

ALSO BY MARGARET WERTHEIM

Pythagoras' Trousers

THE PEARLY GATES OF CYBERSPACE

A HISTORY OF SPACE

FROM DANTE TO

THE INTERNET

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by a new, and most unexpected, revolution. Beyond the bounds of hyperspace—unreachable by *any* number of extra dimensions—the digital universe of the Internet explodes into being with the irrepressible force of its own “big bang.” As we approach a new millennium the new spatial frontier is not hyperspace, but *cyberspace*.

CYBERSPACE

With the exponential force of its own big bang, cyberspace is exploding into being before our very eyes. Just as cosmologists tell us that the physical space of our universe burst into being out of nothing some fifteen billion years ago, so also the ontology of cyberspace is *ex nihilo*. We are witnessing here the birth of a new domain, a new space that simply did not exist before. The interconnected “space” of the global computer network is not expanding into any previously existing domain; we have here a digital version of Hubble’s cosmic expansion, a process of space creation.

Like physical space, this new “cyber” space is growing at an extraordinary rate, increasing its “volume” in an ever-widening “sphere” of expansion. Each day thousands of new nodes or “sites” are added to the Internet and other affiliated networks, and with each new node the total domain of cyberspace grows larger. What increases here is not volume in any strictly geometrical sense—yet it is a *kind* of volume. In cyberspace each site is connected to dozens, or even thousands, of others through software-defined “hot buttons.” These digital connections link sites together in a labyrinthian web that branches out in many “directions” at once. In describing cyberspace we might use the words “web” and “net,”

which classically are two-dimensional phenomena, but even the most neophyte surfer knows that cyberspace cannot be constrained by two axes. This new, enigmatic, space is the subject of our remaining three chapters.

Cyberspace is not just expanding, it is doing so exponentially. In this sense also its genesis parallels that of physical space. According to the latest theories of cosmology, before the smoothly expanding universe we see today there was an early phase of wildly excessive expansion that physicists refer to as the “inflationary” period. During this phase, space swelled from a microscopic point smaller than a proton to the size of a grapefruit in a fraction of a second. In this larval stage, the rudiments of large-scale cosmic structure were laid down, the body-plan, as it were, for the galactic web that constitutes our universe today.

Right now cyberspace is going through its own inflationary period. In the past fifteen years, the Internet has swelled from fewer than a thousand host computers to more than thirty-seven million—and growing by the day. Because each new node becomes in itself a hub from which further nodes might sprout, the greater the number of nodes the greater the possibility for even more expansion. In this seminal inflationary phase the large-scale structure of the cyber-domain is also being formed.

The exponential pattern of cyberspatial growth is evidenced by even a most cursory history. The dawn of cyber-creation—the first quantum flicker, as it were, of a new domain tunneling into being—can be traced to California in 1969. That year saw the formation of the world’s first long-distance computer network, the ARPANET, funded by the U.S. Department of Defense (DOD) through its Advanced Research Projects Agency (ARPA). In October 1969, technicians from the Boston-based firm Bolt Beranek and Newman linked together, via specially laid telephone lines, two computers hundreds of miles apart, one at UCLA, the other at the Stanford Research Institute. By the end of the year two

more nodes had been added to this nascent net—the University of California at Santa Barbara and the University of Utah—making a network of four sites.¹

By the next year, write computer historians Katie Hafner and Matthew Lyon, “the ARPA network was growing at a rate of about one node per month,”² and by August 1972 it contained twenty-nine nodes located in universities and research centers across the USA.³ In these early years, when maintaining a site cost more than \$100,000 per annum (with all the money coming from the DOD), growth was necessarily incremental.⁴ Indeed, by 1979, a decade after the first two sites were connected, there were still just sixty-one ARPANET sites.

The advantages of what was already being called “the Net” were, however, becoming evident, and more and more people—especially computer scientists—were calling for online access. But as a research project of the Defense Department, the ARPANET was not easily available to anyone outside ARPA’s direct circle. Clearly there was need for a civilian network as well. To that end, in 1980 the National Science Foundation decided to sponsor a network to connect the growing number of computer science departments around the country—the CSNET. Though separate, the two networks were interconnected so that members of each could communicate with one another. During the eighties, other networks also were connected to the ARPANET, creating a global network of networks. The growing desire to communicate *between* networks brought about the need for a standardized set of procedures that would enable all networks to pass information amongst themselves—what came to be called an “Internet Protocol.” From this originally technical term the “Internet” would get its name.

Still the Net remained a rarefied domain. In the early eighties few people outside the military and the academic field of computer science had any network access, and few Americans were even aware that “cyberspace” existed.⁵ The word itself was only

coined in 1984, in William Gibson's seminal cyberpunk novel, *Neuromancer*. In 1985, however, the expansion of cyberspace shifted into a higher gear. Following the success of CSNET, the National Science Foundation made the further decision to build a national "backbone" network to serve as the foundation for a series of regional networks linking universities around the country. Replacing the outdated ARPANET, this NSFNET was the basis of what soon became the Internet.

The creation of the NSFNET marks a turning point in the history of cyberspace: Here was the start of cyberspatial inflation. Since then the pace of growth has accelerated rapidly, outstripping the wildest imaginings of its creators. By late 1998, as I write, the World Wide Web (which is the most public component of the Internet) has over 300 million pages. So much volume is being added to the World Wide Web that major cataloging services such as Yahoo and AltaVista estimate their libraries have logged only 10 percent of the total. Inflationary growth on the Web is now so extreme that experts worry they will never be able to keep track of it all.

A hitherto nonexistent space, each year this new digital domain plays a greater role in more and more people's lives. Like many "netizens," I now have e-mail correspondents around the world. People with whom it would be difficult to communicate in the flesh are often readily available online, especially if they work in the academic arena. Almost all academic institutions, research centers, and major libraries in the United States now have Web sites. Through my computer I can access the catalog of the Library of Congress and that of UCLA, which is physically located just a mile from where I live. In the not-too-distant future, the texts themselves will also be online; as already is the content of many magazines and newspapers. Why buy the *New York Times* on paper when you can read it online for free? Moreover, in the new

publishing paradigm now emerging, many publishers eschew hard copy entirely and only publish online.

Businesses too are staking out a presence in cyberspace. Seemingly every corporation from IBM and Nike on down now sports a Web site packed with corporate PR and product information. Included in an increasing number of sites is also the ability to purchase online. Clothes, books, cosmetics, airline tickets, and computer equipment (to name just a few items) can now be bought over the Net. According to a recent Commerce Department report, ten million people in the United States and Canada had bought something online by the end of 1997. The report estimates that electronic commerce should reach \$300 billion by 2002. The virtual mall has arrived.

Whatever the vision of the Internet's founders, cyberspace has long since burst the husk of its academic seedpod. These days every second college kid in America has his or her own home page, spawning what must be the largest archive ever of the adolescent mind. A growing number of families are also "moving" into cyberspace, keeping loved ones posted online with digitized snapshots of their summer holidays. With the advent of automated Web site-authoring software, the family home page is destined to become as ubiquitous as the old photo album—and a lot more public.

Most prominently, cyberspace is a new place to socialize and play. Chat rooms, newsgroups, IRC channels, online conferences and forums, and the fantasy worlds known as MUDs—all seem to promise almost infinite scope for social interaction. Moreover, in cyberspace one can readily search for friends with similar interests. As online pioneer Howard Rheingold has written, while "you can't simply pick up a phone and ask to be connected with someone who wants to talk about Islamic art or California wine, or someone with a three-year-old daughter or a forty-year-old Hudson, you can,

however, join a computer conference on any of these topics.”⁶ The level of discussion in many public forums may well be highly variable, but serious *private* online discussion groups abound on a vast array of topics, from biblical exegesis to particle physics, from *The Divine Comedy* to the big bang.

As of mid 1998, there are one hundred million people accessing the Internet on a regular basis and it is estimated that in the next decade there will be close to a billion people online. With three hundred million pages already on the World Wide Web, it is currently growing by a million pages a day. In just over a quarter century, this space has sprung into being from nothing, making it surely the fastest-growing “territory” in history.

In a very profound sense, this new digital space is “beyond” the space that physics describes, for the cyber-realm is not made up of physical particles and forces, but of *bits* and *bytes*. These packets of data are the ontological foundation of cyberspace, the seeds from which the global phenomena “emerges.” It may be an obvious statement to say that cyberspace is not made up of physical particles and forces, but it is also a revolutionary one. Because cyberspace is not ontologically rooted in these physical phenomena, it is *not subject to the laws of physics*, and hence it is not bound by the limitations of those laws. In particular, this new space is not contained within physicists’ hyperspace complex. No matter how many dimensions hyperspace physicists add into their equations, cyberspace will remain “outside” them all. With cyberspace, we have discovered a “place” *beyond hyperspace*.

We should not underestimate the importance of this development. The electronic gates of the silicon chip have become, in a sense, a metaphysical gateway, for our modems transport us out of the reach of physicists’ equations into an entirely “other” realm. When I “go” into cyberspace I leave behind both Newton’s and Einstein’s laws. Here, neither mechanistic, or relativistic, or quantum laws apply. Traveling from Web site to Web site, my “mo-

tion” cannot be described by *any* dynamical equations. The arena in which I find myself online cannot be quantified by *any* physical metric; my journeys there cannot be measured by *any* physical ruler. The very concept of “space” takes on here a new, and as yet little understood, meaning, but one that is definitively beyond physicists’ ken.

Ironically, cyberspace is a technological by-product of physics. The silicon chips, the optic fibers, the liquid crystal display screens, the telecommunications satellites, even the electricity that powers the Internet are all by-products of this most mathematical science. Yet if cyberspace could not exist without physics, neither is it bound within the purely physicalist conception of the real. In the parlance of complexity theory, cyberspace is an *emergent phenomena*, something that is more than the sum of its parts. This new “global” phenomena *emerges* from the interaction of its myriad interconnected components, and is not reducible to the purely physical laws that govern the chips and fibers from which it indubitably springs.

All this may sound rather radical, and many cyberspace enthusiasts have suggested that nothing like cyberspace has existed before. But on the contrary there is an important historical parallel here with the spatial dualism of the Middle Ages. As we have seen, in that time Christians believed in a physical space described by science (what they called “natural philosophy”) and a non-physical space that existed “outside” the material domain. This nonphysical space metaphorically *paralleled* the material world, but it was not contained within physical space. Although there were connections and resonances between the two spaces, medieval spiritual space was a separate and unique part of reality from physical space.

So too the advent of cyberspace returns us to a *dualistic* theater of reality. Once again we find ourselves with a material realm described by science, and an immaterial realm that operates as a

different plane of the real. As with the medieval world picture, there are connections and resonances between these two spaces. Commentator N. Katherine Hayles has noted, for example, that one cannot experience cyberspace at all except through the physical senses of the body: the eyes that look at the computer screen or at the stereoscopic projections of virtual reality headsets, the hands that type the commands at the keyboard and control the joysticks, the ears that hear the Real Audio sound files. Yet while physical space and cyberspace are not entirely separate, neither is the latter *contained* within the former.

In some profound way, cyberspace is *another* place. Unleashed into the Internet, my "location" can no longer be fixed purely in physical space. Just "where" I am when I enter cyberspace is a question yet to be answered, but clearly my position cannot be pinned down to a mathematical location in Euclidian or relativistic space—not with any number of hyperspace extensions! As with the medievals, we in the technologically charged West on the eve of the twenty-first century increasingly contend with a two-phase reality.

But what does it mean to talk about this digital domain as a "space" at all? What kind of space is it? Some might object that the online arena is just a vast library—or less generously, a vast soup—of disconnected information and junk. And certainly there is a lot of junk online. Nonetheless, it is important to recognize the genuinely spatial nature of this domain. Whatever its *content* may be, a new *context* is coming into being here; a new "space" is evolving.

What is at issue, of course, is the meaning of the word "space" and what constitutes a legitimate instance of this phenomena. I contend that cyberspace is not only a legitimate instantiation of this phenomena but also a socially important one. In the "age of science" many of us have become so habituated to the idea of space as a purely physical thing that some may find it hard to accept cyberspace as a genuine "space." Yet Gibson's neolo-

gism is apposite, for it captures an essential truth about this new domain. When I "go into" cyberspace, my body remains at rest in my chair, but "I"—or at least some aspect of myself—am teleported into another arena which, while I am there, I am deeply aware has its own logic and geography. To be sure, this is a different sort of geography from anything I experience in the physical world, but one that is no less real for not being material. Let me stress this point: *Just because something is not material does not mean it is unreal*, as the oft-cited distinction between "cyberspace" and "real space" implies. Despite its lack of physicality, cyberspace is a real place. *I am there*—whatever this statement may ultimately turn out to mean.

Even in our profoundly physicalist age, we invoke the word "space" to describe far more than just the physical world. We talk about "personal space," and about having "room to move" in our relationships, as if there was some kind of relationship space. We use the terms "head space" and "mental space," and Lacanian psychoanalysts (following Freud) believe the mind itself has a spatial structure. Literary theorists discuss literary space and artists discuss pictorial space.

Contemporary scientists, for their part, now envisage a whole *range* of nonphysical spaces. Chemists designing new drugs talk about molecular space; biologists talk about evolutionary spaces of potential organisms; mathematicians study topological spaces, algebraic spaces, and metric spaces; chaos theorists studying phenomena such as the weather and insect plagues look at phase spaces, as indeed do physicists studying the motion of galaxies and the quantum behavior of atoms; and in a recent *Scientific American* article an epidemiological analysis of the spread of infectious diseases posited the idea of viral spaces. "Space" is a concept that has indeed come to have enormous application and resonance in the contemporary world.

Most obviously, the online domain is a *data space*. This was

the concept at the core of Gibson's original cyberpunk vision. In *Neuromancer* and its sequels, Gibson imagined that when his "console cowboys" donned their cyberspace helmets, they were projected by the power of computer-generated three-dimensional illusionism into a virtual data landscape. Here, the data resources of global corporations were represented as architectural structures. The data bank of the Mitsubishi Bank, for example, was a set of green cubes, that of the "Fission Authority" was a scarlet pyramid. As a nice example of life imitating art, Tim Berners-Lee, the inventor of the World Wide Web, has said that his goal when designing the Web was to implement a global data space that could be accessed and shared by researchers around the world. We are yet to realize the full VR splendor of Gibson's original vision, but the essential concept of a global data space is already manifest in the World Wide Web.

But cyberspace has become much more than just a data space, because as we have noted much of what goes on there is *not* information-oriented. As many commentators have stressed, the primary use of cyberspace is not for information-gathering but for social interaction and communication—and increasingly also for interactive entertainment, including the creation of a burgeoning number of online fantasy worlds in which people take on elaborate alter egos.

What I want to explore in this first cyberspace chapter are the ways in which this new digital domain functions as a space for complex mental experiences and games. In this sense, we may see cyberspace as a kind of electronic *res cogitans*, a new space for the playing out of some of those immaterial aspects of humanity that have been denied a home in the purely physicalist world picture. In short, there is a sense in which cyberspace has become a new realm for the mind. In particular it has become a new realm for the imagination; and even, as many cyber-enthusiasts now claim, a new realm for the "self." To quote MIT sociologist of cy-

berspace Sherry Turkle: "The Internet has become a significant social laboratory for experimenting with the constructions and reconstructions of self that characterize postmodern life."⁷ Just what it means to say that cyberspace is an arena of "self" is something we must examine closely, but the claim itself commands our attention.

The fact that we are in the process of creating a new immaterial space of being is of profound psychosocial significance. As we have been documenting in this book, any conception of "other" spaces being "beyond" physical space has been made extremely problematic by the modern scientific vision of reality. That problematizing is one of the primary pathologies of the modern West. Freud's attempt, with his science of *psychoanalysis*, to reinstate mind or "psyche" back into the realm of scientific discourse remains one of the most important intellectual developments of the past century. Yet Freud's science was distinctly individualistic. Each person who enters psychoanalysis (or any other form of psychotherapy), must work on his or her psyche individually. Therapy is a quintessentially lonely experience. In addition to this individualistic experience, many people also crave something communal—something that will link their minds to others. It is all well and good to work on one's own personal demons, but many people also seem to want a *collective mental arena*, a space they might share with other minds.

This widespread desire for some sort of collective mental arena is exhibited today in the burgeoning interest in psychic phenomena. In the United States psychic hot lines are flourishing, belief in an "astral plane" is widespread, and spirit channelling is on the rise. In the latter case, the posited collective realm transcends the boundary of death, uniting the living and dead in a grand brotherhood of the ether. Meanwhile, *The X-Files* offers us weekly promises of other realities beyond the material plane, and bookstores are filled with testimonials describing trips to an ethereal

realm of light and love that supposedly awaits us all after death. One of the great appeals of cyberspace is that it offers a *collective immaterial arena* not after death, but here and now on earth.

Nothing evinces cyberspace's potential as a collective psychic realm so much as the fantastic online worlds known as MUDs.⁸ Standing for "multiuser domains" or originally "multiuser Dungeons and Dragons," MUDs are complex fantasy worlds originally based on the role-playing board game Dungeons and Dragons that swept through American colleges and high schools in the late seventies. As suggested by the "Dungeons and Dragons" moniker, the original MUDs were medieval fantasies where players battled dragons and picked their way through mazes of dungeons in search of treasure and magical powers. Today MUDs have morphed into a huge range of virtual worlds far beyond the medieval milieu. There is TrekMUSE, a Star Trek MUD where MUDers (as players are called) can rise through the ranks of a virtual Starfleet to captain their own starship. There is DuneMUD based on Frank Herbert's science fiction series, and ToonMUD, a realm of cartoon characters. The Elysium is a lair of vampires, and FurryMuck a virtual wonderland populated by talking animals and man-beast hybrids such as *squirriloids* and *wolfoids*.

Like good novels, successful MUDs evoke the sense of a rich and believable world. The difference is that while the reader of a novel encounters a world fully formed by the writer, MUDers are actively involved in an ongoing process of world-making. To name is to create, and in MUD worlds the simple act of naming and describing is all it takes to generate a new alter ego or "cyber-self." MUDers create their online characters, or personae, with a short textual description and a name. "Johnny Manhattan," for instance, is described as "tall and thin, pale as string cheese, wearing a neighborhood hat"; Dalgren is "an intelligent mushroom that babbles inanely whenever you approach"; and Gentila, a "sleek red squirriloid, with soft downy fur and long lush tresses cascading

sensuously down her back." Within the ontology of these cyberworlds, you *are* the character you create. As one avid player puts it, here "you are who you pretend to be."⁹ Want to be a poetry-quoting turtle, a Klingon agent, or Donald Duck? In a MUD you can be.

MUDing is quintessentially a communal activity in which players become integrally woven into the fabric of a *virtual society*. Part of that process is the continuing evolution of the world itself. While the basic design of a MUD is determined by its programmer creators, generally known as "wizards" or "gods," in most MUDs players can construct their own rooms or domiciles. Using simple programming commands, MUDers "build" in software or, simply with a textual description, a private space to their own taste. Personal MUD rooms span the gamut from a book-lined tree house, to a padded cell, to the inside of a television set. In some MUDs players can also build larger structures. Citizens of the Cyberion City space station in the MicroMUSE, for example, have built for themselves a science center, a museum, a university, a planetarium, and a rain forest.

Above all, a MUD is sustained by the *characters* who populate it. To use William Gibson's famous phrase, a MUD is a paradigmatic instance of the "consensual hallucination" of cyberspace.¹⁰ Fantasy worlds (whether online or off) are always only as good as the imaginations holding them together, and in successful MUDs the other players are just as keen as you are to take your "squirriloid" nature seriously. As the Unicorn said to Alice on the other side of the looking glass: "If you'll believe in me, I'll believe in you." In successful MUDs everyone is striving for maximal conviction, both for their own character and for the world as a whole.

The interlocking imaginative and social mesh of a MUD means that actions taken by one player may affect the virtual lives of hundreds of others. As in the physical world, relationships build

up over time (not untypically over thousands of hours of online engagement); trusts are established, bonds created, responsibilities ensue. The very vitality and robustness of a MUD emerges from the collective will of the group, wherein the individual cyber-self becomes bound into a social matrix that is none the less real for being virtual. When, as in some combat-based MUDs, a character is killed, often there is a strong sense of loss for the actual human being who has spent hundreds of hours establishing the character. "Gutted" is the word players use; because as Richard Bartle, cocreator of the first MUD, explains, "it's about the only one that describes how awful it is."¹¹

What may at first appear little more than juvenile fantasies—talking animals, space cadets, and Toon-town—can, however, turn out to be surprisingly complex domains of psychosocial exploration. A MUDer friend of mine tells me that for her, MUDing is a way to express sides of herself that she feels are not sanctioned by the relentless "put on a happy face" optimism of contemporary can-do America. MUDing allows out a darker, but, she feels, a more "real" side of herself. For her MUDing is not so much a game as a way to explore and express important aspects of her "self," which (she feels) could not easily be exercised in flesh-and-blood society. Turkle, who has been studying MUD cultures since the early 1990s, notes that my friend's experience is not uncommon. As she writes, these fantasy environments may allow "people the chance to express multiple and often unexplored aspects of the self."¹²

One parallel here is with masks. As actors and shamans attest, masks are powerfully transformative objects. Hidden behind an ersatz face, a man can "become" a wind devil, a monkey spirit, or an ass. MUD descriptors are digital masks, fronts that may enable a range of psychological expression and action, which many people in modern societies may not have access to in their regular lives, or which they do not feel comfortable unleashing in the flesh.

"Part of me," says one of Turkle's MUDers, "a very important part of me, only exists inside PernMUD."¹³ In cyberspace, one may have any number of different virtual alter egos operating in a variety of different MUDs, literally *acting out* different cyber-selves in each fantasy domain. In *Computers as Theater* virtual reality researcher Brenda Laurel has indeed drawn a parallel between computer games and virtual worlds and the classical power of drama.¹⁴

Although this imaginative role-play is most pronounced in MUDs, it also takes place in online chat rooms, in USENET groups, and on IRC channels. In all these environments, netizens create digital alter egos—though not usually ones as fantastical as those found in MUDs. As a publicly accessible realm of psychological play, cyberspace is, I suggest, an important social tool. This digital domain provides a place where people around the globe can *collectively* create imaginative "other" worlds and experiences. Within these worlds you can not only express your *own* alter egos, you can participate in a group fantasy that has the richness of texture generated by many imaginations working together.

In this respect MUDs may in fact be seen as a variation on practices that occur in many cultures. In ancient Greek society, for example, drama was not merely entertainment, it also served as a vehicle for collective psychological catharsis. Moreover, in many cultures, drama includes the audience, who also become *participants* in whatever "alternative reality" is being enacted. Take, for example, the famous Passion play of Oberammergau in Germany. Every decade the entire town joins in a collective reenactment of Christ's final days; the event lasts for days and transforms the town along with its inhabitants. One way of looking at MUDs is as collective dramas, where again everyone in the community becomes a "player." Everyone gets a part and a costume—and as many lines as they want.

Even in our technological age, one does not have to resort to cyberspace to participate in collective role-playing "drama."

Dungeons and Dragons, on which MUDs were originally based, is itself a hugely successful role-playing game. Its endless spin-offs—which include medieval and mystery scenarios—provide plenty of nonelectronic opportunities for the creation of fantastical alter egos. So too do battle board games such as the World War I scenario Diplomacy. During the mid-eighties I was intensely involved for most of a year with a Diplomacy group as we battled it out for control of Europe, making and breaking alliances with one another. As Russia, I became obsessed with my part, and I can still remember the pangs that would accompany news of an ally's betrayal; simultaneous of course was the thrill of one's own devious success. For the final move of our yearlong battle, we all dressed in character and assembled for the denouement. Resplendent in a floor-length velvet crinoline and tiara, for that evening I was "The Tsarina."

Another kind of nonelectronic collective theater is provided by battle figurine games such as Warhammer, played by millions of men and boys the world over. Instead of becoming a single character, Warhammer players command armies of Wood Elves, Orks, and the like. The games are accompanied by elaborate manuals outlining the history, mythology, psychology, and fighting strategies of the various groups. In any discussion of contemporary collective drama one must also, of course, acknowledge Trekkies, many of whom engage as deeply and obsessively in the world of *Star Trek* as any MUDer. The universe of Kirk, Picard, and Janeway is as vital a "virtual world" as anything found online.

My favorite example of a nonelectronic dramatic alter ego is provided by Bruno Beloff, a computer analyst in Brighton, England. Beloff regularly paints his body like a zebra; then, stark naked except for this coat of black and white stage paint, takes his zebra-self out into public. The zebra's outings include walks along the Brighton Pier, paddles in the ocean, and even visits to the local pub. For Beloff, "being a zebra is a chance to be honest

about who I am, which is a fantastic release."¹⁵ Others find similar release in weekend visits to "pony clubs," where they spend their days trotting around in harnesses and their nights sleeping in stables on straw. Theoretically such options are open to us all, but in practice it is not so easy for zebras on the streets of Manhattan or in the suburbs of Peoria. Whenever Beloff's zebra-self is out and about his girlfriend must keep a careful watch for the police—public nakedness being technically illegal on the Brighton Pier.

Few people have the wherewithal, or courage, to follow Beloff's example—and many would not even want to—but for those who do, cyberspace provides a most useful service. Behind the protective screen of a computer, MUDs open up a space of psychosocial play to us all—to everyone, that is, who can afford a personal computer and a monthly Internet connect fee. Within the sheltered space of the FurryMuck, thousands of people from around the world abandon themselves to their own animal liberation, donning virtual hooves and wings, baring virtual tooth and claw, frolicking in bucolic virtual parks, and (well, they *are* being animals) enjoying liberal doses of virtual rutting. They can do so here without fear of arrest or the approbation of disapproving parents and friends. What is important is that cyberspace provides a publicly accessible and safe space for such imaginative play. It literally opens up a new *realm* for people to act out fantasies and try on alter egos in ways that many of us would not risk doing in the physical world. That development is to be welcomed, I believe—though, as we shall see, we must be careful not to get too carried away with optimism here.

The value of cyber-psychic role-play is perhaps most evident when considering more down-to-earth examples. Foremost here, and the one that has garnered most media attention, is cyber gender-bending. It is no surprise that most MUDers are young males, yet, says Shannon McRae, a MUD researcher and herself a MUD wizard, "a surprising number of these young men take the

opportunity to experience social interaction in a female body.”¹⁶ While it is all too easy to overstate the subversive power of such experiences, MUDs *can* create a social space in which the flux of gender is more fluid.

Such fluidity can have surprising consequences. Statistically speaking, a female character in a MUD will often turn out to be a man pretending to be a woman. For this reason actual physical women often find their characters harassed to prove they “really” are female. In an arena where females may “really” be males, men cruising for women will often end up partnering not with a woman, but with another man. Since it is not uncommon for such encounters to end in physical gratification—“sometimes with one hand on the keyset, sometimes with two”¹⁷—this virtual polymorphism suggests that MUD cultures can be more open than society at large. In MUDs, as in most online arenas, it is impossible to tell if your communicants are anything like the characters their textual descriptors suggest.

In the early days of cyberspace several cyber-neighborhoods were rocked by discoveries of men masquerading as women and using this facade as a lure to intimacy with “real” women. They took advantage of the fact that many women will talk intimately with another woman in a way they would not do so with a man. The famous case of “Joan,” on the CB channel of CompuServe, highlights how people can “change” gender online. In the mid-1980s, when Joan presented herself to the CompuServe community, she was, she said, a neuropsychologist in her late twenties who had been crippled, disfigured, and left mute by a drunken driver. Despite these appalling injuries, Joan was warm and witty, giving loving support to many in the community. People trusted her quickly, and women especially became intimate with her. Thus many found it shocking when Joan was unmasked as a New York psychiatrist who was not crippled, disfigured, mute, or even female. “Joan” was in fact Alex, a man “who had become obsessed

with his own experiments in being treated as a female and participating in female friendships.”¹⁸

Yet what so upset the CompuServe community in the mid 1980s has become routine a decade later. “To me there is no real body,” one MUDer told online researcher Mizuko Ito. Online, she continued, “it is how you describe yourself and how you act that makes up the ‘real you.’” For her, the “real life” gender of her MUD friends and sexual partners was of little interest. While we certainly must not let ourselves be blinded by false optimism here (the experience of gendered physical bodies *cannot* be completely overridden with a keyboard), nonetheless, there is something positive here. As McRae notes: if online, boys can play at being girls, and gays can play at being straight, and vice versa, then in cyberspace “‘straight’ or ‘queer,’ ‘male’ or ‘female’ become unreliable as markers of identity”¹⁹. The point is that since in cyberspace labels cannot be easily verified, their determining power is reduced. The concept of gender, while not wholly up for grabs, is at least partially decoupled from the rigid restrictions so often foisted on us by the form of our physical bodies. Here is a space that offers, even if only temporarily and in very truncated form, a chance to at least get a glimpse at other ways of being.

MUDs may also serve a genuinely therapeutic role. In her book *Life on the Screen* Turkle describes a number of people who have used MUD personae as proxies in their struggles with very real psychological problems. Robert, a college freshman whose life had been severely disrupted by an alcoholic father, turned to MUDing as an escape from the trauma and chaos of his life, at one point spending more than a hundred and twenty hours a week online, eating and even sleeping at his computer. But things took a more serious turn when he accepted administrative responsibilities in a new MUD that turned out to be the equivalent of a full-time job. Building and running a complex online world is a task requiring considerable administrative skills and through the ex-

perience of overseeing the MUD Robert gained a new sense of control in his life. Furthermore, he was able to use the MUD as a place to talk about his personal feelings in a constructive way, thereby facilitating better relationships outside the MUD. As he later told Turkle: "The computer is sort of practice to get into closer relationships with people in real life."²⁰

I am reminded here of a kind of therapy popular in the late seventies. Known as "psychodrama," patients would role-play various scenarios about their own and their family's lives. In child abuse therapy also, role-play is commonly used—often the children act out scenarios with dolls or other toys. Of course not all MUD experiences are positive. For some, the doors of digital perception open only to escapist delusion, and even addiction. "When you are putting in seventy or eighty hours a week on your fantasy character," says Howard Rheingold, "you don't have much time left for a healthy social life."²¹ Or for much of anything else.

What could be more pathetic than the declaration by one MUDer that "this is more real than my real life"?²² One friend of mine almost lost his long-term relationship when he became so obsessed with the online world of the LambdaMOO he was spending more time with his friends "there" than with his "real life" love. But in this sense, again, MUDs are not unique. All fantastical activities—be it playing Dungeons and Dragons, going to Trekkie conventions, snorting cocaine, or drinking alcohol—are open to abuse. Of course MUDs pose the additional problem that they are readily accessible twenty-four hours a day. As a "drug" they are a most convenient and very cheap option.

Throughout cyberspace—in MUDs and chat rooms, on USENET groups and IRC channels—netizens around the globe are engaging in psychosocial experimentation and play. On any day, at any time, thousands of people the world over are launching psychic test balloons into this new space of being. Many insist that their lives contain a dimension that is *not* physically reducible.

Embodied or not, "cyber-selves" are real, and the space of their action, though immaterial, is nonetheless a genuine part of reality.

This cyberspace-induced dualism can only intensify. As ever more communications media, businesses, newspapers, magazines, shopping malls, college courses, libraries, catalogs, databases, and games go online we will increasingly be forced to spend time in cyberspace—whether we want to or not. My godson, Lucien, is growing up with the Internet; he does not know a world without it. His generation (at least in the industrialized world) will hardly have a choice about whether to participate in this new space. One proleptic example: UCLA recently requested that every one of its undergraduate courses have an accompanying Web site. Whether driven by imperatives to cut costs, or by genuine desire to improve the learning environment, education is just one area that will increasingly move online. For Lucien and his friends, cyberspace will be an unavoidable parallel world that they will *have* to engage with.

Before we get too upset about this bifurcation of reality, it is well to remember that those of us born after the mid-fifties have *already* been living with a collective parallel world—the one on the other side of the television screen. We who grew up with *Bewitched*, *I Dream of Jeannie*, *Gilligan's Island*, and *Get Smart*—are we not already participating in a vast "consensual hallucination"? One that, as in *Bewitched*, is deeply imbued with magical qualities (see Figure 6.1). The collective drama of soap operas and sitcoms—be it the daytime fare of *Days of Our Lives* and *General Hospital*, or the nighttime fare of *Melrose Place* and *Seinfeld*—are these not "consensual hallucinations" which engage tens of millions of people around the world every day of the week? What is the cartoon town of Springfield in *The Simpsons* if not a genuine "virtual world"?

It is well to remember also that throughout human history all cultures have had parallel "other" worlds. For Christian medievals,



FIGURE 6.1. The “consensual hallucination” of television has already paved the way for the parallel world of cyberspace.

as we have seen, it was the world of the soul described by Dante. For the ancient Greeks it was the world of the Olympian gods and a host of other immaterial beings—the Fates, the Furies, et cetera. For the Aboriginal people of Australia it was the world of the Dreamtime spirits. And so on. I do not mean to imply here that the Greek gods or the Aboriginal Dreamtime spirits were nothing more substantial than television characters (quite the opposite is true), I only want to point out that a *multileveled reality* is something humans have been living with since the dawn of our species.

With the virtual world of television we in the late twentieth century have once again created another plane of reality, and thereby paved the way for the new dualism of cyberspace. Yet if this dualism between the physical and the virtual worlds is not something entirely new, for our children and their children it will be greatly magnified. As in the Middle Ages, they will increasingly *inhabit* a two-phase reality.

Entering upon this new age of cyber-dualism we may wish to look afresh at the dualism of the Middle Ages. Can we see ourselves reflected in that distant mirror? Though we must be careful not to fall for glib concordances, Barbara Tuchman’s study of the parallels between Dante’s century and our own is not without resonances for cyberspace.²³ Much like the cyber-domain today, the medieval afterlife served as a collective parallel world of the imagination.

As with MUDs, the medieval afterlife teemed with nonhuman, half-human, and suprahuman life. Think of Dante’s Minos, the demonic judge of Hell, or Geryon, that patchwork creature of man, mammal, and serpent who ferries Dante and Virgil down the chasm to the Malebolge. With his chimeric body and his brightly whorled fur he would be right at home in the FurryMuck. And just look at Hieronymus Bosch’s visions of Heaven and Hell. On a small canvas Bosch could conjure an entire virtual world populated by an imaginal cast that would be the envy of any MUD wizard. Moreover, like cyberspace, the medieval afterlife was a place where friends, and even love, might be found. As a guide, teacher, and protector in an often bewildering place, Virgil is surely the paradigmatic virtual friend. And what greater model for virtual love than that between Dante and Beatrice?

Whatever else it is, *The Divine Comedy* is also one of the most truly “fabulous” worlds ever conjured in text. On one level it is a *genuine* medieval MUD. The parallels between *The Divine Comedy* and computer-based virtual worlds have indeed been

noted by a number of scholars. According to Erik Davis, both “tend toward baroque complexity, contain magical or hyperdimensional operations, and frequently represent their abstractions spatially.”²⁴ As we have seen, *The Divine Comedy* is organized as a multileveled hierarchy: the nine circles of Hell, the nine cornices of Purgatory, and the nine spheres of Heaven. Dante’s journey is an ascent up this ladder. So also in many medieval and combat MUDs; players work their way up through multiple layers of expertise. Virtual ascent through a MUD brings one finally into the “transcendent” class of “wizard”—a cyber-equivalent of Dante’s heavenly elect?

Davis has pointed out that one of the very first computer-based virtual worlds, the game *Adventure*, also has resonances with Dante’s world. As the first computerized version of *Dungeons and Dragons*, *Adventure* directly inspired the development of the first MUDs. The *Adventure* player’s task, rather like Dante’s in the *Inferno*, was to negotiate his or her way through a hazardous underground maze of caves, and out to the light beyond. On the way, one would search for treasures and magical spells, solve puzzles, and kill trolls. Computer industry chronicler Stephen Levy has suggested that *Adventure* might also be seen as a metaphor for computing itself. During the game, players cracked the code of this virtual world in much the way that a hacker would crack the code of a computer operating system. Cracking hidden codes in virtual worlds is also a major theme in many cyber-fictions, notably Gibson’s *Neuromancer* and Neal Stephenson’s *Snow Crash*. So too, Dante scholars stress that the virtual world of *The Divine Comedy* is a complex puzzle of subtle hidden codes.

Cracking these codes, deciphering the multiform patterns both in Dante’s world and in the poem that describes it, has become a favorite task of Dante scholars, who comprise, in this sense, a kind of medievalist hacker intelligentsia. Over the last century they have uncovered scores of hidden patterns in Dante’s

prose and in his world. “These range from relatively accessible insights—[such as] the realization that like-numbered cantos in the *Inferno*, *Purgatorio* and *Paradiso* have important thematic ties—to truly abstruse discoveries about the positions of critical words or rhymes.”²⁵

Patterns have been found in the spatial arrangement of the three afterlife kingdoms, in the symmetrical arrangement of the dream sequences in Purgatory, in the number of lines in each canto, the distribution of longer and shorter cantos, and so on. Beneath the sublime poetics of *The Divine Comedy* lies a dazzling substructure of hidden codes. In recognition of Dante’s supreme skill as a code wizard, researchers at Lucent Technologies currently designing a revolutionary Net-based operating system have named their system “*Inferno*.” They are hoping that as cyberspace becomes the primary source of computing resources, *Inferno* will become the global standard operating system, usurping Microsoft’s DOS and Windows. Thus Bill Gates would, so to speak, be dethroned by Dante.

I have suggested that the new cyber-dualism is a development to be welcomed, yet we would do well to consider carefully what cyberspace does and does not enable. More so even than with most new technologies, there is an enormous amount of hype surrounding cyberspace. I have endorsed the view that cyberspace provides a new space for experimentation with various facets of selfhood, but some cyber-enthusiasts go much further. In *Life on the Screen*, Sherry Turkle proposes that in this postmodern age of cyberspace, the unity of the self is an old-fashioned fiction. According to Turkle, cyberspace provides the opportunity for splitting the self into a radical *multiplicity*.

In discussing the notion of multiple selves Turkle draws on the computer concept of “windows,” the software paradigm that enables a computer user to be working on several different kinds of files at once, each one (say a spreadsheet, a word processing doc-

ument, and a graphics file) constituting a separate “window.” “In the daily practice of many computer users,” Turkle tells us, “windows have become a powerful metaphor for thinking about the self as a multiple distributed system.” She then goes on, and I quote at length, for the passage, I think, is key. In cyberspace, Turkle says:

The self is no longer simply playing different roles in different settings at different times, something that a person experiences when, for example, she wakes up as a lover, makes breakfast as a mother, and drives to work as a lawyer. The life practice of windows is that of a decentered self that exists in many worlds and plays many roles at the same time. In traditional theater and in role-playing games that take place in physical space, one steps in and out of character; MUDs, in contrast, offer parallel identities, parallel lives. The experience of this parallelism encourages treating on-screen and off-screen lives with a surprising degree of equality. Experiences on the Internet extend the metaphor of windows—now real life itself [as one of her MUD subjects notes] can be “just one more window.”²⁶

It is certainly true in the late twentieth century that most of us must negotiate different roles in our daily lives. To that extent we are all multifaceted beings. But to suggest, as Turkle does, that cyberspace offers “parallel identities, parallel lives,” which are equal to our physical lives and identities is going too far. True multiple personalities, such as the famous case of “Sybil” are deeply traumatized people with major psychological dysfunction. To play at being a singing fish or the opposite sex can indeed be a positive experience, but to believe that these experiences are *equal* to life in the flesh is delusion. Elsewhere in her book, Turkle tells us that “some [MUDers] experience their lives as ‘cycling through’ between the real world and a series of virtual worlds.”²⁷ For some

players, apparently, these cyber-selves become so “real” they question the privileged position of the physical self. As one of her subjects puts it: “Why grant such superior status to the self that has the body when the selves that don’t have bodies are able to have different kinds of experiences?”²⁸

One answer is that “the self that has the body” *really* dies. If a cyber-self is killed, or even if a host computer crashes and a whole MUD world is obliterated (as happens on occasion), it can always be rebooted, or you can create a new character and start again. That may not be quite the same experience as with a previous character, but it is a far cry from heart-stopping physical death. Moreover, the self with the physical body *really* gets sick, it *really* feels pain, and crucially, it is bound into a social network of other physical selves whom it cannot simply shut out by logging off the system. People *do* sometimes walk away from their physical lives and disappear, but that is rare for precisely the reason that in the physical world we are *physically dependent* on one another for care and support. Social bonds established in cyberspace can be, and often are, deep and powerful, but these “parallel lives” are *not* equivalent to the lives we experience with our physical bodies.

What is perhaps more troubling about such claims, as philosopher Christine Wertheim has pointed out, is that the notion that we can totally *remake* our “selves” online obscures the very significant difficulties of achieving real psychological change.²⁹ The notion that we can radically *reinvent* ourselves in cyberspace and create whole “parallel identities” suggests that the very concept of selfhood is endlessly malleable and under our control. In Turkle’s vision, the self becomes a kind of infinitely flexible psychic plasticine. What such a vision belies is the enormous amount of psychological shaping and forming that is enacted on an individual by his or her upbringing, by his or her society, and by his or her genes. This shaping, much of which occurs when we are very young, cannot generally be overthrown or

reengineered except by an enormous amount of psychological hard work. While I believe wholeheartedly that each of us does have the power to change our “selves” profoundly, real self-transformation is extraordinarily difficult—which is why psychotherapy is usually such a long process.

Role-playing at being a squirriloid or a Klingon, whatever its genuine value, is simply not an identity-changing experience. “I”—that is, my “self”—can role-play any number of different personae online and off, but that does not mean I become fragmented. In every one of these situations I am still me, unless I become a true split personality like Sybil, in which case I am likely to be committed. Moreover there is the problem that if we come to really believe that sane people can be split personalities, then how are we going to apportion responsibility? If one of my “alters” commits murder, does that mean “I” am responsible? Who would go on trial? Surely our goal should not be to encourage the idea of self-fragmentation, but rather to learn to better contain paradoxes within the *one* self. Certainly there are parts of me that disagree with one another, but I consider it a sign of my growing maturity that I no longer seek total internal unity on every issue.

Life in the physical body—what MUDers so quaintly refer to as RL (i.e., real life)—is not the totality of *real life*. In our materialistic age, the inner life of mind *has* generally been accorded too secondary a place in our discourse about reality. But in rehabilitating “mind” back into our conception of the real it will not do to make the *opposite* mistake of denying the unique and irreplaceable role of the body. In a sense, all this is just another iteration of the age-old mind-body tension in Western culture. For the past several centuries the body has been decidedly to the fore in our thinking, which is hardly healthy; yet we ought also to be wary of letting the pendulum swing too far back in the other direction. Life in the flesh is *not* “just another window,” and we ought strongly to resist efforts to promote it as such.

As I see it, the value of cyberspace is not that it enables us to become multiple selves (a concept that seems pathological), but rather that it encourages a more fluid and expansive vision of the one self. Perhaps this is what Turkle means by a “decentered self”? The point is that if we allow (as I believe we must) that some part of my self “goes” into cyberspace when I log onto a MUD or onto the Net, then we must also acknowledge that some part of my self also “goes” into every letter I write. If you like, my self “leaks out” in the letters and stories that I write, and even in the phone conversations I have. If I carry on a long-term correspondence by the old-fashioned post (as I have been known to do), there is a sense in which the “I” of those letters is also an extension of me. It, too, becomes a kind of virtual alter ego. As Christine Wertheim puts it, even offline “I am extending myself all over the place.”

All this is not to deny that cyberspace provides a *new space* for such extensions of self—one that is, moreover, highly public. It is only to point out that the kinds of self-extensions that occur online also take place in our lives offline. To be sure, this is not generally in such dramatic forms as cyberspace allows, but these extensions or extrapolations of self are going on nonetheless.

One question that arises, then, is *where does the self end?* If the self “continues” into cyberspace, then as I say, it also “continues” through the post and over the phone. It becomes almost like a *fluid*, leaking out around us all the time and joining each of us into a vast ocean, or web, of relationships with other leaky selves. In this sense, cyberspace becomes a wonderful metaphor for highlighting and bringing to our attention this crucial aspect of our lives. As Wertheim points out, the Net makes *explicit* a process that is already going on around us all the time, but which we in the modern West too often tend to forget. By bringing into focus the fact that we are all bound into a web of interrelating and fluid selves, the Internet does us an invaluable service.

Another way of looking at this is to say that every one of us

“occupies” a “volume” of some kind of “self-space,” a space that “encompasses” us as profoundly as the physical space that modern science describes. This collective “self-space,” this communal ocean of leaky selves, binds us together as psychosocial beings. I am well aware that in this materialistic age, such an assertion will be greeted with derision in some quarters. Neuroscientists and philosophers such as Daniel Dennett and Paul and Patricia Churchland, who claim that the human mind can be fully explained in terms of materialistic neurological models, will no doubt scoff at any notion of “self-space.” But I suggest that something like this is precisely what we *experience* as thinking, emoting beings. Just such an idea is indeed encoded in many religious and mythological systems.

I do not mean to claim here that “self-space” exists *independently* of physical space, as something ontologically separate. Obviously, my “self” only exists because there is a physical body in which it is grounded. At the same time, “I” am not restricted purely to the space of that body. As Descartes recognized, there is a sense in which I am first and foremost an immaterial being. After three hundred years of physicalism, cyberspace helps to make explicit once more some of the *nonphysical* extensions of human beingness, suggesting again the inherent limitations of a strictly reductionist, materialist conception of reality. Again, it challenges us to look beyond physicalist dogma to a more complex and nuanced conception both of ourselves, and of the world around us.

CYBER SOUL-SPACE

Let us begin with the object of desire. It exists, it has existed for all of time, and will continue eternally. It has held the attention of all mystics and witches and hackers for all time. It is the Graal. The mythology of the Sangraal—the Holy Grail—is the archetype of the revealed illumination withdrawn. The revelation of the graal is always a personal and unique experience. . . . I know—because I have heard it countless times from many people across the world—that this moment of revelation is the common element in our experience as a community. The graal is our firm foundation.¹

This statement would probably seem at first glance an expression of religious faith. With its focus on the Holy Grail, surely the “community” referred to must be Christian. The clue that it is not is in the second sentence. What is the word “hackers” doing there? In fact this is not an extract from a Christian revival meeting but from the capstone speech to a conference of cyberspace