positioned as 'others' to define this subject, 'to mirror the self. Monsters such as those in classical myth demonstrate the ambiguities of self-definition through the other: the centaur, half human, half animal represents 'boundary pollution'. The cyborg then is a contemporary monster, but from the standpoint of a postmodernist politics of difference, one to be celebrated.

The 'challenge to western either/or epistemology' is conducted through an 'ironic political myth' of the cyborg. This creature is 'a cybernetic organism, a hybrid of machine and organism' (Haraway 1990: 191). It is deliberately ambiguous, encompassing fictional cyborgs such as *Robocop*; the increasing material intimacy between human bodies and machines (in medicine, warfare, or in miniaturised consumer electronics); a conception of networks as complex systems in which categories of biology and machines blur, and a postmodernist, 'post-gender' subject position. This latter is facilitated precisely by

Martin Lister, Jon Dovey, Seth Giddings, Iain Grant, and Kieran Kelly, "Cyborgs, Cyberfeminism, and the Posthuman," *New Media: A Critical Introduction*, pp. 280–286. Copyright © 2009 by Taylor & Francis Group LLC. Reprinted with permission.

the cyborg's ambiguity. It is not reducible to either the natural or the cultural, and therefore is neither entirely male nor female. Haraway cites *Blade Runner*'s heroine, the replicant Rachel, as an image of the fundamental confusion the cyborg generates around distinctions between the technical and the natural, and questions of origins, of mind and body (Haraway 1990: 219). The cyborg comes into being through 'replication' rather than organic reproduction, so it lends itself to the 'Utopian tradition of imagining a world without gender' (Haraway 1990: 192). This then is an attempt to think beyond difference, beyond the dualisms that structure the modern subject, an attempt in which science and technology, and particularly information technology, are central.

Haraway is careful to insist that her cyborg is at once an ironic fiction and a way of thinking about actually existing phenomena. As N. Katherine Hayles puts it:

> [Haraway's] cyborgs are simultaneously entities and metaphors, living beings and narrative constructions. The conjunction of technology and discourse is crucial. Were the cyborg only a product of discourse, it could perhaps be relegated to science fiction, of interest to SF aficianados but not of vital concern to the culture. Were it only a technological practice, it could be confined to such technical fields as bionics, medical prostheses, and virtual reality. Manifesting itself as both technological object and discursive formation, it partakes of the power of the imagination as well as the actuality of technology.
>
> (Hayles 1999: 114–115)

This articulation of the actual and the metaphorical is very important and is often blurred in research based on Haraway's essay. In addition to the fictional cyborgs of science fiction cinema and literature, Hayles distinguishes between 'actual cyborgs' (for example people fitted with pacemakers) and 'metaphoric cyborgs' (Hayles 1999: 115). The 'adolescent game player in the local video game arcade' exemplifies the 'metaphoric' cyborg for Hayles, and we will return to this everyday technocultural entity later in this section.

> It is useful to point out here that Hayles's use of the term 'metaphoric' in this context might be misleading. In strict cybernetic terms the gameplayer is not metaphorically but *actually* part of a feedback loop with the videogame. See 4.5.5 and 5.4.4 for the cybernetic nature of videogame play

> The cyborg has generated substantial comment (Gray *et al.* 1995; Gray 2002; Zylinska 2002; Balsamo 1996), though it should be noted that media technologies are rarely discussed in cyborgian terms. There are notable exceptions (often in relation to videogames, e.g. Friedman 1995, 1999; Ito 1998; Lahti 2003; Dovey and Kennedy 2006; Giddings and Kennedy 2006)

Posthumanism

All this said, while the use of the term 'cyborg' here makes links with salient concepts, debates and disciplines, and suggests new couplings or hybridities of the human and the technological in contemporary everyday life, it may ultimately prove misleading. It implies, and is often taken to mean, a discrete, bounded entity (a cybernetic *organism*); a monster no doubt, but one generally more or less human in origin and form. Think of the cyborg's fictional figurations: Robocop and the Terminator for example. Part man and part machine no doubt, but reassuringly humanoid in form and, as the films unfold, increasingly 'human' in emotional and moral terms. Similarly, however bewildered or decentred postmodernist subjects feel themselves to be, they—and their crisis—are still fundamentally *human*.

> It is comforting ... and a source of profound relief to think that man is only a recent invention, a figure not yet two centuries old, a new wrinkle in our knowledge, and that he will disappear again as soon as that knowledge has discovered a new form.
>
> (Foucault 1970: xxiii)

In this often-quoted sentence Foucault suggests a more profound sense of change in the subject, one that has been picked up in recent theoretical developments that resonate with new media and technocultural theory, developments that are sometimes loosely bracketed together as posthumanism. Posthumanism can however be divided into three (overlapping) approaches. First the term refers to a critique of the notion of humanism and the human subject within critical theory (Badmington 2000); second it refers to a range of debates around science and technology that are researching into, or predicting, changes in the human body and its relationship with technology and technoscience in the present and the near future. There are distinct echoes of early uncritical cyberculture in some manifestations of this aspect of posthumanism or 'transhumanism' (see for example the 'extropian' movement http://extropy.org/ with its New Age worldview, unqualified optimism about technological progress, and corporate ambitions). Third, 'posthumanism' is used within critical cyberculture (particularly cyberfeminism) and some STS-influenced debates to draw on both of the first two and to address critically the relationships between technology and the human. Not surprisingly this discussion has been termed 'critical posthumanism' (Didur 2003). Critical posthumanism is often concerned with the cultures and implications of biotechnology, reproductive technologies and genetics (Halberstam and Livingston 1996; Thacker 2005; Davis-Floyd and Dumit 1998) and has been greatly influenced by the work of Donna Haraway.

Critical posthumanism is, then, an articulation of a number of interlinked concepts:

- the cyborgian notion of the posthuman as marked by material, corporeal change (whether through prosthetics or genetic manipulation);
- the challenge cybernetics makes to the established sense of the human body's boundaries—for example, 'the idea of the feedback loop implies that the boundaries of the autonomous subject

are up for grabs, since feedback loops can flow not only within the subject, but also between the subject and the environment' (Hayles 1999: 2);

- the cyberfeminist critique of the Enlightenment subject, as founded on a Western epistemology of binary divisions (not least that of male–female), and the (more or less) ironic proposition that fictional cyborgs and actual technologies offer alternative ways of thinking about identity;
- post-structuralist critiques of post-Enlightenment humanism. Poster argues that 'We are moving beyond the "humanist" phase of history into a new level of combination of human and machines, an extremely suggestive assemblage in which the figures of the cyborg and cyberspace open vast unexplored territories' (Poster 1995b).

Cyberfeminism

> Perhaps, ironically, we can learn from our fusions with animals and machines how not to be Man, the embodiment of Western logos.
>
> (Haraway 1990; 215)

'Cyberfeminism' is not a movement as such; the term covers a diverse, even contradictory range of feminist theories on technological change and gender. These theories—and, again, Haraway's cyborg in particular—have been influential on many studies of new media. For cyberfeminists the recognition and critique of the gendered nature of the Enlightenment human subject is central. 'Posthumanism' here then is a political gesture towards rethinking the relationships not only between the human and the technological, but between men and women and the technological.

Though in quite different ways, the works of Donna Haraway and Sadie Plant have addressed the sexual politics of new technologies and subjectivities through an enquiry into what it means to be human, each seeing technological change as potentially liberating. Both draw on science fictional ideas of the embodied cyborg, though Plant's model of a blurring of boundaries between the biological and the machinic is predominantly one of networks rather than bodies. She sees the history of the computer's development as one of ever-expanding complexity, to the point at which this complexity is indistinguishable from the complex systems of both nature and culture:

> Parallel distributed processing defies all attempts to pin it down, and can only ever be contingently defined. It also turns the computer into a complex thinking machine which converges with the operations of the human brain ... Neural nets are distributed systems which function as analogues of the brain and can learn, think, 'evolve' and 'live'. And the parallels proliferate. The complexity the computer becomes also emerges in economies, weather systems, cities and cultures, all of which begin to function as complex systems with their own parallel processes, connectivities and immense tangles of mutual interlinkings.

(Plant 2000: 329)

Plant isn't speaking metaphorically here, she is asserting that machines not only appear to take on the characteristics of biological systems, including the human brain, but that to all intents and purposes no meaningful distinction between the natural and the machinic can now be made. For Plant the Internet, or matrix, is inherently feminine and manifests

> lines of communication between women, long repressed, ... returning in a technological form ... The immediacy of women's communion with each other, the flashes of intuitive exchange, and the non-hierarchical system which women have established in the networking practices of grass roots feminist organisations: all these become the instant access of telecommunication, the decentred circuits and dispersed networks of information.
>
> (Plant 1993: 13–14)

Plant's project is, like that of Haraway, to question and 'think beyond' the structuring binaries of Western thought, and again in particular the masculine subject as agent of history. Both draw on post-structuralist theories. Plant develops the ideas of French theorist Luce Irigaray who argued that, apparently paradoxically, machines and women are bracketed together in binary opposition to men. For though not 'natural' as such, machines are, like women, things existing to benefit man, 'mere things on which men worked', or objects of exchange (Plant 1993: 13). In opposition to men, they too have been seen as having no agency or self-awareness. Following this logic, then, Plant asserts that there is only one *homo sapiens* ('Man') and that 'Woman is a virtual reality'. The implication here is that women have always been positioned as some kind of biological-machinic hybrid, and that it is only with the emergence of information technology that this association ceases to be repressive. Instead it marks a revolution that doesn't so much undermine the male modern subject as sweep him away, in 'a fluid attack, an onslaught on human agency and the solidity of identity ... It is the process by which the world becomes female, and so posthuman' (Plant 1993: 17).

Sarah Kember is critical of Sadie Plant's analysis of the relationships between the human and the machine in the age of networked communication, arguing that collapsing any distinction between life and information—a concept she terms 'connectionism'—runs the risk of conflating the complex systems of nature with social systems such as economies. While connectionism 'offers a rhetoric of resistance to control and authority which is based on the destruction of boundaries', Kember sees it as fundamentally anti-political in that the assertion of such systems as 'selforganizing, self-arousing' (Plant 1995: 58) denies any social or historical context. For Kember, Haraway, by contrast, seeks to 'trouble and revise the restricted rationality of conventional Western forms of knowledge' without recourse to connectionism (Kember 1998: 107; see also Squires 1996).

> While cars are not commonly thought of as media, driving is one of the most familiar and mundane experiences of contemporary technoculture, and we might remember McLuhan's assertion that the wheel is a medium, an extension of the body, or to be more precise, the foot

As befits something so monstrous, the cyborg is heteromorphic. For Donna Haraway it is chimerical, an ironic yet Utopian being made from actual and symbolic parts. However for this study of everyday technoculture we can be less ambiguous. Contemporary life in the developed world is a near constant set of overlapping and nested relationships between the human mind and body and non-human processes and entities. A number of STS-influenced sociologists have discussed the everyday technoculture of cars and their drivers in cyborgian terms. Tim Dant usefully adopts the term *assemblage* from ANT to denote these impermanent but significant couplings of the human and the nonhuman (Dant 2004, also Haraway 2004, Latour 1999). These 'car/drivers' (Lupton 1999), or 'driver-cars' (Dant 2004), then, are assemblages of human and machinic components within a technologised environment of roads and street furniture, more than the sum of their parts:

> The driver-car is neither a thing or a person; it is an assembled social being that takes on properties of both and cannot exist without both ... The car does not simply afford the driver mobility or have independent agency as an actant; it enables a range of humanly embodied actions available only to the driver-car.
>
> (Dant 2004: 74)

For Deborah Lupton 'when one is driving, one becomes a cyborg, a combination of human and machine' (Lupton 1999: 59). The contemporary technocultural phenomenon of road rage is bound up with this cyborg ontology:

> When other car/drivers invade our space, appear to put us in danger, when they touch our hybrid bodies with their own or yell at us, our sense of being in a private space within a public sphere is violated.
>
> (Lupton 1999: 70)

Angry drivers, Lupton suggests, force the breakdown of the automotive actor-network, threatening 'the complex social order of the road and its heterogeneous network of human, non-human and hybrid actors' (Lupton 1999: 70). This is an example of ANT applied to everyday here-and-now technoculture. It describes a network of the human and the nonhuman as characteristic of the most familiar and mundane activities:

> Many of our engagements with machines challenge notions of the accepted dichotomy between human and non-human, between self and other. Drawing a distinction between the 'animate' and the 'inanimate' and 'human' and 'non-human', therefore, suggests dichotomies which perhaps should be viewed as continual or hierarchical categories. Actors may better be conceptualized as the products of networks of heterogeneous factors interrelating with one another.
>
> (Lupton 1999: 58–59)

Though ostensibly similar to Lupton's car/driver, Dant's driver-car is terminologically, and ultimately conceptually, distinct. He is clear the driver-car is not a cyborg: he makes a distinction between the *cyborg* as a human augmented by 'feedback systems incorporated into the body that can be used to replace or enhance human body parts' and *assemblages*, the temporary constitution of human and nonhuman actors (Dant 2004: 62). The assemblage 'comes apart when the driver leaves the vehicle and ... can be endlessly reformed, or re-assembled given the availability of the component cars and drivers' (Dant 2004: 62). In denying any cyborgian characteristics to the driver-car assemblage, Dant reinscribes a solidly humanist position, arguing that 'human subjectivity is in no sense constituted by getting into a car; it is a temporary assemblage within which the human remains complete in his or her self' (Dant 2004: 62).

Conversely, Lupton's vision of the car/driver as one actor-network circulating eccentrically within and across many others indicates that there is little humanist reassurance in stepping out of the driver-car:

> the network of social relations, norms and expectations around car use, such as road rules, and material and spatial aspects such as the physical nature of roads, the presence of traffic lights and of other cars, represent everpresent structuring features of car use. Cyborg subjectivities, therefore, are not simply about how we, as bodies/selves, interact with our machines, but about how we interact with other cyborgs as part of a cyborg 'body politic'.
>
> (Lupton 1999: 59)

Issues and Conclusions

The notion that there are important shifts in the nature of identity or subjectivity attendant on the advent of digital media is evident across the diverse conceptual frameworks of new media studies. There is little agreement over the precise nature of these shifts, their historical and technological location, and their epochal import, but each—in different ways—makes claims for the importance of these shifts in understanding everyday life in a digital technoculture. We have seen then:

- profound claims for transformation of the underpinnings of everyday life, its politics and possibilities: sense of self, gender, body and identity in a new media world;
- demands to see the self in everyday life not as an autonomous subject but as, to varying degrees and with diverse conclusions, embroiled in networks, in intimate relationships with machines and media;
- that the science fictional figures of the posthuman and the cyborg have a descriptive and non-metaphorical purchase on mundane, everyday technocultural relationships.

Moments in Cyberculture

David Bell

As a way into a tight focus on particular cyberculture theorists, I want to introduce here three writers—Michael Benedikt, Sherry Turkle and Maria Bakardjieva—whose work represents three phases of cyberculture research. These accounts give a flavour of the development of cyberculture theory, its methods and concerns, since the early 1990s. While the endless branching and bifurcating of cyberculture means I could have chosen countless alternatives, these three writers all do the useful job of summing up the mood of the time and place they were writing from.

1. Cyberspace: First Steps

Edited by Michael Benedikt, Hal Box Chair in Urbanism and Director of the Center for American Architecture and Design at the University of Texas at Austin, USA, *Cyberspace: First Steps* is based largely around papers presented at the self-proclaimed First Conference on Cyberspace, held at the same institution in May 1990. So the book does indeed contain a number of 'first steps', including landmark essays, still often cited, such as David Tomas's 'Old Rituals for New Space', Michael Heim's 'The Erotic Ontology of Cyberspace' and Alluquere Rosanne Stone's 'Will the Real Body Please Stand Up', as well as cyberpunk guru William Gibson's account of birthing the word cyberspace itself, 'Academy Leader'. It also includes two essays by the editor, which are the focus on my discussion here; given the heterogeneity of the chapters in the volume, it seems more fruitful to focus on these twins rather than to try to capture something of the buzz that still, more than a decade later, crackles through *Cyberspace: First Steps*.

Benedikt provides both a contextualizing and thematicizing introduction to the volume, and his own extensive essay which discusses how cyberspace might work. This future-facing orientation is important: the book was published ahead of cyberspace, signalling a beginning, an advent: 'Cyberspace itself is an elusive and future thing', Benedikt (1991c: 22) writes, adding that 'one can hardly be definitive at this early stage' about the forms it was then yet to take. This is one reason why I have chosen

David Bell, "Moments in Cyberculture," *Cyberculture Theorists*, pp. 15–51. Copyright © 2007 by Taylor & Francis Group LLC. Reprinted with permission.

to discuss this work here; for its 'prefiguring' of cyberspace and cyberculture (see also Tofts, Jonson and Cavallaro 2002). There is a palpable sense of promise and excitement: 'the door to cyberspace is open' (ibid.: 18) and Benedikt is keen to step through. He also sees in the book, and in cyberspace, a 'motivating, unifying vision' of the future (Benedikt 1991b: 188)—a door to be leapt through enthusiastically, then.

His introduction to the book opens with ten vignettes, each one attempting to poetically capture what cyberspace was imagined as, at this time and place. I would love to quote them all, as they're all so evocative, but there isn't time for that here. Instead I give one full example from the ten, then select some choice cuts from the others:

> Cyberspace: The tablet become a page become a screen become a world, a virtual world. Everywhere and nowhere, a place where nothing is forgotten and yet everything changes.
>
> (Benedikt 1991c: 1)

Cyberspace is also summoned as a 'parallel universe', as a 'common mental geography', as forming 'wherever electricity runs with intelligence', as a 'realm of pure information, filling like a lake', as a 'soft hail of electrons', but also as 'an unhappy word' from the dystopian pen of William Gibson, here to be made happy again when removed from the cyberpunk domain and brought into computer science. (The 'category line' on the back of the book jacket, which signals the subject area of the book to aid booksellers in shelving it appropriately, lists only Computer Science as the proper home of this book—cyberspace was not yet fully seen as of interest to those studying culture.)

That Gibson is here from the start is another key point: we are talking here about 'Gibsonian cyberspace'—the neologism coined to describe cyberspace as imagined in the shadow of its description in *Neuromancer* (1984). As Stone (1991) notes in this volume, *Neuromancer* had an incredible impact not just on sci-fi fans but also on computer scientists, hackers and academics. It became a kind of 'source code' for the development of cyberspace, and etched into the ideas presented in *Cyberspace: First Steps* is exactly that legacy, which informs, for example, Benedikt's own discussion of the 'datasphere' as an urban architectural form, as we shall see.

Gibsonian Cyberspace

Cyberpunk writer William Gibson famously coined the term 'cyberspace' to describe a 'virtual' landscape made up of all the information in the world, a description given fullest form in his novel *Neuromancer* (1984). Cyberspace is entered as disembodied consciousness, by 'jacking in' to the network, and the landscape is a battleground over the ownership of and access to data, between corporations and hackers. Gibsonian cyberspace thus refers to visions of cyberspace which trace back to Gibson's vivid descriptions. In some contexts, Gibsonian cyberspace is contrasted to Barlovian cyberspace, named after John Perry Barlow, the American cyber-guru, who is said to have first used 'cyberspace' to describe networked computing.

Cyberspace Threads

Now, having laid out those ten conjurings of cyberspace, Benedikt hits the brake: 'Cyberspace as just

described—and, for the most part, as described in this book—does not exist' (Benedikt 1991c: 3). *It does not exist*—yet. Or, rather, it exists in the minds of those imagining it, but does not yet exist as an everyday experience, as a 'thing'. It does not (yet) exist as the thing Benedikt later defines it as: 'a multisensory, three-dimensional, involving, richly textured and nuanced virtual world converting oceans of abstract data and the intelligence of distant people into perceptually engaging, all-but-firsthand experience' (Benedikt 1991b: 191). We might ask, here and now: does this cyberspace exist yet? Will it ever? Benedikt is himself sanguine about this issue in an interview from a decade later, as we shall see (Szeto 2002).

Using the Popperian idea of 'World 3'—the 'world' of patterns of communications that overlays Worlds 1 (the material world) and 2 (the subjective world of consciousness)—Benedikt uses his introduction to weave four intertwining historical threads that have evolved in World 3. One aim of this approach is to highlight the long history of cyberspace—that it has been coming for millennia. His first thread is perhaps best summarized by his term 'symbolic doing' (Benedikt 1991a.: 13)—representation, including pictures and writing, myths, stories. Human cultures need to live in stories, need rituals and magic, and cyberspace is coming to be 'the most tempting stage for the acting out of mythic realities', the prime site for symbolic storying (ibid.: 6; see also Bell 2001).

Benedikt's second thread is also about 'symbolic doing', this time encapsulated in the history of communications media, in its broadest sense, from writing to printing to transmission, storage and retrieval (hence his 'The tablet become a page become a screen …' formulation quoted above). Here he is concerned with the dematerialization of communication—or, perhaps, we might say its 'redematerialization' after it had first been materialized in printing, recording, photography, etc. Crucially, this dematerialization erases the constraints on communication made by geography, at all scales, from the global to the local (he gives the excellent example of remote controls for TVs in the latter case). Moreover, the history lesson in thread two is also about widening access to media production as well as consumption—cameras, photocopiers, cassette recorders all put the tools for making content in ordinary people's hands. Cyberspace expands this potential exponentially.

The then-recent history of this thread is overshadowed, Benedikt (1991c: 11) writes, by the 'almost irrational enthusiasm' for virtual reality (VR). Indeed, VR overshadows much of *Cyberspace: First Steps*, as it did much of the writing and talking about cyberspace at that time. Benedikt notes how virtual reality was seen as superseding the 'symbolic doing' of threads one and two by reintroducing direct, 'post-symbolic' communication—a return of the literal—though he is unsure of how this will pan out: 'In future computer-mediated

World 3

Austrian-born British philosopher Karl Popper (1902–98) proposed the idea of the existence of three 'worlds': World 1, the world of physical objects, events and biological entities; World 2, the world of mental events and objects; World 3, the world of products of the human mind, or abstract objects (theories, formulae, learning). He proposed that World 3 is partly autonomous from the other two, and that changes in World 3 can impact on Worlds 1 and 2. Today, World 3 is sometimes used to talk about cyberspace and cyberculture, as an emblematic abstract 'mind-space'.

Virtual Reality (VR)

3-D, immersive, computer-generated audio-visual simulations of reality (or imaginings of reality), for a while widely seen as the most exciting new development in human–computer interactions. Applications such as flight simulation and battle training have been developed, but the technology has not evolved to match the hype that preceded it. VR has become more useful conceptually, in terms of troubling ideas about what is 'real', as well as being widely depicted in science fiction and cyberpunk.

environments, whether or not this kind of literal, experiential sharing of worlds will supersede the symbolic, ideational, and implicit sharing of worlds embodied in the traditional mechanisms of text and representation remains to be seen' (ibid.: 13). With the benefit of hindsight, we can say that, at least where we've got to now, that idea is still a long, long way off, but also that people have found ingenious ways round the failure of VR to deliver such a cyberspace.

The third thread is, unsurprisingly given Benedikt's disciplinary background, about architecture. He argues that architecture is also part of World 3, the world of patterns of communication (just as 'natural architectures' such as ant colonies are)—architecture is communication in built form. Benedikt presents a take on the history of architecture in biblical terms, moreover; using ideas of nostalgia for Eden and of the Heavenly City from Revelation. Architecture is about transcendence, he writes, about a desire to go beyond—an idea which has led to the 'ephemeralization' or 'self-dematerialization' of architecture, as buildings become light, hollow, transparent. The Heavenly City epitomizes this impulse, this transcendent architecture: 'weightlessness, radiance, numerological complexity, palaces upon palaces, peace and harmony through rule by the good and wise, utter cleanliness, transcendence of nature and of crude beginnings, the availability of all things pleasurable and cultured' (ibid.: 15)—hardly Gibsonian cyberspace, then, given the latter's dystopian griminess (see Tomas 1991, 2000).Yet it is very like cyberspace, the city as information, the epitome of World 3—a different way of imagining what Manuel Castells calls the space of flows (see later). Benedikt's bottom line is also unsurprising: building cyberspace will require cyberspace architects, designers of electronic edifices, the liquid architecture of information flows. In this respect, in the visual imaging of data arranged like skyscrapers or heavenly cities, he is, of course, purely Gibsonian.

The last of Benedikt's historical threads concerns the mathematics of space, both geometry and algebra. How is 'real' space theorized mathematically, and what does this mean for ways of thinking about cyberspace-as-space? Space is here seen more as a 'field of play' for information, and this has crucial bearing on a whole set of questions about the space of cyberspace that Benedikt raises and addresses later on: how big is cyberspace? What are its edges like? What shape is it? How are we to find our way around it? These four threads (and he notes there are many others) begin the process, then, that Benedikt picks up later, in his own contribution to *Cyberspace: First Steps*.

Proposing Cyberspace

'Cyberspace: some proposals' has a similarly speculative, future-facing tone, for which Benedikt is unapologetic; as he says at the start, there is vital work to be done at this stage: 'Before dedicating significant resources to creating cyberspace … we should want to know how it might look, how we might get around it, and, most importantly, what we might usefully *do* there' (Benedikt 1991b: 119, emphasis in original). The project of envisaging cyberspace is crucial, therefore, and connects to the history lessons he has already taught us: to understand how we might think and build cyberspace, we need to understand how we have developed ways of acting in the world around us—phenomenologically, if you like (see p. 45). At times with vertiginous complexity, Benedikt talks us through the mathematics and cosmologies of space and time, speculating on the futures brought about by twin processes: 'the *etherealization* of the world we live in' and 'the *concretization* of the world we dream and think in' (ibid.: 124, emphasis in original). But before he can figure out cyberspace, he has to ask some tricky questions. First up: what is space?

Turning to mathematics and physics, and also to experience, he asks how we come to understand space both commonsensically and theoretically. How do we understand, experience and live in space and time, and how can this be fed into emerging cyberspace? What do we need to know about human spatiotemporal perception and use in order to build cyberspaces that work for, rather than against, their users? Benedikt, like Maria Bakardjieva who we shall meet in a while, is adamant that the views and experiences of 'ordinary users' are central to this task; otherwise, cyberspace will be inhospitable, alien, disorienting, useless.

Yet use must not be read to mean purely rational use or instrumental use. Remember thread one: symbolic storying, myth-making. Cyberspace must be magical, too—and it can be magical, Benedikt argues, through it violation of principles that govern our 'real life' experiences of space and time. As Sherry Turkle writes, cyberspace can be thought of as a liminal space, a space where rules are overturned (see p. 36 below). Prefiguring Turkle again, Benedikt discusses graphical user interfaces (GUIs) on computers as the beginnings of something, a new experience of space and time. But, for all his talk of violation, Benedikt is equally keen to establish some guiding principles for the design and building of cyberspace: principles aimed to produce usable, livable, but also magical worlds. These principles concern a number of key issues: the dimensions of space and cyberspace, how to visualize cyberspace, how to distinguish different 'data objects' in cyberspace, how 'things' will 'look' there, how we will find them, and so on.

The seven key principles of cyberspace design and build, according to Benedikt (and very roughly sketched here by me, to be selectively filled out later) are:

1. The Principle of Exclusion—two things cannot be in the same place at the same time;
2. The Principle of Maximal Exclusion—rules to minimize violations of the first principle, for example, over how 'big' and 'dense' cyberspace can become;
3. The Principle of Indifference—'life goes on whether or not you are there' (ibid.: 160); cyberspace has an existence independent of users;

4. The Principle of Scale—the relationship between the amount of information in space and the amount of space in space;
5. The Principle of Transit—even through we may move instantaneously, travel as an experience is important, as is navigation;
6. The Principle of Personal Visibility—users in cyberspace should be seen, at some minimal level, by other users (but we should also be free to choose who is visible or invisible to us);
7. The Principle of Commonality—there needs to be an objective, shared social 'reality' in cyberspace, so that people see and hear the same things (at least partially).

Benedikt works through these principles, exploring how they might be realized in cyberspace. Some of his answers are intensely mathematical, concerned with modelling cyberspace in algebraic terms; others are (for me at least) more down-to-earth. For example, part of the riddle of the Principle of Maximal Exclusion is: how big does cyberspace have to be so that things there aren't in the same place at the same time too often? And once that problem occurs, how might cyberspace be expanded? The solutions to the latter quandary include literally making cyberspace bigger, producing a nested set of differently scaled cyberspaces, making data-objects multi-dimensional (so they might be in a different place or time at least in *some* dimensions), and so on. This is heady stuff, to be sure, a bit like imagining the size of the universe.

The question of the size of cyberspace is related by Benedikt to the question of how much data can it hold? How dense can that data become? How can we arrange data-objects so that users can comprehend them? And what do we want these data-objects to be like? Benedikt says, again recalling the magic dimension he is keen to retain in cyberspace, that some may be like mirages or rainbows, objects always far-off and elusive, but nevertheless clearly visible. Others will be fixed in place, objects we can move closer to, even 'touch'.

Of course, this isn't developing in a vacuum; users will enter cyberspace already 'hardwired' with a set of ways of dealing with space, time and objects. There's only so much magic we can take, before we get giddy, start suffering from 'sim sickness' (the disorientations experienced when VR makes us out-of-kilter). The task of producing 'workable data spaces' (ibid.: 150) must acknowledge and work with these features, balancing heady opportunities with limits and limitations. Benedikt offers a beautiful exemplification of this, again too long to quote in full, discussing an encounter in cyberspace with an 'unidentified flying data object' (UfdO). Nicely tinged by sci-fi, it is mind-boggling in its implications for the design and experience of cyberspace. Here, again, is my sketch: the user sees a UfdO in the distance moving at constant speed. The

Posthuman

The idea that either (i) the human species is at an evolutionary dead-end, and must incorporate technologies in order to evolve to the 'next level'; or (ii) that we have long ceased to be human, because of our increasingly intimate relationships with nonhumans, such as technological artefacts. Often seen as similar to arguments about cyborgs (see p. 100), the idea of the posthuman provokes excitement in some, terror in others. It contains a number of variants in fields of biomedicine, science fiction and cyberculture theory.

UfdO starts to slow down and shrink—has it turned to travel away from the user, or actually slowed and shrunk, or entered a denser area of cyberspace where it gets squashed and slowed down? How can the user tell?

The user tries to get closer to the UfdO, flying towards it, and, as the user does so, the UfdO gets larger and more detailed; only suddenly the user starts to decelerate, and cannot move closer to the UfdO—both have in fact entered a region of more space, expanded space, where everything is far away and travel takes a long, long time. (I know, so far, so *Star Trek*.) The point is that our perception of space, time, movement, objects, etc. in cyberspace is going to have to cope with a lot more than we're accustomed to. I guess the question then becomes: how much do we think we *can* get accustomed to? What are the limits of the human in cyberspace, and can these be transcended, maybe by becoming posthuman?

This is part of the key paradox Benedikt has already hinted at: given that we can do pretty much anything in cyberspace, what *should* we do? Striking the right balance between the doable and the dreamable, between the real and the magical, is vital to the success of cyberspace development for Benedikt. So the Principles of Indifference, Transit and Personal Visibility, for example, don't simply map onto 'real life' experience. There is something extra in cyberspace, something that exceeds ordinary real life. I particularly like his discussion of the Principle of Transit, and therefore move to discuss this in more detail now.

Moving in Cyberspace

Setting aside the question of how the user might actually move in cyberspace—by flying or surfing, or by bouncing, seeping, slithering or strolling—Benedikt sets out some interesting ideas in the Principle of Transit, which he defines thus: 'travel between two points in cyberspace should occur phenomenally through all intervening points, no matter how fast (save with infinite speed), and should incur costs to the traveler proportional to some measure of distance' (Benedikt 1991b: 168). Toll roads on the information superhighway? Not exactly. Benedikt's concern is with the disappearance of the experience of travel—as an experience in itself—made possible by instantaneous communication. Zapping in a flash between places may be convenient, but it will be too disorienting for ourselves and for others. Moreover, being in multiple places at once, for Benedikt, needs some control, for much the same reasons. He suggests a limit on two or three 'clones' of oneself being present in cyberspace at any one time—a limit well exceeded only a few years later by the MUDders cycling through multiple personae, talked to by Sherry Turkle (see pp. 28–29).

But Gibsonian cyberspace is ripe with metaphors of movement through the 'datascape', and, given Benedikt's background in architecture, it is unsurprising that he would like to see cyberspace spatialized in ways that make travel something worthwhile. This is also about meeting fellow travellers—hence the Principle of Public Visibility is important because 'cyberspace must have a street life' (ibid.: 178). Travelling is about chance meetings, and also about the stories of journeys we can later retell. So Benedikt suggests that there should be both 'navigation data' and 'destination data' in cyberspace—because it is good to travel, but it's also good to arrive. Note that we still talk of

navigating the web; as Benedikt says, the metaphor is one programmers and users both utilize in order to describe how they find their way around computers.

Now, remember that part of this Principle is about incurring 'cost'. Benedikt says this may be financial, just as long-distance phonecalls normally cost more than local ones, or it may be in terms of time: travel times may vary in cyberspace, partly as a result of your machine's processing power, but also as a way of making cyberspace seem 'spacey'—making things feel near or far. Distance is experienced as the time it takes to get somewhere, after all; Benedikt wants to put a brake on 'time–space compression' (see Castells, below) before they are compressed to nothing. He thus proposes a *landscape* for cyberspace, of routeways, ports of entry, virtual subway stations, and different modes of travel, from the speedy commute home to leisurely browsing. This range of spatiotemporalities is, you may have noticed, at odds with a key imperative of new technology: *faster, faster, faster!*

See You in Cyberspace?

As already noted, this issue is related closely by Benedikt to his Principle of Personal Visibility—that we should, at some level, see and be seen in cyberspace. Who we see, he argues, should be a choice: 'I may want no self-styled teenage mutant dragon to leap into my view when he chooses to' (Benedikt 1991b: 179)—though he never really deals with the implicit issue of power here, other than to note that we might be able to invisibilize those we disagree with or dislike. Of course, many people are already invisibilized, by not being in cyberspace at all. But they are regrettably outside of Benedikt's thesis at this point. He is more concerned with the idea of balancing privacy and publicness in cyberspace (a theme picked up later, for example in Bakardjieva's work). Users should be prevented from 'cloaking' themselves, because visibility is linked to accountability—but also to vitality, in terms of the 'street life' of teeming hordes mixing in virtual cityscapes. Moreover, he points to a kind of virtual crowd behaviour—people will congregate, to see what's going on. This connects to Benedikt's seventh Principle, Commonality. People in the same cyberspace must have an overlapping shared reality, even if there can also be differences (magical ones). Otherwise communication is impossible, everyone seeing something different. But cyberspace will still have more flex in it, than 'real life', in terms of this commonality—it is a minimum, not a total condition.

Towards the end of the chapter, he turns to attempts to visualize the kinds of cyberspace he has been theorizing, making use of his own graduate students' work on databases and other virtual environments. (Castells and Haraway, discussed later, also make frequent, fully acknowledged, use of their students' work in this productive way.) He describes how a number of his students have responded to the task of building small-scale cyberspaces, for example to work as virtual slide libraries or video stores, or as 'data cells' in which immersive VR can be experienced. Importantly, these models stress the 'intuitive', hyper-linked ways of searching through databases, of navigating cyberspace, and thus of building cyberspace—a key theme discussed by the next two cyberculture theorists in this book, Sherry Turkle and Maria Bakardjieva.

Right towards the end of his discussion, Benedikt returns to a Gibsonian depiction of cyberspace, with flying data objects identified and unidentified, coasting above a vast urban plain—but a plain

nevertheless with a horizon, and 'sky' above. In the sky waft travellers and traffic, plus data objects of various sorts, 'floating like ribbons, hot-air balloons, jellyfish, clouds, but in wonderfully unlikely shapes' (ibid.: 205). He concedes, ultimately, that his chapter has been theoretical, some would say even speculative. But that has been his self-appointed task—a vital task, he rightly points out, in making some 'first steps' towards, and into, cyberspace and cyberculture:

> Let us begin to face the perplexities involved in making the unimaginable imaginable and the imaginable real. Let the ancient project that is cyberspace continue.
>
> (Benedikt 1991c: 24)

Looking back on this work a decade later, Benedikt says in an interview that all he had imagined here has, in fact, failed to materialize:

> Cyberspace—that wonderful, phantasmagoric three-dimensional alternative reality imagined by William Gibson—was not actually shaping itself on-line as I and many others thought it surely would. ... To this day, only advanced intranet gamers have a foretaste of Gibsonian cyberspace: a real-time, shared, virtual space seamlessly mixing useful data, personal personae, and real-world, real-time connection.
>
> (Szeto 2002: 1)

Of course, this doesn't mean we don't have something called cyberspace, just that it hasn't taken the forms (and functions) that Benedikt (and indeed Gibson) foretold.

Benedikt does not explicitly talk of culture in his work here; apart from to note that there are cultural 'threads' to the history of cyberspace, and that this agenda is taken up by others in *Cyberspace: First Steps* (such as Stone 1991; Tomas 1991). Yet his two essays are profoundly cultural, in many ways: in their understanding of the role of symbolic stories in shaping cyberspace, in their insistence on an added magical dimension to cyberspace, in their discussion of uses and users. Hence my inclusion of Benedikt's prefiguring work as a key moment in cyberculture theory.

2. Life on the Screen

In his discussion of the three stages of cyberculture studies, already sketched, David Silver (2000) names Sherry Turkle's (1995) *Life on the Screen: Identity in the Age of the Internet* as one of the main pillars of the second stage, in which virtual communities and online identities become the main focus of discussion, and where the tone of that discussion is largely optimistic, stressing the possibilities offered by cyberspace to think and do identity and community anew. The book coincided, Silver adds, with transformations in the form and content of cyberspace, in its availability and accessibility, all of which 'helped to foster a less technical, more mainstream internet populace' (Silver 2000: 23).Turkle's book came out on the cusp of that change.

MUDs

Multi-user domains, dimensions or dungeons are text-based games or environments in cyberspace. The word 'dungeon' hints at MUDs' origin as a computerized adaptation of the role-playing subculture Dungeons and Dragons—fantasy games in which players weave imagined worlds and take on characters to interact with each other in elaborate, long-running scenarios often drawing on imagery of swords and sorcery, goblins and wizards, castles and monsters. Early MUDs were written as on-line versions of these games, and many subsequent MUDs continued this 'adventure' or 'hack and slash' style. Others developed into 'social MUDs', not based around dungeons and dragons, but as virtual spaces for players (MUDders) to interact, adopting 'personae'. This interacting is known as MUDding. The spaces, characters and interactions were initially always text-based: players typed scenes, actions, talk, and this appeared on the screens of all players currently logged on. Social MUDs were often centred on a house or a town, with players adding new rooms or buildings. Since players can freely write their own personae, MUDs became associated with forms of identity play, such as gender switching—men adopting female personae on MUDs, etc. Some commentators saw this as potentially therapeutic, even political; others saw it as perpetuating gender stereotypes and as being potentially harmful. There was also much debate about whether MUDding represented a retreat from 'real life', and the subculture that grew up around MUDs was often seen negatively, as addicted to MUDding and withdrawn from reality. MUDs attracted a lot of academic attention, coming to be seen as key sites in cyberculture. Types of MUD have proliferated, and not all of them are solely text-based; there are graphic MUDs, and a proliferation of neologisms and acronyms, including MOOs, MUCKs and MUSHs.

Sherry Turkle is Abby Rockerfeller Mauze Professor of Social Studies of Science and Technology at Massachusetts Institute of Technology (MIT), one of the powerhouses of cyberculture, where she is also Director of the MIT Initiative on Technology and Self (for a discussion of her life and work, see McCorduck 1996). Her work combines sociological and psychotherapeutic analysis—she is also a licensed clinical psychologist—and draws on a range of theoretical approaches and a huge amount of empirical material collected over many years. *Life on the Screen*, her third and best-known book, centres on what she calls the 'nascent culture of simulation', a culture she aligns with postmodernity, read through people interacting with computers: as she comments, computers are 'bringing postmodernism down to earth' (Turkle 1995: 268), providing many 'objects-to-think-with' for exploring the culture of the times and places she was writing from.

The book divides into three sections. The first, 'The Seductions of the Interface', focuses on forms of computer programming (and programmers), looking at the Macintosh interface as a new way for representing computing to users, and discussing the value of 'tinkering' as a way users come to understand their machines. Of 'Dreams and Beasts' explores aspects of computer science's cultures, including artificial intelligence (AI) and artificial life (A-Life)—the key questions being what counts as thought, what counts as intelligence, and what counts as alive in contexts where these terms

get blurry. Here, in one of the moves I particularly like in her work, Turkle observes and talks to children interacting with computers and 'computational toys' (see also Turkle 1998, 1999). The amazingly open and nuanced ways that kids talk about these objects-to-think-with provides many valuable insights into the future of human-machine inter-relationships. Finally, in 'On the Internet' she discusses identity and community in virtual spaces, mainly MUDs (multi-user domains or dungeons). Talking with MUDders and participating in MUDding herself, Turkle explores ways that people using virtual spaces think about their self, or selves, and about how they connect or disconnect virtual life from 'real life' (RL). Deeply immersed in the cultures she studies—McCorduck (1996) says that her tone is almost confessional—Turkle has written a vivid portrait of what she saw as a 'liminal' period, a period of uncertainty, flux and change. While Silver is broadly right to see *Life on the Screen* as enthusiastic about this period, I think there is more ambivalence in the book, itself arguably symptomatic of the time and place it was researched and written. And while it has inevitably dated, it retains a resonance despite the almost antique quality of some of the things Turkle discusses.

Looking at Computers

In her exploration of 'computational aesthetics', Turkle tracks a shift from 'modernist' computing, which saw the computer as a rational calculating machine and in which the computer was presented to us through the language of programming, to a newer, postmodernist computational aesthetic, embodied in the Mac, which instead presents us with the interface; or, more accurately, with the graphical user interface (GUI)—the things we see on screen. In place of lines of programming commands we see pictures (icons), buttons, things. Working a word-processing package, like the one I am using now for example, I see 'pages' that look like pieces of white A4 paper, and as I type the words form, their font and size and arrangement all sorted. What comes off a printer will look like what I now see on the screen, minus all the bits and bobs that encircle it (the buttons and so on). Turkle discusses this shift in aesthetic in terms of the computer's 'holding power', and she connects this interface aesthetic with how ordinary users relate to computers: where the earlier generations she studied in her previous book, *The Second Self* (1984), were either hobbyists seduced by the hardware and self-building ideals or hackers seduced by programming and a love of complexity, ordinary users want simplicity, don't want to know *how* things get done, only reassurance that they do get done: knowing *how to* make the computer work has replaced knowing how it works. This is key to the culture of simulation, which Turkle sees as having replaced the earlier culture of calculation. It impacts not only on our interactions with computers, but the way we conceptualize thinking, life, intelligence, the real and the virtual. While subsequent readings of the interface have criticized it for making users into idiots (see, for example, Fuller 2003; Stallabrass 1999), Turkle sees the interface as a fitting emblem of the times: 'the holding power of the Apple Macintosh, of simulation games, and of experiences in virtual communities derives from their ability to help us think through postmodernism. ... Life on the screen carries theory' (Turkle 1995: 47, 49).

Indeed, Turkle peppers her book with theory, drawn from a wide range of sources, which she then connects cleanly to computing culture. She repeats time and again that life on the screen is a

way of bringing postmodern theory down to earth, a way of showing how people are living the ideas she herself found hard to handle when exposed to them in what she calls her 'French lessons'—her encounters with the ideas of French theorists of postmodernism. But now those 'Gallic abstractions are more concrete' (ibid.: 15)—she has the objects-to-think-with for thinking about postmodern culture.

This alignment of computing and postmodernity is also worked through in her discussion of 'soft' programming styles—intuitive 'tinkering' rather than abstract reasoning. Using the web, for example, is about exploration, intuition, following leads, not knowing where you'll end up (or at least it was in the times Turkle was writing). There's something democratic in this, Turkle argues, in that access to computing has been broadened by user-friendly software that frees us from having to learn programming. She calls this a 'musical' culture of simulation, with computers 'more like harpsichords than hammers' (ibid.: 63)—still tools, but tools used in different, more open ways. Turkle finds the same approach in computer gaming, too. She watches kids playing games, talks to them about how they feel their way along, how they don't bother learning all the rules but prefer to get started and see what happens. She sees them ignoring things, working round things, playing the games how they want to. Out of all this observation and talk, she conceives three responses to the acknowledgement that we now inhabit a culture of simulation: resignation, denial and—the one she favours—using simulation to birth new forms of social criticism that 'would try to use simulation as a means of consciousness-raising' (ibid.: 71), by making users think about simulations, virtual and real (see also Fuller 2003). Becoming 'simulation savvy' would give us ways to explore questions about what's real and what's simulated—and what's at stake in the way that distinction is made.

Cy-dough-plasm

> Today's children are growing up in the computer culture; all the rest of us are at best its naturalized citizens. ... [W]e can look to children to see what we are starting to think ourselves.
>
> (Turkle 1995: 77)

Turkle's work with children is, for me, one of the most interesting areas of her research. She shows how children relate to and think about computers, computer games and 'computational toys' (e.g. virtual pets such as Tamagochi), and how they use play as a way to explore ideas about machine intelligence and 'aliveness'. Less encumbered by rigid ways of thinking than adults, children approach these questions playfully but also seriously. Looking at a series of studies over two decades, Turkle also sees shifts in the way children thought and talked about these 'intimate machines': what tools did they use to think them with? How did they conceptualize 'aliveness'—in terms of mobility, thinking, feelings? She writes that the children she worked with most recently seemed much clearer and more confident about drawing a distinction between themselves and machines, but that they had at the same time settled into a new way of understanding what machines can do and be: 'Now, children are comfortable with the idea that inanimate objects can both think and have a personality' (ibid.: 83). This shift parallels

changes in the broader culture, around ideas of machine intelligence and ways of understanding human minds and bodies using machine metaphors.

She recounts watching 7-year-olds playing with Transformers—toys that can morph to take the form of people, machines or robots. She sees the children enjoying mixing up the transformations, leaving the toys half-changed, with a robot arm and human body for example. While some of the children protest that it isn't right to play with them like this, one girl says: 'It's okay to play with them when they are in-between. It's all the same stuff ... just yucky computer cy-dough-plasm' (ibid.: 171). In their dealings with computer games that simulate life, in Transformer toys, in Speak 'n' Spell machines and in virtual pets, Turkle argues, children are 'pointing the way toward multiple theories in the presence of the artifacts of artificial life' (ibid.: 172). She lists a range of responses that the children she has worked with have made to computational toys and games, which is worth quoting at length for its exemplification of these multiple theories:

> My current collection of children's comments about the aliveness of what I have called A-Life objects (the Blind Watchmaker, Tierra, SimLife, mobots, and Lego-Logo robots) includes: The robots are in control but not alive, would be alive if they had bodies, are alive because they have bodies, would be alive if they had feelings, are alive the way insects are alive but not the way people are alive; the Tierrans are not alive because they are just in the computer, could be alive if they got out of the computer, are alive until you turn off the computer and then they're dead, are not alive because nothing in the computer is real; the Sim creatures are not alive but almost-alive, would be alive if they spoke, would be alive if they traveled, are alive but not real, are not alive because they don't have babies, ... [are] not alive because babies in the game don't have parents. ... For all the objects, the term sort of alive comes up often.
>
> (Turkle 1995: 172)

Now, this doesn't mean that these children are hopelessly confused, or dazzled by these machines into thinking they're alive; it shows us that ideas about life, intelligence, people and machines are rapidly, complexly changing. It offers an example of what Turkle refers to as cycling through, another key feature of the culture of simulation.

Cycling Through

Turkle uses the computing term 'cycling through'—running several different programs at once—to describe diverse experiences in the culture of simulation. Children playing with A-Life objects cycle through different ways of thinking and talking about the 'liveliness' of these new forms; participants in MUDs move from real-life (RL) person to on-line persona or personae, cycling through different MUDs and between 'real' and 'virtual' worlds. Working on a computer using windows—boxed-off parts of the screen in which different programs and functions can operate—is also cycling through. Like the 1970s fad for split-screen TV, 'windowing' lets us keep an eye on a number of different things—a MUD, an email

list, an accounts spreadsheet, a webcast—but also lets us focus primarily on one window, the one that occupies the majority of screenspace. We have grown accustomed to this way of working with computers, to clicking between screens, flitting between files and applications.

A-Life

Artificial life (A-Life) research centres on the replication of biological processes, behaviours and lifeforms in digital environments. A-Life focuses on evolution, replication, swarming behaviour, adaptation, etc. Some commentators argue that computer viruses can be thought of as A-Life forms. The particular forms Turkle discusses in *Life on the Screen* include **The Blind Watchmaker**, an evolution program that evolves 'biomorphs' through a process that mirrors natural selection (but is 'unnatural' because it is controlled by the programmer); **Tierra**, a program more closely simulating natural selection to let 'digital organisms' evolve through mutation (in their code); **Lego-Logo** robots built as computational toys using Lego blocks and programmed using Logo, a computer language; **SimLife**, part of the growing family of Sim games, which again lets players 'grow' lifeforms in their computers. These A-Life objects are linked by their underpinning emphasis on the idea of emergent intelligence: the lifeforms are programmed to evolve and to learn.

And this experience has migrated out of computers, making RL just one more window, and letting us see ourselves as made of the windows we cycle through: 'windows have become a powerful metaphor for thinking about the self as a multiple, distributed system. ... In the culture of simulation, cycling through is coming to be the way we think about life itself' (Turkle 1995: 14, 174).

This experience is best exemplified for Turkle on MUDs. Reflecting the period in which it was researched and written, *Life on the Screen* spends a lot of time on MUDs, exploring how MUDders cycle through many selves, and how identity has thus become about multiplicity rather than unity; or, as Turkle titled an article in *Wired* magazine summarizing this part of the book, the key question here is 'Who am we?' (Turkle 1996). The postmodern self, theorized as fractured, fragmented, decentred, is the MUDding self, who types new identities in text-based virtual spaces, interacting with other identity-typists from anywhere and everywhere. MUDs are, Turkle says, a 'hybrid between computer programming and writing fiction' (Turkle 1995: 181), and they are, moreover, sites for writing and rewriting the self. (We might speculate that if she were writing this book today, she might have focused instead on weblogs.)

In the 'world of words' that makes up the MUD, participants (players) self-describe their adopted personae, and talk and interact with each other. This offers the opportunity for 'identity play'—for becoming someone else online. But that someone else needn't be thought of as a deceit; MUDs mix up this kind of thinking, asking where the 'real me' is, if indeed it exists at all: 'MUDs imply difference, multiplicity, heterogeneity, and fragmentation. ... When each player can create many characters and participate in many games, the self is not only decentered but multiplied without limit' (ibid.: 185). Through extensive talk with players, and through participation, Turkle shows the different ways MUDs work as objects-to-think-identity-with. She raises the then-controversial issues of online deception and

'virtual rape', highlighting the costs of identity play in cyberspace. She also discusses the therapeutic potential of MUDs, asking whether they allow 'working through' or only 'acting out' of psychological issues. On the basis of her research, she is unsure how to call these questions, finding clear examples on both sides. But the MUDs she studied certainly provided a space to experience and experiment with the postmodern self, the self of the culture of simulation, the self that is cycling through different selves.

Virtual Society?

After a long discussion of the self, Turkle turns to another topic that, in the mid-1990s, was generating a lot of heat about and in cyberspace: community. Her intervention in these debates explores, among other things, how RL and virtual life intersect and interact not only in terms of how individuals see themselves but in terms of how they see their 'fit' (or lack of fit) with the world around them. One particularly interesting aspect of this is her discussion of 'virtual social mobility'—how some of the people she talked to used things like MUDs to secure for themselves a virtual middle-class identity and status that they either lacked or had lost in real life. Some people used their programming skill or playing skill to gain status in MUDs, others simply reinvented themselves via their self-descriptions, and built up for themselves emblems of virtual status.

Turkle connects this phenomenon to a discussion of politics, finding some MUDders heavily involved in MUD politics but disengaged from RL politics, but also finding others using cyberspace as a grassroots political space and tool (see discussion of Castells below). MUDs can be an escape from RL, or a way of changing it. Here she worries about the potential for withdrawal from real life, and about issues of accountability and responsibility. While different people have such different understandings of the connection (or lack of connection) between life on- and off-line, for example over whether being in a MUD is just play, or whether actions there have real repercussions, it is difficult to reach a consensus on such issues (indeed, consensus is intrinsically tricky in cycling through). Ultimately, Turkle sees virtual space as liminal: as a space of transformation or transition, where society's normal rules no longer apply, and from which new cultural symbols and meanings can emerge.

Liminality

An anthropological concept, referring to movement between states or statuses, such as between childhood and adulthood, often involving a period of withdrawal from 'normal' society and the enactment of rituals—'rites of passage' or pilgrimages. During the liminal phase, the 'normal' rules of society do not apply, and participants' identity and status are thereby erased to be made anew. In the anthropological model, the liminal stage is passed through, and the participants emerge out of the other side to be reintegrated into society with their new status and identity in place. For a critical discussion, see Hetherington (1998).

3. Internet Society

Maria Bakardjieva's *Internet Society: Everyday Life on the Internet*, published in 2005, is in many ways an exemplar both of Silver's (2000) 'critical cyberculture studies' and of Sterne's (1999) cultural studies approach to doing the Internet. It is promiscuous in its use of theory, as we shall see, and approaches cyberculture from a solidly empirical trajectory, informed by theory, and grounded in the practices of users. It therefore provides an excellent step-by-step guide to 'thinking the Internet' in particular contexts; so, while it doesn't tick all of Sterne's boxes in terms of a total study of cyberculture, it serves as a very good example of where we're at currently in terms of research and writing on cyberculture. It includes focus on a number of key aspects of cyberculture currently attracting a lot of attention—the material culture of the Internet, the 'everyday' uses to which it is put, issues of domestication, and the use of 'ethnographic' research (see also, among others, Hine 2000; Lally 2002; Miller and Slater 2000). While each of these aspects brings its own problems, they certainly work as a useful corrective to the perceived shortcomings of previous phases in the ongoing development of cyberculture studies.

Maria Bakardjieva is an assistant professor in the Faculty of Communication and Culture at the University of Calgary in Alberta, Canada. She went to Canada from Bulgaria to pursue postgraduate studies, and has also worked as a journalist. Her book is peppered with autobiographical (and 'autotechnographical') anecdotes, situating the bigger story she wants to tell in the very personal context of her own 'ordinary uses'. She describes the entry of computing into her own home, the process of coming to live with computers, or what Scannell (1996) calls the 'dailiness' of ordinary, everyday interactions on screen—her own, and those of her twenty-three respondents. This move towards the mundane, everyday dimensions of cyberculture is important and timely; as she remarks early on in the book, 'the practices of everyday users [have] remained largely invisible. The time to write this unglamorous, but nonetheless important, history was ripe' (Bakardjieva 2005: 5). Focusing on the dailiness or 'ordinari-ization' (Moseley 2000) of everyday cybercultures also led her to explore how online and off-line (or virtual and real) lives are folded together, in a move echoed in other work attempting to bridge the false divide between real and virtual life (see also Miller and Slater 2000). This is achieved both by talking to people and by observing their daily interactions in cyberspace—as well as the ways in which they have accommodated cyberspace in the space of the home, both materially (which room of the house is used for computers) and socially (who gets to go

Henri Lefebvre

French sociologist and philosopher Henri Lefebvre (1903–91) extended Marx's ideas about alienation into the realm of everyday life, suggesting the need for the 'critique of the real by the possible' as a way of remaking everyday life. Lefebvre's work proved influential in a number of disciplines, including human geography, where his *The Production of Space* (1974/1991) has been widely discussed; his work was also influential outside of academia: his *Critique of Everyday Life* (1974/1991) influenced the thinking of the political art activists the Situationist International, who similarly sought the re-enchantment of everyday life in the modern city, and whose actions are associated with the events in Paris of May 1968 (see p. 53).

online, in what contexts, etc.). Drawing on a wide range of theoretical perspectives, which she mixes rigorously, Bakardjieva writes a richly detailed story of cyberculture's dailiness or everydayness.

Bakardjieva also has a desire to rewire the Internet to better suit the needs of everyday users—a large group previously neglected in studies that have instead focused on 'early adopters' as vanguards of a coming new technological age. She wants to ask, and answer, the question 'What should the Internet be like?' (Bakardjieva 2005: 6)—how are everyday users shaping cyberculture, in what ways can a focus on everyday uses be put to work in transforming the form and content of computers and cyberspace? Drawing on previous discussions of the politics of everyday life, such as the work of the French Marxist philosopher and sociologist Henri Lefebvre (1971, 1991), she calls for a programme of democratic Internet development responsive to, indeed informed by, 'ordinary' uses:

> The point is not to concoct utopian schemes for realizing the visions of theorists, technologists and political leaders, but rather to elaborate visions to be asserted in a technical and political process with an eye and ear turned to the unglamorous everyday initiatives of ordinary users.
> (Bakardjieva 2005: 193)

Social Construction of Technology (SCOT)

Part of the sociology of science and technology, SCOT shows how the 'shape' of technological artefacts is the outcome of social processes, such as the influence of relevant social groups (for example, users). The form an artefact takes is ultimately stabilized only once the different relevant social groups have reached agreement. Thus the aim of the SCOT approach is to explore how different groups influence the development and final form of a technological artefact.

In one sense this programme represents a reclaiming of the democratic ideals of the 1960s computer counterculture, argued to have become lost in the rapid commercialization of cyberspace (see Abbate 2000). But those ideals also idealized the ordinary user and their ordinary uses; Bakardjieva wants to start from a position of *knowing* the user, based on detailed empirical investigation.

The Ordinary User

As Bakardjieva writes, the so-called ordinary user has been somewhat neglected in stories about technology, including computers and the Internet. This group is seen as passively receiving an already-developed technology, more or less enthusiastically or recalcitrantly, and then coming to accommodate it in their everyday routines. In the language of the social construction of technology (SCOT) approach, the technology arrives at the ordinary user already 'stabilized'—its form, uses and even meanings fixed, after a period of development and refinement in which other players had an input, but in which ordinary users were excluded. The technology is also 'black boxed' for ordinary users: they are not encouraged to 'look inside', to wonder how it works; they are told how to use it, and should accept that as sufficient.

This sense of liminality, of the move towards the culture of simulation, pervades *Life on the Screen*, even though that in itself troubled the process of researching and writing it (McCorduck 1996). It is a book written at a time when 'we are dwellers on the threshold between the real and the virtual, unsure of our footing, inventing ourselves as we go along' (Turkle 1995: 10). But she is uncertain whether this liminal phase will ever pass, whether things can ever settle down again, or whether postmodernity means a kind of perpetual liminality. As a record of that moment, that dwelling on the threshold, *Life on the Screen* retains its importance and power as a landmark cyberculture text.

Now, as should be apparent from my hint at Bakardjieva's desire to rewire cyberculture, this neglect of ordinary users is seen by her as wholly inadequate, and moreover as doing a disservice to ordinary users who, she argues, do much, much more than merely accept what lands in their lap. Moreover, home computers and the Internet exhibit, she suggests, a high degree of openness, especially when they become stitched into everyday life. Only by focusing on the dailiness of everyday uses can we begin to map out the contours of this openness and then use that map as the basis for rerouting the development of cyberculture towards more democratic and inclusive ends. To accomplish the task she has now set for herself, then, Bakardjieva assembles theoretical and methodological toolkits—in both cases reflecting Frow's and Morris's (2000) description of 'rigorous mixing' in cultural studies. She works through a number of theoretical approaches, critiquing each but also wanting to pick out their useful attributes, which she then connects together, letting them productively rub against each other. So, for example, she criticizes the SCOT perspective for its neglect of ordinary users, but holds onto its theorization of the mutual shaping of technology and society. She raids the nest of the critical theory of technology, appreciating its politics and its focus on thinking how things could be different, its emphasis on resistance. She locates Raymond Williams's (1974) *Television* in this approach, liking his focus on new patterns of cultural practice that new technologies help bring about. These practices—watching telly, surfing the net—loop back to inform the development of the technology, highlighting the productive role of users

Encoding/Decoding

Cultural theorist Stuart Hall (1932–), who came to Britain from the Caribbean in the early 1950s, developed the encoding/decoding model during his time at the Centre for Contemporary Cultural Studies at the University of Birmingham, UK. He proposed a new model of audience reception, looking at TV, in which the 'TV text' is seen as an articulation of linked but distinct moments of production, circulation, distribution and reproduction, and draws on the key idea of hegemony. Crucially, the model sees the TV audience as stratified, not homogeneous (for example, by class), and sees TV texts as 'polysemic' (carrying lots of different meanings) rather than being 'closed'. A particular set of messages may be encoded in a text by the various agencies responsible for its production, but the audience makes sense of the text's messages, drawing on their cultural context, experience, etc. So there are different reading or decoding possibilities: (i) dominant/preferred, in which the encoded message is accepted; (ii) negotiated—this position permits some disagreement but accepts the legitimacy of the hegemonic view; (iii) oppositional, which rejects the message encoded in the text and instead uses its own, contrary reading.

in shaping technological change.

Next in her sights is a focus on the meanings of technologies: how machines come to us coded in certain ways, reflected in their form and so on. As Donna Haraway puts it, machines are 'material-semiotic' entities (see pp. 120–1). Black boxing is an example of this coding, and Bakardjieva uses a favourite classic cultural studies theory, Stuart Hall's (1973) encoding/decoding, to talk about the ways in which producers seek to imprint certain meanings into the 'text' of the machine, but also how users can adopt a number of 'reading positions' as they decode those messages. As well as the preferred or dominant reading, where the user conforms with the encoded meaning, and where the user is said to be 'configured' by the machine to perform in accordance with its rules, users may also adopt resistant or negotiated reading or decoding positions. As Bakardjieva says, no matter how hard producers try to inscribe particular uses and meanings into their products, 'there remains an "irremediable ambiguity" about what the technology can do' (Bakardjieva 2005: 21)—sometimes referred to as the 'double life' of technology: the uses to which it is put that go beyond those 'written' into it. So the user isn't simply configured by the technology; there is a mutual configuring and reconfiguring. This is part of the process of domestication, viewed here as *relational*: it's about living with technologies, with work required on both sides—also seen later in the context of dog–human relationships in the work of Donna Haraway (see also Lehtonen 2003). But she is also critical of the way that domestication is viewed primarily as an act of consumption, preferring to see it as part of the ongoing production process: users are creative producers of new uses, new meanings and, particularly in the case of computing, new content, such as personal websites.

Michel de Certeau

French sociologist and philosopher Michel de Certeau (1925–86) is best known for his work on everyday life and on popular culture as practice, which drew on historical and psychoanalytic theories. This work was concerned with understanding the structures of everyday life and the ways that ordinary people negotiate these, including their use of strategies (ways of appearing to conform to dominant social formations) and tactics (little acts of resistance that create spaces of freedom). Ordinary people were seen by de Certeau as 'tactical raiders' in their everyday practices.

This point underscores her focus on 'users' rather than 'consumers' on the Internet, and also leads her in new theoretical directions, as she sees all the previous approaches sharing a 'repressive bond' by instating a separation between production and consumption, encoding and decoding, and so on (Bakardjieva 2005). Drawing on the ideas of French theorist Michel de Certeau (1984), she wants to think about technology as 'language': language is a system with normative rules and codes, but also has the openness to change, to new ways of talking, slang and word play. Now, de Certeau had already suggested using language as an analogy for the ways in which ordinary people exist within but also subvert rules and norms, using the example of walking in the city as the equivalent of speaking language. The walker is immersed in the city-as-system, walking its routes and following its rules, but he or she can improvise within that system, can skip or saunter, can walk with purpose or aimlessly. Use in technological systems is, Bakardjieva says, also analogous to speech (or walking). This idea is further

developed by delving into linguistic theory, in particular the concept of 'little behaviour genres'—the different ways people talk in different situations, which we all carry round as a repertoire. How to speak to your mother, or your friends, or a shop assistant, or a dog—each type of situation has its own genre, and as we move to different social situations, so new ways of talking emerge.

Technology can play a crucial role here, of course: the telephone and later the mobile phone have their own genres of talking, and these are not preset by the technology but evolve through use. Bakardjieva adopts this idea to talk of 'use genres' in cyberculture: the ways we use the Internet has similarly evolved through the domestication of the technology, and we also use it differently in different social contexts (work or leisure, email or virtual shopping). Over time, some use genres 'stabilize' and become widely accepted—such as 'text speak' on SMS systems—whereas others fade to be replaced by new genres. In this way, Bakardjieva (2005: 31) suggests, use genres associated with technologies '*articulate* technological change and social practice' (my emphasis), thus resolving the limitations she highlighted in other approaches to use (seen as consumption, etc.). Bakardjieva also highlights that new technologies interact with preexisting use genres: they don't simply bring with them wholly new uses, but have to fit in with the ongoing evolution of uses and use genres. Hence some new technologies are taken up in unexpected or unprogrammed ways, while others flounder because their preconfigured use is at odds with current genres (3G phones being currently an example of the latter). That the computer still looks like a television and a typewriter reveals how technologies also bear the impress of previous uses, rather than being refitted to better suit current use genres—so there's still a lot of typing in cyberculture, even long after the invention of non-text-based uses. And a computer comes to us loaded with preset use genres, in the forms of programs, the interface, and so on. There are 'rules' we need to follow to make it work, yet the use genres to which we then put it are diverse and changing—as Turkle (1995) had already suggested in her discussion of 'tinkering'. For some people a computer is primarily a glorified typewriter (and even then, the things they type into it can vary immensely, from poetry to tax returns); for others it is a portal into virtual worlds (even if those worlds still demand some typing). Crucially, it is ordinary users who invent new use genres, and these are transmitted through the fabric of everyday life as 'users discover important, personally meaningful applications of the Internet' (Bakardjieva 2005: 117).

In her ethnographic work, then, Bakardjieva wanted to explore both the *a priori* rationalizations that users gave for getting connected to the Internet, and the relation between those rationalizations and the use genres they subsequently developed. Her typology of reasons for getting connected reads like symptoms of living in the network society: isolation, relocation or dislocation, job dissatisfaction or belonging to globally dispersed communities and networks (see also Bakardjieva and Smith 2001). Her respondents used the Internet to satisfy their perceived needs, whether for connection to events taking place in a now-remote 'homeland' or for communication with others suffering the same illness. These use genres reflect the social-biographical situations of the respondents, which Bakardjieva argues are typical of contemporary culture. But more importantly she sees the development of these use genres—which were not prefigured in the technology—as the creative engagement of ordinary users with the Internet, and as (potentially) empowering. What she calls the 'situated rationalities' of use (ibid.: 135) hint at a way to re-engineer the Internet as a democratic communication tool, and to resist

its dominant stabilization as a tool of consumer capitalism. To accomplish this project necessitates the detailed exploration of use genres, therefore, in the situated context of particular users' everyday lives.

Everyday Cyberlife

Hence it is important for Bakardjieva to also develop a tight theoretical view on what everyday life actually is. Luckily, she is aided here, too, by a bag of pre-existing ideas and theories, which she picks through to develop her own take of what some see as a peculiarly elusive concept (Highmore 2002). This is a similarly complex task, marshalling different perspectives and letting them rub up against one another. In her first encounter, phenomenological sociology meets Lefebvre's critical theory, and the idea of the lifeworld meets the idea of the everyday. The lifeworld—the spaces and times we inhabit and experience—provides a phenomenological framework for understanding a set of proximities and distances, or varying intensities, in all spheres of experience. Our decisions about what is relevant or meaningful to us relates to these 'zones': things most immediately around me, the tasks of today, are in a higher zone of relevance than more distant goals. Bakardjieva describes this in a nice autobiographical passage (which perfectly resonates with me here now, too):

> My situation at this moment is determined by the prioritized goal of producing a piece of text which paves the way towards completing my book and thus represents a miniscule component of my hierarchy of plans for the day, the year, and my life as a whole.
>
> (Bakardjieva 2005: 47)

This situation has both preset elements—writing books as part of academic work, etc.—and more open elements, such as the choice of what to write about, how to assemble arguments, and whose ideas to agree or disagree with.

Bakardjieva relates this neatly to the computer on which she is writing: it is now an expectation that academics can do word processing, so this is what she calls an imposed system of relevances, rather than a use she has openly chosen to make of her computer. But an hour earlier, she was online, on the same computer, chatting to some friends, making over her networked computer as 'an emotional, community-sustaining, social machine' (ibid.: 48). This ebb and flow of imposed and elective uses, or relevances, reveals the interplay of the lifeworld—in terms of both immediate situations and social-biographical situations—and the technology of networked computing. Mapping use genres onto social-biographical situations provides the bigger picture, therefore, of the 'significance the medium has acquired in society and culture at large' (ibid.: 50).

This lifeworld approach is then set alongside the Marxist critical theory of Lefebvre, who wanted to rescue everyday life from its cooption into capitalism. Crucially, where he concurred with Marx that work was an alienating experience under capitalism, he wanted to suggest that in the sphere of everyday life production could be unalienated, or disalienated—everyday life could be seen as the site where the self and the social world is produced, through what Lefebvre called the critique of the real by the possible, or what we might call thinking and doing everyday life otherwise. Lefebvre is useful to Bakardjieva

for his attentiveness to the alienations of everyday life, and also to the disalienating, productive work of ordinary users. Synthesizing these two approaches, she thus sets out 'to study the Internet *from the standpoint of* and *for* ordinary users' (ibid.: 57, emphasis in original). To accomplish this she develops a 'critical phemonenology', drawing especially on the work of American 'post-phenomenologist' Don Ihde (1990), who proposed four types of human-technology relation:

- embodiment relations, for example spectacles, which are taken into bodily experience and which mediate the external world through improving the ability to see it;
- hermeneutic relations—technology represents the world, as in the case of a map (which needs the map reader's skill to 'see' the landscape it represents);
- alterity relations, such as the feeling of a machine working against you, the machine being related to as if it is an animate 'other' (shouting at your computer for losing a file);
- background relations—things like lighting and heating which enable our lives but which we more-or-less take for granted (at least until there's a power cut or the boiler packs in).

Now, these relations can help us understand how something like the Internet works for ordinary users, how use genres develop. Ihde also discusses the dualism of amplification/reduction that new technologies bring: making some things easier, but also other things harder. New freedoms also bring new restrictions, and the ongoing negotiation of these has a bearing on the stabilization of use genres relative to both the immediate situation and the social-biographical situation of the user.

Now, to put some empirical flesh on this theorization, Bakardjieva decided to focus on the home, while also recognizing that home is not synonymous with everyday life. This focus represents a pragmatic move, to produce a manageable project that will still deliver on the big themes she is interested in. She understands the home as 'the place where objects from the exterior ... are taken in and used' (Bakardjieva 2005: 73), but remember that for her use is not simply consumption, it is a productive act. She is interested in 'home-spun genres of using a new technology' (ibid.). So she goes to the homes of her respondents, including their 'electronic homes' (the places they inhabit in cyberspace), talks to them about their uses of the Internet, about the mundane dailiness of using networked computers.

Phenomenology

Literally the study of phenomena, phenomenology is the philosophical or sociological study of things as they appear in our experience or consciousness, and it seeks to explore the essential features of experience and the essence of what we experience, through studying conscious experience through the first-person, subjective point of view—the experience of the 'lifeworld'.

At Home with (and on) the Internet

As already noted, Bakardjieva wanted to explore how users decided that it was time to get the Internet at home. She also wanted to know how the getting of the Internet at home was realized, and how networked computing was incorporated into the lifeworlds of her respondents. For some, getting a home computer was about work, either in terms of the need to work at home, or in terms of job hunting or reskilling for a new career. Others expressed a vaguer intention, based on the perceived 'need' to be online, to keep up with current trends. They got the Internet because that's what you have to have, in a kind of deterministic take of the inevitability of technological 'progress' and the fear of being left behind. As one of Bakardjieva's respondents said: 'If you don't have it, you feel like an outcast. You don't know what is really going on. If you don't have email, who are you?' A third group got hand-me-downs, computers passed on by friends or relatives, so they got to use the technology because they had been given it, rather than having a prior perceived need. As she notes, this last group often suffered from low-grade out-dated machines that were poor performers in terms of Internet use—there is a 'digital divide' of users, let alone between users and non-users, based on the spec of their machines and connections. A lower-tech Internet, one that doesn't require the latest models and programs to use it, thus becomes part of Bakardjieva's democratic rewiring programme.

In her discussions with users about the process of getting connected and learning to use the Internet, Bakardjieva discusses the widespread help provided by 'warm experts'. In place of the often foreboding expertise offered through official channels such as help lines, her respondents often turned to more tech-savvy friends and relatives to help them out. In turn, users sometimes became warm experts as they mastered their own use genres. So, away from formal tuition and assistance, ordinary users deploy and receive warm expertise based on stabilized use genres and based on experience. Hence unauthorized use genres are passed on, like ways of speaking, even as the overall 'system' of use is preset by programming and so on. Like the debates about approaches to programming and like children's use of computational objects in Turkle's work, here users are seen experientially working within the system, each walking their own route through the 'streets' of cyberspace. As Bakardjieva (2005: 103) concludes, 'the particular category of everyday users produces its own culture of understanding and application of the medium'.

The category 'everyday users' also produces different stories, different ways of talking about the Internet, and different *feelings*: some respondents felt strong connection to their computers, others much less so. For some the computer was 'just a machine', while others enjoyed the tussle between the machine and their skill at using it. Bakardjieva refracts this back through Ihde's four-fold typology of human-technology relations, bullet-pointed above, but dropping the background relations:

- embodiment relations—the computer is an unobtrusive mediator between the user and the world (no need to understand how it works);
- hermeneutic relations—a focus on how the computer allowed them to relate to the world (for example, by understanding programming);
- alterity relations—the computer is a 'quasi-other', to be challenged and mastered, but also there is a clear relationship between the computer and the user.

As users settle in to life with the Internet, so they may change their orientations, and their feelings, in part as they experience the amplifications and reductions that the Internet brings (for example, the amplification in the amount of information available versus the reduction of being unable to judge its 'quality' or veracity). Becoming an Internet user, then, can follow many different paths and draw on different use genres. It also means making space and time for the Internet in the patterning of everyday life.

Drawing on previous work on the incorporation of 'media machines' into the home—such as Lynn Spigel's (1992) work on television (see also O'Sullivan 2005)—Bakardjieva looks at the 'microprocesses' by which room is made at home for the Internet. Like Elaine Lally's (2002) rich empirical work on home computers and Bernadette Flynn's (2003) discussion of the computer games console as a new 'digital hearth', a focal point for domestic life, Bakardjieva's study explores the mundane domestic material culture of technology—the networked computer as an object that has to be found a place in the arrangement of domestic objects in the rooms of the home—and also the accommodation of Internet use into the routines of everyday life: which household member uses it when? What uses are privileged? What other activities has Internet use replaced, and which has it enhanced? Placement and use are, in fact, woven together in an intricate geography of home Internet use genres.

Bakardjieva found some homes with a 'wired basement', the Internet installed in the cellar or basement under the house, a space ambivalently coded, sometimes as a male 'den', other times like a utility room. She found in some homes a battle for prime locations between the computer and the television, while in others the computer belonged in the home office, marking it as a work tool. Sometimes a spare room was used—a phenomenon often remarked upon by my own students, who complain that once they leave the family home to go to university, their parents quickly install a computer in what used to be the student's bedroom, making it over as a study. Placement was in some cases dictated by presumed use: a computer for play belongs in a room set aside for leisure, such as a sitting room; a computer meant for work belongs in an office. Multi-use networked computers mix up this tidy domestic geography, but rules of use (work more important than play) nevertheless structured the shifting meaning of the multi-use machine in the homes Bakardjieva studied.

There's something more at work here, though—something that Bakardjieva doesn't dwell on. The computer at home means different things to different people: for some it is a sign of the encroachment of work into the home, for others a window onto new and exciting possibilities, for yet others a sorry symptom of 'couch-potato' addiction to games and surfing. These feelings also clearly structure placement and use schedules. A friend who lives in a one-bedroom flat hates the fact that his computer 'looks at him' even when he's trying to relax, and I too for a long time refused to have a computer at home, because of its inevitable tie to work (see Bell 2001). And then there's the issue of children and the Internet, which Bakardjieva's respondents discuss—the need to have the computer in communal space so as to monitor children's use, versus encouraging children to freely explore cyberspace and become proficient in the warm expertise of use (both strategies of what Bakardjieva labels 'Internet parenting'). Of course, as Internet parenting shows, one key issue in letting the Internet into the home is its mixing of public and private, given both positive and negative spins by respondents. Crucially, everything that Bakardjieva describes going on in the homes of her respondents reinforces her view of active, productive work taking place as users make room in their everyday lives for the Internet.

The discussion of the mixing-up of public and private leads Bakardjieva into the vexed area of debates around 'virtual community' (see also Bakardjieva 2003). Here she develops another typology of ordinary users, on a continuum from 'infosumers' who have an instrumental view of the Internet, to those seeking to build communities based on far more than pure instrumental exchange. She wisely refuses to get mired in the debates about virtual versus real communities (see Bell 2001), instead talking of forms of 'togetherness'. In between her two poles lies a 'gradient of immediacy', with a balance between rationality and sociality, or we might say between facts and chats.

As with other elements of her discussion, Bakardjieva sees individual users as mobile on this continuum, their location dependent on both their immediate situation and their social-biographical situation. It is also dependent on a gradient between public and private, and movement in both directions as users reflexively manage their desire for publicness and privacy in cyberspace. Only the kind of careful, detailed study of Internet use advocated and exemplified by Bakardjieva can highlight how use genres map onto ideas of public and private as users craft relationships and boundaries. This point thus underlines her conclusion that 'the standpoint of users proves to be a crucial vantage point towards the present and future of the Internet' (Bakardjieva 2005: 195), leading her to call for user-centred research practice and for the development of platforms amenable to the use genres invented by ordinary users. As her last words in *Internet Society* evocatively summarize: 'everything is still at stake' (ibid.: 198).

Summary

The three cyberculture theorists discussed here are all in some ways talking about different cyberspaces, and certainly different ways of understanding cyberspace and cyberculture, though there are common threads and echoes through their work. Benedikt, writing just ahead of the coming of cyberspace in the forms we know it today, flexed his architect's imagination to conjure the space of cyberspace as a Gibsonian cityscape, and he tied its current and future development to long histories of the evolution of World 3—the world of abstract thought. Half a decade later, Sherry Turkle is fully immersed in an actual cyberspace, the space of MUDs but also of computational toys, of AI and A-Life; suddenly, cyberspace is taking shape in ways both like and unlike those predicted earlier. Also taking shape are the uses (and users) of cyberspace. By the time Maria Bakardjieva was researching and writing, cyberspace and cyberculture were both well-established World 3 phenomena, and well-established transdisciplinary fields of academic enquiry. Each phase of the development sketched here, every moment in cyberculture, is marked by its own concerns, hopes and fears, and by its own theories and methods. The next two chapters show how broad a field cyberculture has now become, yet how it is still possible to detect common ideas and common purpose.



Discussion Questions and Recommended Reading/Viewing

Discussion Questions

1. Define "cyborg" and the "posthuman era." Why are these concepts compelling to cyberculture theorists? What are these thinkers trying to explore about the relationship between technology and humans, the boundaries of the human body, and the potential for a "feedback loop" between humans and their environment? Can you think of any contemporary digital technologies that provide such a feedback loop between you and your environment? (They don't have to be in the form of implants.)
2. Identify examples of cyborg or posthuman technology in science-fiction literature and film. What do these examples tell us about our hopes for and anxieties about the future of technology and humanity?
3. Define assemblage, as Tim Dant uses the term. In what "assemblages" do you participate? How closely linked do you feel to your technologies and devices?
4. What do you think about Sadie Plant's assertion that within the male-centered Enlightenment paradigm, women have always been seen as a sort of hybrid between female and machine?
5. Michael Benedikt, Sherry Turkle, and Maria Bakardjieva exemplify very different approaches to the study of cyberculture. Describe and discuss each. What are the benefits and limitations of each theoretical approach? How might they complement one another?

Recommended Reading

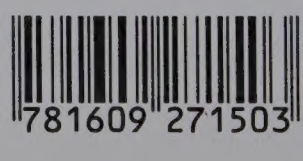
Critical Cyberculture Studies. Eds. David Silver and Adrienne Massanari. New York: NYU Press, 2006.

Hayles, Katherine N. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics.* Chicago: University of Chicago Press, 1999.

Recommended Viewing

Transcendental Man. Robert Barry Ptolemy. 2011. This biopic of inventor and visionary Ray Kurzweil is an excellent supplement to conversations about the Technological Singularity and posthumanism.

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