The Spirit of the Internet

Speculations
on the
Evolution of Global Consciousness

by

Lawrence “Lorenzo” Hagerty

eBook edition 2011

First published by Matrix Masters, Inc. July 2000

© 2000 Lawrence C. Hagerty. All Rights Reserved.

Book cover art, *The Awakening of the Noosphere*, by Steven Rooke. See “The Art of Steven Rooke” at the end of this book for a description of the process used to evolve the image on the cover.

Cover design by Future Graphx, Solana Beach, CA

Editors: Jon Hanna and Minot Tilson

Java™ technology is a trademark or registered trademark of Sun Microsystems, Inc. in the United States and other countries.

About the author: Go to: www.lorenzohagerty.com

First place award winner, The Virginia Festival of the Book

Ralph Abraham
(Dialogue with Terence McKenna on August 1, 1998 at Omega Institute, Rhinebeck, NY)

The World Wide Web is an expression in peculiar form, in a kind of a mechanical form, of the spiritual aspirations of ancient times. . . . The spiritual wisdom of the ages is materializing itself through the recruitment, unconsciously, of otherwise innocent and unconscious nerds, computer engineers, and hackers such as myself, recruiting them to a higher purpose and creating something of spiritual importance while everybody on the planet thinks it is other than what it is so that it wouldn't be attacked and destroyed by the backlash reflex of our civilization, of our species, which always tends to destroy advancing things.

Dedication

One gentle summer evening, in the woods of upstate New York, a butterfly took flight. The tiny breeze created by its wings was just enough to perturb the chaos in my mind, and out of that chaos, this little book was born. It only seems right therefore to dedicate this work to the two wings of that butterfly

Ralph Abraham
and
Terence McKenna

and, of course, to

Nicola Tesla
Master of Resonance

Conventions Used

To keep the narrative flowing smoothly, I have taken the liberty of moving explanations of technical jargon to the Glossary. Words that are defined in the Glossary are shown in **bold font** the first time they appear in the text. Although most eBook readiers have dictionaries incorporated into them, you may find it helpful to refer to the definitions in the Glossary for a better understanding of how I am using a particular technical term in this book. You will find a link to the Glossary in the Table of Contents.

Introduction

“The medium is the message.”
Marshall McLuhan

Whether you like it or not, the **Internet** is going to have a major impact on your life. It is a mistake to think you can avoid becoming entangled in its **World Wide Web**. Like the telephone, the automobile, and other revolutionary technologies that came before it, the Internet is already responsible for dramatic changes in the way many of us live. However, the changes being brought about by the Internet are orders of magnitude more significant, and are taking place much faster, than anything we have ever seen before.

Casual observers of the Internet phenomenon sometimes make the mistake of thinking it is nothing more than a new place to buy and sell merchandise, but it is much more than that. The Internet, or the Net as it is commonly called, is in fact the physical manifestation of the continuing evolution of human consciousness during an age of unprecedented growth in human/machine symbiosis.[1]

We already take for granted that much of our daily activity is governed by machines. We no longer even notice that many common activities, like selecting a seat on an airplane or buying groceries, are now controlled by computers and other electromechanical devices. Large numbers of machines already serve as the primary interfaces between us and our fellow human beings, and the telephone is not the only device to which I refer. Recently I witnessed the age-old ritual of someone greeting a long unseen friend, but I saw a machine transform this experience into something quite modern. It was in the Dallas/Fort Worth airport while waiting to board a plane that I noticed a woman and her young daughter awaiting the arrival of a friend. They were carrying helium-filled balloons, flowers, and a video camera. The camera was of the type whose

---

[1] The concept of the evolution of human consciousness is discussed in detail in the chapter titled “Conscious Evolution and the Evolution of Consciousness.”

viewfinder consisted of a miniature television-like screen that could be seen when holding it several inches in front of one's face.

As this young woman's friend came into view, there were the normal shouts of joy along with an exchange of hugs, but one thing was very different. The woman with the camera never stopped recording the scene. Her entire visual experience was confined to the images in the viewfinder and had little connection to the larger physical reality of her friend's arrival. Even as the woman and her friend embraced, she pointed the camera at her friend's daughter, all the while keeping her eyes on the camera's viewfinder. The greater part of this woman's *visual* impression of the experience was confined primarily to her camera's video screen. Therefore, when she replays the tape she will experience the audio and visual portions of this event in much the same way she did at the time. The sound and images from the video tape will faithfully reproduce her original experience. Had someone else been holding the video camera, a replay of the tape would provide the woman with a completely different point of view. Although her original experience was not totally controlled by a machine, her recall of that scene will be largely shaped by the machine she held in her hand at the time.

Our dependence on machines has increased so gradually that few people give any thought to how much we are already at their mercy. Perhaps you can remember the first time you encountered a machine that scanned bar codes on products in your local grocery store, but you may not have paid attention to the fact that these scanners now seem to be everywhere. High volume retail businesses simply cannot function without them. If all computer-based price scanners were taken out of operation for just one week, the economic effect on businesses would be catastrophic. It is time to face the fact that we are already extremely dependent upon our machines. Machines like price scanners and personal video cameras are among the millions of devices that can now exchange information with each other through this technology we call the Internet. As you will see, the Internet is much more than somewhere to go to exchange **email**, buy things, or **surf the Web**. The Internet has become the central nervous system of our planet's social and economic life and is the physical manifestation of a place called **cyberspace**.

One of the most basic human urges is to form bonds with others of our species. In prehistoric times it was the family fire that served as the

technology for bringing us together. By the end of the 20th century we had developed an entire galaxy of technologies to help us remain connected to our friends and families. Yet no technology before the Internet has had the power to literally transform the entire range of human experience. There is much more going on here than meets the average eye, and if you intend to be an active participant in the affairs of this new century you will be well served to pay very close attention to the evolution of this important communications medium.

Readers of this book need not have a deep understanding of Internet technology. In fact, a person who has not yet had an opportunity to use the Internet can still understand the concepts presented in this book, particularly if he or she first reads the "A Brief Explanation of How the Internet Works," which is included as an "Addendum." Readers with a technical background may also find the "Addendum" useful, particularly the subsection titled "Who is in Charge."

"Addendum" topics that are touched on in the body of this work include:

-email.

-Chat rooms.

-Newsgroups.

-Electronic mailing lists.

-Internet protocols.

-Types of networks.

-The difference between the Internet and the World Wide Web.

-Positive and negative connotations of the words "**hack**" and "**hacker**."

-How the Internet is regulated.

While one will not walk away from the "Addendum" with enough detailed information to become a certified network engineer, its purpose is to provide a basic understand of the workings of the Internet. In other words, you will know all you need to know about how it works in order to be able to navigate your way through cyberspace.

I wish to make it clear that this book is not an attempt to impose my own sense of spirituality onto the Internet. In fact, the circumstances surrounding the writing of this book are exactly the opposite, for it was the inherent spirituality of the Net that drew me into this story. As I once heard Ralph Abraham[2] say, "The Web is a spawning ground for spiritual wisdom . . . what if *that* is what it is there for?"

Originally, I intended to write a short essay about the spirit of camaraderie that was present in the Internet community before the World Wide Web was introduced. Before long, however, my notes took on a life of their own and it became obvious that there was much more to this story than I had originally planned to write. In essence, this book is about the ways in which unfettered access to virtually unlimited amounts of information is changing our world. The Information Age is now underway, and one of the major changes it promises is to free us from our previous reliance on those in power giving us access to accurate and uncensored information. Access to uncensored information is not a sure thing just because we now have the Internet. Those in power will not give up their control of information without a struggle, and that is one of the reasons the spirit of the Internet is calling out to you. As you will soon see, the cause of free speech on the Internet can use your help.

As the subtitle suggests, many of the ideas in this book are speculative, some people will say *highly* speculative. For example, the concept of an ephemeral sphere of mind encapsulating the Earth, as originally theorized by Teilhard de Chardin[3] in 1938, is not a mainstay in most established schools of thought. This is the subject of the chapter titled "The Internet and the Noosphere." Other ideas, such as the ones you

---

[2] Ralph Abraham is a writer, lecturer, and Professor of Mathematics at the University of California at Santa Cruz. He has been active on the research frontier of dynamics in mathematics since 1960, and in applications and experiments since 1973. He has been a consultant on chaos theory and its applications in numerous fields (medical physiology, ecology, mathematical economics, psychotherapy, *etc*.) and is an active editor for the technical journals *World Futures* and the *International Journal of Bifurcations and Chaos*.

[3] Teilhard de Chardin (1881–1955) was a Jesuit priest, paleontologist, and philosopher.

will encounter in the opening chapter concerning Virtual Reality and Inhabited Virtual Worlds, may *sound* speculative but are actually descriptions of activities that are now common in cyberspace. In the chapter titled “The Internet as a Chaotic Attractor” you will see how difficult it is to separate speculation and fact when one views our universe from the perspective of both new and ancient learning.

The main thread of this book concerns what is meant by the evolution of global consciousness. It would be convenient here to provide the reader with clear and concise definitions of “evolution” and “global consciousness.” As you will see, that is not an easy task. Until these concepts are more fully developed later in this book, when I use the word “evolution,” I intend the more general usage—namely, to grow or develop. There are instances, however, when “evolution” is used in the context of biological evolution. At such times this usage will be clearly indicated.

My meaning when I use the phrase “global consciousness” is not easy to explain in a few words. In the closing chapter, under the section titled “The Awakening of the Noosphere,” the full meaning of this phrase will become clear. Until then, what is meant by “global consciousness” is that it is a state in which one is as closely attuned to issues that affect *all* life on this planet as one is to one’s own personal affairs.

I would now like you to consider the phrase “the spirit of the Internet.” The word “spirit” has many connotations. It can mean an animating or vital principle that gives life to physical entities. Spirit can also imply a special frame of mind, a soul, a ghost, or a collective attitude such as school spirit. It is the purpose of this book to explore all aspects of the meaning of the word “spirit” as applied to the Net. My belief is that something of overwhelming spiritual importance is going on here. Something truly spiritual, or “of spirit,” has already captivated many of the most thoughtful members of the Internet community, and this spirit is now reaching out to you. So come with me on a journey through cyberspace where we will meet this exciting new spirit that has already captured so many minds.

Chapter 1: A Place Called Cyberspace

"There was something amazingly enticing about programming. You created your own universe and you were the master of it."
Vinton Cerf [1]

I can still remember how cool I thought I was in the late 1980s when I first connected my home computer to the Internet. I would often brag to my friends at work that I stayed up most of the night "jacked into the Matrix." Those were exciting times for computer professionals who were just beginning to gain entry into the mysterious world of networked computers. We now had access to seemingly unlimited amounts of information that could be found on thousands of computers all around the globe. As the song goes, " . . . those were the days, my friend." Back then the Net was a lot harder to navigate. To go from computer to computer one had to use what is known as a **command line interface**. In plain English, that means all interactions between a person and a remote computer take place by typing a long string of alphanumeric commands, pressing the ENTER key, and then reading a textual response sent back from a distant computer. There were no pretty pictures, no mouse, and no pointing and clicking. By today's standards, it was a boring and complicated way to access the Internet—all text and no graphics.

Then, in the early 1990s, the technology we call the World Wide Web was introduced. By January of 1993 there were over 50 Web server**s** online. Already, many of us were wondering where we would ever find the time to check out each new Web site that appeared, as this was in addition to the millions of files already available on the Internet. Few people realized at the time that the World Wide Web was about to change the Internet forever.[2] Within seven years there would be almost *five million*

---

[1] Vinton Cerf is sometimes called "the father of the Internet" because of his pioneering work with ARPANET, the forerunner of today's Internet and for his contributions to the development of TCP/IP, the Internet's basic communications protocol.

[2] In essence, the World Wide Web is "superimposed" on the Internet. The "Addendum" to this book describes this concept more fully.

Web servers providing a combined total of more than *one billion unique documents* **online**.[3] No longer was the Net to be the exclusive domain of us **geeks** (who, by the way, sometimes still get a thrill out of using the old command line interfaces). Text-based interfaces were out and **graphical user interfaces**, with their simple point-and-click metaphor, were in. Hundreds of millions of people flocked to the Web, and cyberspace experienced its first population explosion. The genie was out of the bottle.

What is Cyberspace?

In 1984, when William Gibson coined the word "cyberspace," he said, among other things, that it was a "consensual hallucination."[4] Since then, the concept of cyberspace has been defined in a multitude of ways, including:

> -Cyberspace is the total interconnectedness of human beings through computers and telecommunication without regard to physical geography.[5]
>
> -An artificial world formed by the display of data as an artificial three-dimensional space, which the user can manipulate and move through by issuing commands to the computer.[6]
>
> -A metaphor for describing the non-physical terrain created by computer systems. Online systems, for example, create a cyberspace within which people can communicate with one another (via email), do research, or simply window shop.[7]

---

[3] Source, Inktomi Corporation, www.inktomi.com/webmap.

[4] The complete quotation is: *Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts. . . . A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity.*

[5] Found at www.whatis.com/cyberspa.htm.

[6] Found at www.apnet.com/inscight/10131999/cybersp1.htm.

While these and dozens of other definitions of cyberspace all have some validity, there does not seem to be any agreed-upon, all-inclusive, concise definition of the word “cyberspace.” In fact, the concept of cyberspace itself appears to be constantly morphing between related but slightly dissimilar meanings.

In the preceding definitions, the one that I find least agreeable calls cyberspace a metaphor. Perhaps it is due to the fact that cyberspace is a non-physical reality that some see it as only a metaphor. However, to those who inhabit the online virtual worlds we will encounter later in this chapter, cyberspace is much more than a metaphor, it is a very real place. As you see, our attempt to describe cyberspace is already on thin ice; “How can a non-physical reality be called a *place*?” There is no simple answer to that question. I find it interesting, however, that whenever I ask someone if he or she thinks cyberspace is a “place,” almost everyone answers, “Yes.” When asked why they believe that to be so, a common answer is, “Because it *feels* like a place.”

My informal surveys also revealed some other common, but again very subjective, aspects of cyberspace. For example, people seldom have a sense of feeling alone when they are in cyberspace. Even when not using an interactive environment, such as a **chat room**, people often report a sense of being in the midst of a large crowd in some public space. Many have reported that this large, invisible crowd of strangers feels like a *friendly* group. Perhaps this is because the majority of people in cyberspace are there voluntarily. Although I am not willing to go along with Gibson’s definition of cyberspace being a “consensual hallucination,” I do find it to be a *consensual* place.

Another approach to defining cyberspace is to look at it from the bottom up, beginning with its substrate—the minds, computers, and networks that support it. If we consider the human mind, we see that the brain is the physical substrate that supports the ethereal mind. The substrate that supports cyberspace is different. It has both physical and mental components, for it consists of computers, networks, *and* human minds. What has evolved out of this substrate is cyberspace. Perhaps we

---

[7] Found at www.webopedia.com/Internet_and_Online_Services/cyberspace.html.

would be better served using the word “cybermind” instead of cyberspace, but that too can be misleading, as we will see in the next chapter.

Today, the word “cyberspace” has largely come to represent a synergistic collection of concepts about where one’s mind *is* when involved in mental activities that are leveraged by technology. In essence, being in cyberspace is comparable to an out-of-body experience that has been activated by some form of technology. Bruce Sterling captured this idea best when he wrote:

> Cyberspace is the “place” where a telephone conversation appears to occur. Not inside your actual phone, the plastic device on your desk. Not inside the other person’s phone, in some other city. The place between the phones. The indefinite place out there, where the two of you, human beings, actually meet and communicate.[8]

It is in this sense that the word “cyberspace” is used in this book. It is the limitless place one’s mind finds itself in when applying technology to communicate with or to receive information from others. Therefore, your mind is *in* cyberspace when composing **email** or designing a Web site. As Mark Pesce says, “Imagination in the context of the Internet is known simply—and powerfully—as cyberspace.”[9] As used in the context of this book, it is not necessary for one to be actually sitting in front of a computer, which is connected to the Internet, in order to be in cyberspace. Minds can actually be projected into a cyberspace-like place simply by thinking about an email received earlier, or by working out a design for a Web site while driving to work.[10] It is the location of one’s *mind* that determines whether or not one is *in* cyberspace. A mind that is in cyberspace is a mind that is altered from its normal, walking around state.

---

[8] Bruce Sterling’s *The Hacker Crackdown* (Bantam Books, 1993).

[9] Mark Pesce is a leader in the development of Virtual Reality computing.

[10] An argument can be made that the original “low tech” way people entered cyberspace was by reading books. It is not uncommon to hear someone say their mind was “lost” in a good book. What the high tech of the Internet adds is the opportunity to interact with other minds while “in” cyberspace and reading/discussing, online, the same book.

This may not resonate with everyone who reads it, but it is what I mean when I speak of being *in cyberspace*.

This definition implies that cyberspace is not a material realm. No part of your physical being ever can be *in* cyberspace. Only your nonmaterial essence, your mind, or mind/*spirit*, can enter cyberspace. Therefore, by definition, cyberspace is a place of spirit, a spiritual place. This does not mean, of course, that cyberspace is always reverent. Cyberspace is a reflection of who we *really* are—for in cyberspace our minds are more willing to explore new ideas, taste forbidden delights, and meet some very interesting people.

Virtual Communities

The topic of virtual communities is so broad that it would take an encyclopedia to even begin to scratch the surface.[11] Ultimately, the emergence of virtual communities, gatherings without geographical boundaries, may be the single most important outgrowth of the Internet. For the first time in human history, people from around the globe are organizing into actual communities through the use of email, chat rooms, mailing lists, newsgroups, Web sites, and combinations of these and other technologies. Some have even begun to colonize cyberspace by building the Inhabited Virtual Worlds that are discussed later in this chapter.

There do not appear to be any areas of human activity in which online communities have not formed. For example, senior citizens have formed online communities whose interests may focus on a particular geographic area, finances, politics, health, spirituality, and other issues as they relate to their age group. Communities have formed around hobbies, favorite vacation spots, raising children, and a seemingly endless array of other broadly defined and narrowly circumscribed topics of interest. What is more, most people consider themselves to be members of more than one online community, each one representing a different facet of one's personality and interests.

---

[11] See Howard Rheingold's *The Virtual Community* (Addison Wesley, 1993) for an excellent overview of this topic.

The importance of these newly evolving collections of consciousness cannot be overestimated, for they just may be the best hope yet for our species to come to an understanding of the fact that we are all directly connected to one another. When a school child in Palestine joins an online gaming community he or she immediately begins to interact with others, young and old, who share a similar interest. It may be that this interest is initially focused on some shoot-em-up action game, but it is not uncommon for this involvement to lead to direct interactions with other gamers outside of the environment of the game that first drew them together. Gradually, these interactions lead to a discussion of real world events, and often this leads to a greater tolerance for ideas that are not a part of the culture in which one lives.

A Global Culture

Is it possible that the Internet has become the cornerstone of what will one day become this planet's first truly global culture? If we are to consider the word "culture," unadorned by our emotional attachment to what it implies on a personal level, it seems that the answer to this question is a resounding "Yes!"

The dictionary defines "culture" as:

-Development of the intellect through education and training; or

-The arts, beliefs, customs, institutions and all other products of human work and thought created by a people or group at a particular time.

Whenever I hear the word "culture" my mind first springs to France and its high culture of art and music and poetry. Some people believe that anything which falls short of a strict adherence to the formal structures of high culture does not even deserve to be called culture. While the beauty of high culture is widely accepted, it seems to me a very restrictive environment in which a creative mind must live. And, quite frankly, those people who remain set in their belief that only one form or another of artistic expression is worthy of being considered cultural are going to be left behind as human consciousness continues to expand into the new millennium.

Taken in a broad sense, it appears that a truly global culture has begun to blossom forth on our planet. Using the Internet as its seedbed, this new culture is changing our societies more rapidly than anything we have experienced before. The rate at which the technology of the Internet is being adopted by such a large number of people throughout the world is entirely without precedent. In fact, political debate has already begun in several countries as to whether a person actually has a *right* to use the Internet. We are entering new territory here, one that presents a grave threat to the established order, those who preserve our cultures.

Of course, transformations like these raise some important questions. Just what is this new global culture that is evolving? What does it represent? What is its shape? How is this evolution/revolution taking place? Is this an elitist culture, or will persons in less technically developed countries also be able participate? How are these revolutionary developments going to affect you? These are some of the questions that will occupy us for the remainder of this book.

Taking the "Virtual" out of Virtual Reality

"Well they outlawed LSD. It'll be interesting to see what they do with this."
Jerry Garcia From "Being in Nothingness"
by **John Perry Barlow** (1990)

Webopedia defines Virtual Reality as:

> *An artificial environment created with computer hardware and software and presented to the user in such a way that it appears and feels like a real environment. To enter a Virtual Reality, a user dons special gloves, earphones, and goggles, all of which receive their input from the computer system. In this way, at least three of the five senses are controlled by the computer. In addition to feeding sensory input to the user, the devices also monitor the user's actions. The goggles, for example, track how the eyes move and respond accordingly by sending new video input.*[12]

[12] Found at http://webopedia.internet.com/TERM/v/virtual_reality.html.

It is difficult to decide where to begin a discussion about Virtual Reality, or VR. Although constricted by the technology supporting it, VR actually has no *natural* limits. There is no absolute beginning, end, top, or bottom to Virtual Reality. The fact of the matter is that VR is as unlimited as the imaginations of those who are building these new virtual universes, and from what I have seen, the virtual worlds now coming to life on the Internet are being created by people with astounding imaginations indeed.

My personal experience with VR is quite limited. The majority of my career involving the Internet has been devoted to working on its infrastructure, security, and e-commerce capabilities. Naturally, I played around with VR from time to time but, like many of my peers, I left it to the kids. We all knew that the field of Virtual Reality is where the real action will eventually take place, but we were waiting for the technology to mature a little more before investing our time and money on it. After meeting some pioneers in the field of Virtual Reality, however, my opinion about waiting on the sidelines until the technology is perfected has changed dramatically. It is now clear to me that, while the World Wide Web is simply a linked, two-dimensional, document base, Virtual Reality is about direct person-to-person interactions in three-dimensional cyberspace. This is some of the technology our species has begun using to actually *populate* cyberspace.

In early autumn of 1999, I attended a conference at which two of the presenters spoke about their work in Virtual Reality. Mark Pesce, co-developer of **VRML,** described ways in which our species is already being transformed by ideas brought back by some of the early colonizers of virtual spaces. One of the projects of which he spoke was T-Vision, or Terravision, which has already made a profound impact on all who have used it. In a paper delivered at an earlier conference, here is what Pesce had to say about this amazing project:

> In T-Vision, the participant is immersed within the body of the Earth; using a novel “Earthtracker” interface, the system delivers a realistic [video] approximation of the planet, from almost any point of view, in a continuously refining series of quasi-live images. T-Vision is a networked system whose nodes gather up data and then share it with other T-Vision nodes. Each additional node adds detail to the system; each node consists of itself and all others.

> T-Vision delights and enraptures participants in a seductive materiality; the immediacy of the ultimate interconnectedness of all life is self-evident rather than metaphysical. Spreading out from the proximal, the self finally comes to encompass a body greater than its own, the Gaian biota as a whole.[13]

Another speaker at the conference I attended was Bruce Damer, a leader in **avatar** research and development. Bruce is also a co-founder of the Contact Consortium, a global forum for the development in cyberspace of Inhabited Virtual Worlds.[14] During the week of the conference, Bruce, along with dozens of his friends who were in remote locations, labored to construct a virtual counterpart of our conference in cyberspace. At the end of the week, Bruce gave his presentation jointly to those of us who were physically with him at the conference and to those who were also with us in cyberspace.

Personally, I don't like the phrase "Virtual Reality." That term suggests that there is a more real reality elsewhere, and that in some way VR is only an imitation of what we so casually refer to as reality. The fact is there is no such thing as one, single, absolute reality that each and every human being shares. For example, those of us who live in the United States share a consensual reality we call the Interstate Highway System. We know that freeways exist because we drive on them. On this very same planet, however, there are people who have never seen an automobile, much less a freeway. For these people there is no independent and absolute reality of an Interstate Highway System. Even if they have heard of such things, technological artifacts like modern highways exist for many people only as fantastic flights of fancy.

One could argue, of course, that freeways are truly an objective fact of reality, and that if members of an aboriginal tribe spent a month in Los Angeles their absolute reality would then include many of the things U.S. citizens assume to be absolutely real. What then of the reality of the aborigines? Are we willing to agree that their reality, which bears little resemblance to our own world view, is also concretely objective and real? If we are to force our freeways into an aboriginal world view of absolute

---

[13] From a paper found at www.telefonica.es/fat/epesce.html.

[14] Information about the Contact Consortium may be found at www.ccon.org.

reality, it seems only fair that we then agree the aboriginal world view also encompasses many absolutes. We are all members of the same species. What right does one tribe have to declare that theirs is the only real world view? Unless we are willing to integrate every existing human world view into our own (an impossibility, due to numerous contradictions), we cannot say that there is a single form of overreaching and absolute reality for our entire species. The reality of what we mistakenly call primitive cultures is every bit as well-grounded as that of modern physicists, with their tales of charmed quarks and other exotic particles that we cannot see with our own eyes.[15]

Reality, as experienced by individual members of the human species, is not absolute. Rather, what we so loosely call reality is better called consensual reality. Our reality is what we, as a particular tribe, agree to. It is our consensual reality—our world view. As you peel back the layers of consensual reality, searching for some bedrock of commonality among all people, what do you find? The only absolute measures of consensual reality I can find that reach across all cultures are the three dimensions of up/down, left/right, and forward/backward. Even the fourth dimension, time, which most of the world has accepted as an absolute, is not universally accepted in all human cultures. Some native cultures view time as open for travel in both the forward and backward directions. Western civilizations, however, usually agree that it is not possible to go backward in time. Thus, I call the four-dimensional reality of the West "closed reality" as opposed to the open reality of those who have a more malleable view of time. For the rest of this chapter, therefore, I will use the phrase "closed reality" to refer to the consensus reality where one of the four basic dimensions, time, is limited to moving only in one direction.

Unlike the case of closed reality, virtual universes created in cyberspace can establish their own laws of nature. Therefore, not only can one defy gravity and fly in VR space, one can also be instantly teleported to another part of the world or into a completely different universe, with no concerns for the restrictions of time. In essence, Virtual Reality is such an unlimited form of reality that after you spend some time there, you will wonder why anyone would want to live in the time-constricted space we

[15] See the chapter titled "The Internet as a Chaotic Attractor" for a discussion of the "reality" of nuclear physics.

call consensual reality. As Mark Pesce says, “At the furthest corners of the imaginal, our ability to simulate rapidly approaches believability, as if, soon we’ll cross a threshold between what is real and what we believe to be real, never again sure of the difference.”[16]

Pure VR is a consensual reality that has no limitations in any of its dimensions if that is what the creator of a particular VR universe decides. Thus, Virtual Reality is actually unlimited reality. Of course, as virtual worlds are constructed in cyberspace, their citizens gradually evolve their own rules of nature, imposing whatever limitations are necessary to fulfill their visions within the mundane restrictions of computer speed and **bandwidth**. The fact remains, however, Virtual Reality is a mind-space that is no more virtual than any other form of reality in a quantum mechanical universe.

I once heard a motivational speaker say, “Wherever you are, *be* there.” What he was pointing out is that sometimes our minds are not in the same place as our bodies. Such is the case when, after a taxing day at work, some people cannot get their minds to focus on what is happening at home. Their bodies are at home, but their minds are still at work. The beauty of a Virtual Reality experience is that *be*-ing there is much more easily attained than when engaged in the physical world. Flying through a VR world is a pure mental and emotional experience, a pure spirit experience. There is a smooth, fast, continuous flow about it that causes creative sparks to fly, which sometimes results in seeing the physical world through completely different eyes. After having now spent some time in various VR worlds, I understand what Bruce Damer means when he says that “Virtual Reality is going to be *the* fundamental communications medium of the 21st century.” I also agree with Bruce’s view that VR is going to have a far greater impact on this century than any other form of communication media. Through the use of this powerful technology our species has the means to truly immerse itself in the future and see where various paths may lead us.

As another Virtual Reality pioneer, Galen Brandt, says about the depth of a VR experience, “What happens to your *image* happens to *you*,

---

[16] Mark Pesce’s *Ontos and Techne: Incorporations and the Noosphere*, found at www.hyperreal.org/~mpesce/d2k.html.

because in Virtual Reality we become both art and artist."[17] This is not mere rhetoric; it is serious science. For example, the American Cancer Society has funded research aimed at discovering ways in which Virtual Reality technology can be used to help cancer patients better tolerate the side effects of chemotherapy.[18] In her soon-to-be published book, *Virtual Healing*, Galen Brandt provides other examples of how this technology is already being used to improve people's lives:[19]

> -Children with autism who can't deal with the complexities of the real world can be placed in a deliberately simplified VR and learn to use a fork or cross the street safely for the very first time in their lives.
>
> -Adults so crippled with Parkinson's disease that they can barely walk can use "augmented reality" glasses, which let them see regularly spaced visual cues in the form of little black cubes, and suddenly they can walk again.
>
> -Quadriplegic children wired to a Virtual Reality biocontroller can move a happy face cursor across a computer screen, just by moving their eyes.
>
> -An agoraphobic crosses a virtual bridge, then the real Golden Gate Bridge for the first time.
>
> -A doctor in Boston performs a colonoscopy in Bosnia.
>
> -A woman in a wheelchair plays tag in space.
>
> -A musician uses her nervous system to make music . . . and then *becomes* music.

As Galen has told audiences for several years now, "These are miracles of virtual healing . . . and they are real today." It is a known

---

[17] Galen Brandt is a writer, speaker, musician, performer, and a leader in the field of Virtual Healing.

[18] See www.cwru.edu/pubs/cnews/1999/12-2/vrtherapy.htm.

[19] Publishing information regarding *Virtual Healing* will be posted on the Matrix Masters Web site when it becomes available; examples here are from personal correspondence with the author.

scientific fact that changes in a person's consciousness can be directly linked to changes in one's brain chemistry. Your thoughts actually cause chemical reactions, which in turn can have a deep impact on your emotional state. There are rumors that research is now underway on using Virtual Reality as an anti-depressant—a digital drug. When Galen says the woman in the wheelchair was healed after playing tag in a virtual environment, she is not saying that the woman's body was miraculously restored to full health. Rather, by using Virtual Reality to send her body positive chemical messages, she was able to emotionally experience a new sense of self. As Galen says:

> *Consciousness creates the body. To give yourself a new message is to become that message, down to your neurons. In beholding ourselves as healed, virtual selves—in becoming our self-visualizations—we become the selves of our deepest and most healing dreams. Belief becomes biology; the technological, the transformational. This is nothing less than a revolution in medical practice.*[20]

It is in people's *minds* that the healing begins. It is only there that our most deeply held self-image can change. Consciousness can truly transform the self, and regaining a positive image of oneself can do wonders in forging the attitude required to overcome the obstacles that life might throw in one's path.

Virtual Worlds

"We are still in an early stage of world making."
Henry Ford

"It's not just about new media. There is something bigger going on."
Bruce Damer
Interview for *New Media Magazine* (2000)

In parallel with the development of Virtual Reality we see the first *colonizations* of cyberspace taking place in what are called Inhabited

[20] From Galen Brandt's *Virtual Reality as Healing Art* (a panel discussion, SIGGRAPH 98).

Virtual Worlds, or IVWs. As we discuss Inhabited Virtual Worlds, it is important to know that to participate in the community of an IVW does *not require* the use of any of the devices being developed for Virtual Reality. While the use of VR equipment, such as headphones, goggles, tactile feedback devices, *etc*., can enhance the experience of being in an Inhabited Virtual World, the majority of people who are now inhabiting such worlds use the same hardware most of us use to browse a Web page. That is one of the reasons IVWs are so popular today. If you can surf, you can colonize.

What it means to colonize an Inhabited Virtual World is that one becomes a regular or semi-regular member of an online community that is constructing a virtual world made out of graphical objects that give the appearance of a three-dimensional space on a two-dimensional computer screen. In many IVWs, one does not even have to participate in the building of the world to become a member of the community. It does not require deep computer programming skills to help build these worlds. Many of them have tools available that make the construction of a cyberhouse, for example, something a novice can easily learn to accomplish. The primary difference between an Inhabited Virtual World and a chat room is that conversations in an IVW take place face-to-face with the participants being represented by avatars in a space that appears three-dimensional.

For some, particularly those who have experienced *geographic* colonization first hand, the word colonize may carry some negative baggage. The dictionary informs us that to colonize means to “establish a colony in a country or area.” A colony is defined as “a group of settlers in a new country (whether or not already inhabited) fully or partly subject to the mother country.” I suspect it is the reference to a mother country that carries the negative emotional weight of the word “colonize.” It is hoped that these negative aspects of colonize can be left behind as you ponder what it means to colonize an Inhabited Virtual World.

Actually, my hope is that there will never be anything *but* colonies in cyberspace. The alternative is to see both big companies and nations, large and small, attempt to put fences around parts of cyberspace just as they have on land, sea, and in our air space. (In subsequent chapters, this issue and others involving the freedom of cyberspace will be discussed more fully.) To colonize, in the context of cyberspace, therefore, is meant

to imply a positive activity, one that is to be encouraged on as large a scale as possible. Today, we have all been given a charter to colonize as much of cyberspace as we care to maintain. It does not take the assent of any nation-state to give you permission to become a colonizer. You may do this on your own or in union with other minds, no matter where they may be geographically situated.

One morning, as my wife and I were walking along a sidewalk in a small town on the Island of Hawaii, we saw a group of teenagers looking out to sea through a gap in the buildings that lined the street. Seeing them made me wonder if these young minds were dispirited by the fact that all of the land on their island was already owned, and is very expensive. What hope did these young people have to ever own a substantial piece of real estate, I wondered. Then I remembered Bruce Damer's presentation at the conference we were attending. Suddenly, the enchantment of Inhabited Virtual Worlds became crystal clear to me. The young men and women I saw staring at the ocean may very well have been projecting their minds into cyberspace at that moment. Perhaps their whispered conversation was about the new world they were building together. The possibilities of IVWs instantly blossomed before us as we began to see the promising future these young people can create if they have unlimited access to the Internet. (In later chapters we will discuss the issue of Internet access for the less advantaged members of our species.)

This is not meant to imply that Inhabited Virtual Worlds are only for people under 20 years of age. The age of one's body is of no importance in cyberspace. What is important is the age of one's mind. By that I mean, to fully enjoy an IVW it helps if you still have that youthful sense of adventure, exploration, and endless possibility you had when you were young in body. I can think of no more therapeutic activity for senior citizens than to spend some time online every day in an Inhabited Virtual World. I would bet that if a controlled study were conducted to test the mental acuity of senior citizens who actively participate in IVWs, it would find these people to be at the top of their age group.

In addition to virtual human communities, there are other kinds of virtual worlds to be found in cyberspace. I refer here to digital worlds that are inhabited by the non-biological life forms known as artificial life, cyberbiology, or ALife. Formerly the stuff of science fiction, ALife is already on its way to becoming an integral feature of nature.

While grammarians may not be able to get past the seemingly oxymoronic phrase “artificial life,” some of the researchers laying the foundations for this field no longer have a problem in conceiving of their creations as a new form of life. The debate, of course, centers on one’s definition of what is meant by life.

The most elementary form of life we know of on this planet is the cell. In technical terms, a living cell is a dissipative structure that is not in a state of equilibrium. To remain alive, both matter and energy must continuously flow through it. An interesting case of a cohesive structure that is in such a state of nonequilibrium is the Great Red Spot on the planet Jupiter. As Stuart Kauffman[21] explains, it is possible to argue that this big storm is actually alive:

> The Great Red Spot vortex, essentially a storm system, has been present for at least several centuries. Thus the lifetime of the Great Red Spot is far longer than the average time any single gas molecule has lingered within it. It is a stable organization of matter and energy through which both matter and energy flow. The similarity to a human organism, whose molecular constituents change many times during a lifetime, is intriguing. One can have a remarkably complex discussion about whether the Great Red Spot might be considered to be living—and if not, why not.[22]

Similar discussions abound about cyberbiology—digital life.[23] One of the more impressive ALife research projects is Tom Ray’s “Tierra,” a large scale computer environment in which digital life has been evolving

---

[21] Stuart Kauffman is a leading thinker on self-organization and the science of complexity as applied to biology. He was Professor of Biochemistry and Biophysics at the School of Medicine, University of Pennsylvania, and External Professor at the Santa Fe Institute. Professor Kauffman was awarded a John D. and Catherine T. MacArthur Fellowship in 1987.

[22] Stuart Kauffman’s *At Home in the Universe*, pp. 20–21 (Oxford University Press, 1995).

[23] The Digital Biology Project is dedicated to creating biologically inspired cyberspace. Their Web site, www.biota.org, provides a wealth of information about this topic.

for over ten years.[24] The basic premise of Tierra is that life, which on Earth is the result of evolution operating in the medium of organic chemistry, need not be restricted to carbon chemistry or to only the planet Earth. The medium used to support the life of Tierra is digital computation.

Snippets of **computer code** are used to simulate organisms. These little pieces of software can mutate through random changes in one or more **bits**, or recombine with others by exchanging segments of code.[25] The operating system, in this case a **virtual computer**, provides a Darwinian-like environment in which this code runs—thus these strings of ones and zeros can actually evolve. Over time, natural selection improves the genetically more robust code and eliminates weak code. Also over time, a true ecology has evolved in the network of computers supporting the Tierra project.

> This system results in the production of synthetic organisms based on a computer metaphor of organic life in which **CPU** time is the "energy" resource and memory is the "material" resource. Memory is organized into informational patterns that exploit CPU time for self-replication. Mutation generates new forms, and evolution proceeds by natural selection as different genotypes compete for CPU time and memory space.
>
> Diverse ecological communities have emerged. These digital communities have been used to experimentally examine ecological and evolutionary processes: *e.g.*, competitive exclusion and coexistence, host/parasite density dependent population regulation, the effect of parasites in enhancing community diversity, evolutionary arms race, punctuated equilibrium, and the role of chance and historical factors in evolution. This evolution in a bottle may prove to be a valuable tool for the study of evolution and ecology.[26]

---

[24] The Tierra Web site may be found at www.hip.atr.co.jp/~ray/tierra/.

[25] See "The Art of Steven Rooke" on page 156 for a brief description of how a computer can use genetic algorithms to simulate life.

[26] Found at www.hip.atr.co.jp/~ray/tierra/whatis.html.

It has been over ten years since the Tierra project first began. During that period, CPU time on hundreds of interconnected computers has been made available for the evolution of Tierra. Unlike the pace of Earthly evolution, digital life forms in Tierra are evolving millions of times faster than is possible in carbon-based biology. As these forms of ALife evolve, they are seen to migrate from one computer to another, sometimes moving their offspring with them. Eventually parasites emerged and began consuming their hosts, which in turn developed strategies to fend off these digital viruses. The implications of this research are quite profound when one considers that what we are seeing here is the evolution of pure information, which could quite possibly lead to a Cambrian-like explosion of artificial life once a sufficient number of computers are connected to the Tierra network.[27]

Other than the intellectual pleasure that projects like this provide, there are some very practical applications for virtual worlds populated by digital life. For example, here is Bruce Damer's idea of a way to build an asteroid killer once we have also developed nanotechnology devices that can build things one atom at a time:

> That creature could have evolved the equivalent of a hundred million years in a cyberspace world. The world would be capable of modeling what asteroids are like and what the hard vacuum of space is like and solar flux and all that. Then you could attach your nano-spinner to the virtual space and actually make some of them out of atoms. And make sure they don't eat the earth, but allow them to evolve.
>
> Then you jam your little creature factory on to the surface of a big local asteroid and put a receiver on it and send the creatures to it, and then suddenly you've got an uncounted number of creatures out in the solar system that are going to create environments that they need to live in. Because we are never going to expand off the earth with our current stuff. Space ships have to be alive and have to repair their own bodies. Virtual worlds and cyberspace may be key for life's next step, and the key may necessitate the most

[27] During the Cambrian period, about 550 million years ago, almost all of the major phyla found in the Earth's biosphere first came into being. Only the vertebrates arose somewhat later.

> dangerous imaginable tools and the most powerful imaginable tools that apes have ever made.
>
> So, it's all like a big metaphor for what's already happened over billions of years, only this time, it'll take maybe a couple years? The virtual world plays precisely into how we've evolved.[28]

After billions of years of organic evolution on Earth, both ALife and human consciousness are beginning to colonize cyberspace. Of course, many people cannot accept the possibility that artificial life has the potential of evolving into a living form. Yet it should not be difficult to see that even if ALife never achieves parity with biological life, this new technology promises to have a significant impact on the future of our species.[29]

Cyberspace and You

The next time you find yourself watching a television program, perhaps you might want to reconsider what the popular press has been saying about the isolation the Internet allegedly is bringing about. While you are sitting in front of your TV, ask yourself how *connected* you feel to the millions of others who are watching the same program at the same time. Then, turn off your television, log on to the Internet, teleport into an Inhabited Virtual World and see if you don't feel much more connected to other intelligent members of our species than you do when you are just *watching* television. (Some even experience this elevated feeling of connectivity when they are merely thinking about cyberspace.)

There is an unlimited number of virtual worlds and virtual communities that can be established in the densely populated islands of information that are to be found in the infinity of cyberspace. Perhaps the time has arrived for you to add your spirit to this growing chorus of human awareness as it extends beyond the barriers of our biology. As you will see in the next chapter, there are some intriguing and very compelling reasons

---

[28] An interview with Bruce Damer by Russ Spencer, found at www.digitalspace.com/papers/interviewruss.html.

[29] For more information about artificial life, see the Web site of The Digital Biology Project at www.biota.org/org/vision.html.

you may want to begin exploring life in the Inhabited Virtual Worlds located in deep cyberspace. By deep cyberspace, I mean that almost hypnotic state of mind that is sometimes experienced after spending a long period of time in an Inhabited Virtual World.

I call this “deep cyberspace” because after leaving there and re-entering everyday consensus reality, it sometimes takes hours, or even days, to “come back down.” Once a mind is in deep cyberspace, it is no easy matter to extract it and return to the restrictions of biological existence.

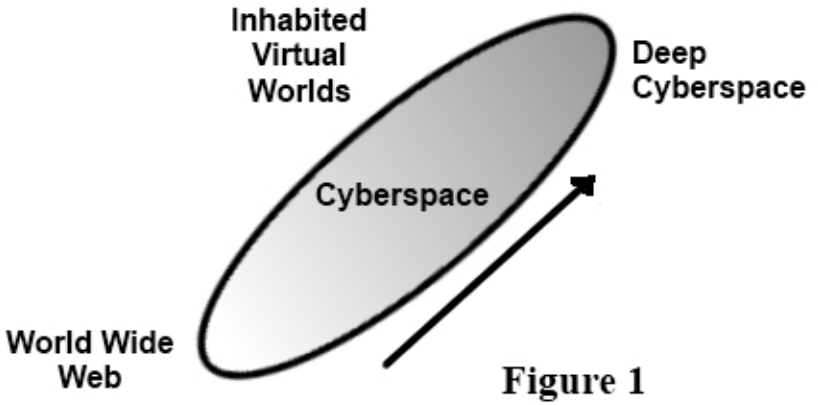

Figure 1
Conceptual view of deep cyberspace

It is in deep cyberspace where we see the islands of information becoming larger and consciousness becoming more dense. These islands in cyberspace consist of the interactions between consciousness, information, billions of virtual objects, and artificial forms of life, and are being sustained by the most complex technological artifact ever built on Earth. It is difficult to imagine what the Internet will be like a few decades from now, when *just one* densely populated Inhabited Virtual Universe, itself composed of a galaxy of Inhabited Virtual Worlds, becomes the equivalent of a *single page* on today’s World Wide Web! Which brings us full circle to William Gibson’s original definition of “cyberspace:”

Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts. . . . A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity.[30]

Unthinkable complexity!

[30] William Gibson's *Neuromancer* (Ace Books, 1984).

Chapter 2: The Internet and the Noosphere

"The shaman seers of the Fourth World generally agree that those who tenaciously cling to the past will fall into mass insanity. The serpent power of the Aquarian Age is upon us. The Kundalini of Gaia is about to awaken. No one can avoid being affected. Most human beings may go out of their minds; others will go beyond mind."
John Hogue[1]

In 1938, a Jesuit priest wrote a book in which he postulated the existence of "a sphere of thought" enveloping the Earth.[2] This book, *The Phenomenon of Man*, wasn't published until the late 1950s, after its author, Teilhard de Chardin, had died. In it, he called this enveloping sphere of thought the **noosphere** and described it as "a living tissue of consciousness" enclosing the Earth and growing ever more dense. For several years after the book's first English publication in 1959, Teilhard's concept of a thinking membrane surrounding our planet provoked significant controversy in both religious and academic circles. Like many revolutionary ideas, however, the concept of a noosphere was eventually passed over by most mainstream thinkers and largely forgotten. Imagine my surprise then when I discovered that I wasn't the only one who remembered Teilhard's work and had begun thinking about the Internet in terms of the noosphere.

Teilhard believed that because of the spherical shape of the Earth, ideas will eventually encounter other ideas resulting in a cultural convergence of thought. This, he believed, would eventually lead to a single, self-developing framework of pure mind. Teilhard used the term "noosphere" (possibly first coined by Vladimir Vernadsky[3]) to represent a

---

[1] John Hogue is an author and self-described "rogue scholar."

[2] Albert Hofmann's first syntheses of LSD also took place in 1938, although his famous bicycle ride did not take place until 1943. Interestingly, it wasn't until the 1960s that both Teilhard's book and Hofmann's discovery entered mainstream consciousness.

[3] Vladimir Vernadsky (1863–1945), a Russian scientist, was instrumental in establishing the field of biogeochemistry.

sphere of mind encircling the Earth. As he saw it, the noosphere encased what we call the biosphere, or sphere of life. Within this framework, Teilhard saw the ongoing evolution of the human species manifesting itself as changes and advances in mind more than in body. In other words, human evolution would henceforth take place mainly in the noosphere.

As Sir Julian Huxley explained in his introduction to the first English translation of *The Phenomenon of Man*:

> [Teilhard was] deeply concerned with establishing a global unification of human awareness as a necessary prerequisite for any real future progress of mankind.

Huxley goes on to say,

> In Père Teilhard's view, the increase of human numbers *combined with the improvement of human communications* has fused all the parts of the noosphere together. . . . But when it is confined to spreading out over the surface of a sphere, idea will encounter idea, and the result will be *an organized web of thought*, a noetic system operating high tension, *a piece of evolutionary machinery* capable of generating high psychosocial energy.[4] [Emphasis added]

This is a perfect description of what is taking place on the World Wide Web. Huxley and Teilhard would be amazed and delighted if they were alive today.

Many people involved with the Internet and who are familiar with *The Phenomenon of Man* accept as fact that the Internet and the noosphere are interrelated in some way. If you are new to this concept, however, you most likely have a few questions, such as:

-What is the noosphere?

-Is the Internet the mechanical infrastructure of the noosphere?

-Is "noosphere" another name for "**Gaian mind**?"

-If they are not one-and-the-same, how do they relate to one another?

---

[4] Julian Huxley's "Introduction" to Teilhard de Chardin's *The Phenomenon of Man*, p. 17 (New York: Harper & Row, 1959).

In the following discussion, it is important to keep one essential fact foremost in your mind: the Internet is *not* the noosphere. An Internet connection is not required, for all of humanity is already an integral part of the noosphere. This statement will become clear in the following pages as we explore the deeply woven interconnections of the mechanical Internet and the ethereal species-consciousness we call the noosphere.

What is the Noosphere?

In *The Phenomenon of Man*, Teilhard de Chardin observed that, from a historical point of view, the "stuff" of this universe is becoming ever more complex, that information is becoming ever more concentrated. He further observed that, at least in this corner of the cosmos, human beings are the most complex of all known forms found in nature. From an evolutionary standpoint, he also saw that changes taking place in the human species are occurring in the domain of mind at a much faster rate than changes seem to appear in our biology.[5] For example, many users of cigarettes understand that their smoking habit is unhealthy, yet their biological make-up continues to crave the nicotine, which brings with it all of the carcinogens found in cigarette smoke.

According to the Big Bang Theory, our universe is becoming ever more complex as it continues to cool. From an initial point of intensely concentrated and homogeneous matter, we see the formation and evolution of stars, galaxies, and planets as the primordial ball of plasma expanded, cooled, and formed structures of ever-increasing complexity. In the case of our own planet, we also see the development of biological life with its even more complex forms of matter. These organic structures are actually containers of sorts—densely packed with information. The more information an object carries in a given volume, the more complex it is. A strand of DNA is not only smaller than a grain of sand, it is also

[5] As our understanding and use of genetic-altering technology improves, perhaps our species' biological changes will take place at a much faster rate as well. Of course, technology such as this is going to require even greater and more rapid advances in consciousness if we are to remain in control of our creations.

considerably more complex because it contains more information than the silicon in the grain of sand.

The densest collection of complex information we know of thus far is the human being, and *human activity* gives rise to even greater complexity. If Teilhard is correct in asserting that reflective consciousness is "the specific effect of organized complexity," it follows that some sort of intensification of human consciousness is at least possible within the laws of biological evolution. If consciousness does expand as complexity increases, how will this expansion or intensification of mind become manifest? Will the noosphere, this "envelope of thinking substance," as Teilhard called it, one day become so complex and full of information that it evolves into a higher form of consciousness in its own right? Perhaps. What Teilhard foretold was an *awakening* of the noosphere as the result of:

-An overall increase in knowledge, and

-The increasing psychosocial pressure on the surface of the planet due to the explosion in human population.

In other words, a massive amount of information is building up within the relatively small confines of the planet Earth. This, Teilhard believed, will result in the blossoming of the noosphere into some form of super-consciousness, once the amount of information it contains reaches a critical density.

To illustrate this phenomenon, Teilhard suggested we consider our current understanding of the atom. It goes without saying that no one person could have possibly developed the complete body of knowledge we now have about the atom. He further suggests that this is not a mere accretion of information, but rather a synthesis of information that erects "as though it were a vault above our heads, a domain of interwoven consciousness." Nuclear physicists and mathematicians are not the only ones who are a part of this interwoven consciousness; also included is every child, woman, and man on the planet who has *any* knowledge of the atom. Awareness of the smallest tidbit of information about the atom is all that is required for the mind containing that awareness to become joined in the noospheric web of thoughts about particle physics.

Just as **hypertext** documents on the World Wide Web are interconnected, information in the noosphere may be conceived to be structured as webs of thought. Seemingly unrelated information becomes interconnected when two or more of these webs of information intersect in individual minds. The moment our species attains the ability to tap into the *complete* body of human-created information at will is the point at which Teilhard hypothesizes the collective consciousness of the noosphere becomes an aware entity of some sort in its own right. As he says:

> . . . and the noosphere tends to constitute a single closed system in which each element sees, feels, desires and suffers for itself the same things as all the others at the same time.
>
> We are faced with a harmonised [*sic*] collectivity of consciousness equivalent to a sort of super-consciousness. The idea is that of the earth not only becoming covered by myriads of grains of thought, but becoming enclosed in a single thinking envelope so as to form, functionally, no more than a single vast grain of thought on the sidereal scale, the plurality of individual reflections grouping themselves together and reinforcing one another in the act of a single unanimous reflection.[6]

In other words, it is the moment in time when the entire human species acquires super-psychic abilities. Speculation as to what this may mean and how it might come about is the subject of following chapters.

It isn't just in the sciences where these webs of thought are forming. For those of us fortunate enough to travel throughout the world, it is clear that the interchange of customs and ideas is taking place more frequently than at any other time. Discerning world travelers can see a beautiful tapestry of global awareness being woven through the interactions of diverse cultures. Exchanges ranging from the casual—like a London taxi driver telling a Japanese passenger about a recent Australian vacation—to the more complex—as with business meetings hosted by multi-national corporations—continue to make new connections in our psychic web, the noosphere. These connections are now being made at an ever-increasing rate, thanks to the Internet.

---

[6] Teilhard de Chardin's *The Phenomenon of Man*, p. 251 (New York: Harper & Row, 1959).

Another way to think of the noosphere is to see it as Sir Julian Huxley did, "the union of the whole human species into a simple inter-thinking group based on a single self-developing framework of thought." This, in Teilhard's view, is nothing less than a collective human organism. It may take a giant leap of faith for some readers to "consider inter-thinking humanity as a new type of organism whose destiny it is to realize new possibilities for evolving life on this planet,"[7] as Huxley suggests in his introduction to *The Phenomenon of Man*. However, if we can believe without personally seeing it demonstrated, that a nanoassembler can actually build things one atom at a time, or if we can believe that humans now have the ability to alter the structure of specific genes, is it that much more difficult to accept the existence of the noosphere?

Is the Internet the Mechanical Infrastructure of the Noosphere?

Like many of my colleagues, I view the Internet and the noosphere as inseparable, yet not the same. More precisely, I see the Internet playing the role that Teilhard termed "the mechanical apparatus" of the noosphere. The following is from a paper he wrote in 1947:

> To an increasing extent every machine comes into being as a function of every other machine; and, again to an increasing extent, all the machines on earth, taken together, tend to form a single, vast, organized mechanism. Necessarily following the inflexive tendency of the zoological phyla, the mechanical phyla in their turn curve inward in the case of man, thus accelerating and multiplying their own growth *and forming a single gigantic network girdling the earth*. And the basis, the inventive core of this vast apparatus, what is it if not the thinking-centre of the noosphere?[8] [Emphasis added]

---

[7] Chardin, *Phenomenon*, p. 20.

[8] Teilhard de Chardin's "The Formation of the Noosphere," *Revue des Questions Scientifiques* (Louvian), pp. 7–35, January 1947, found in Teilhard de Chardin's *The Future of Man*, pp. 165–166 (New York: Harper & Row, 1964).

Today you can purchase and rent cars that have satellite navigation systems which monitor the auto's movements. This information is transmitted over a communications network to companies that provide emergency roadside assistance. Thus, today's cars are actually connected to communications networks. In turn, some of these automobile monitoring networks are managed as **Virtual Private Networks**, otherwise known as VPNs, which use **tunneling** technology with the Internet for their **backbone**. It is now clear that the automobile is on its way to becoming a small part of a much larger machine that uses the Internet for its nervous system. This is only one example of where we are headed. Soon we will see many of our everyday household appliances and other devices Internet-enabled. Your pager will be synchronized with your daily activity planner so it automatically shifts to quiet mode during times you are scheduled to be in meetings. Your refrigerator will be connected to its manufacturer's service network through which it will be routinely checked for worn-out parts. Within a few years, there will be millions of people around the globe who will be immersed in the continuous computer environments now being designed for the "personal electronic companions" that are about to enter the market.[9] All of these examples point to the fact that we seem to be building a single, complexly interconnected, global-sized machine of some sort.

What then is the relationship of this immense machine to the noosphere? In Teilhard's words:

> When ***Homo faber*** came into being the first rudimentary tool was born as an appendage of the human body. Today the tool has been transformed into a mechanized envelope (coherent within itself and immensely varied) appertaining to all mankind. From being somatic it has become 'noospheric.' And just as the individual at the outset was enabled by the tool to preserve and develop his first, elemental psychic potentialities, so today the noosphere, disgorging the machine from its innermost organic recesses, is capable of, and in process of, developing a brain of its own.[10]

Can you see how the Internet has been "disgorged," or come out of, "the innermost organic recesses" of the noosphere? What are the

[9] See page 129 for a description of these new devices.

[10] Chardin, "The Formation," p. 166.

innermost organic resources of the noosphere if not humankind? Is it not we humans who are building the Internet? Could it be that the Internet is the noosphere's "brain of its own" he refers to? Teilhard goes on to say:

> But in addition to its protective role, how can we fail to see the machine as playing a constructive part in the creation of a truly collective consciousness? It is not merely a matter of the machine which liberates, relieving both individual and collective thought of the trammels which hinder its progress, but also of the machine which creates, *helping to assemble, and to concentrate in the form of an ever more deeply penetrating organism, all the reflective elements upon earth*.[11] [Emphasis added]

By "reflective elements" Teilhard means individual human beings. In other words, he sees the *mechanical infrastructure* of the noosphere as "helping to assemble, and to concentrate" the collective consciousness of the human species. Again, keep in mind that the Internet is *not* the noosphere. It is merely an infrastructure that is now available for the noosphere *to use*. Teilhard continues his speculations about the form this mechanical infrastructure might take:

> I am thinking, of course, in the first place of the extraordinary network of radio and television communications which, perhaps anticipating the direct inter-communication of brains through the mysterious power of telepathy, already link us all in a sort of 'etherized' universal consciousness.
>
> But I am also thinking of the insidious growth of those astonishing electronic computers . . . [12]
>
> If, as Teilhard theorized:
>
> -There is an envelope of thinking substance surrounding the Earth, and
>
> -This thinking substance requires a mechanical infrastructure to support the universal impulse toward increasing complexity, then

---

[11] Chardin, "The Formation," p. 167.

[12] Chardin, "The Formation," p. 167.

-The mechanical framework for this sphere of thought, the noosphere, just may be the ever-evolving Internet.

Does this mean that there is a parallel between our association of brain/mind and the association of Internet/noosphere? If we commonly understand the brain/mind combination to compose an individual human being, then what can we say about the Internet/noosphere combination? What kind of "being" will this combination give rise to?

Is "Noosphere" Another Name for "Gaian Mind?"

In late 1969, British scientist James Lovelock and American microbiologist Lynn Margulisis put forward a theory postulating that:

> The entire range of living matter on the earth *collectively* defines and regulates the material conditions necessary for the continuance of life. The earth is thus likened to a vast self-regulating organism, modifying the biosphere to suit its needs. [Emphasis added] [13]

Lovelock named this vast organism Gaia, after the Greek goddess who drew the living world forth from chaos. The theory of a living Earth is now called the Gaia Hypothesis.

There does not seem to be a universally agreed upon belief as to what constitutes the mind of Gaia. In fact, there are probably more people who have never even heard of Gaian mind than there are who see it as some form of overreaching intelligence that is regulating life on this planet. Some people believe the human species itself is, or will become, the mind of Gaia; but if we do not yet fully understand the intricate mechanisms our own minds use to regulate our bodies, it seems egotistical to think we will soon understand, let alone regulate, all of the processes of life on this planet. As technologically advanced as our species has become, we still are not able to accurately predict the weather, let alone regulate it.

Others have speculated on the possibility that at some point in the future the noosphere will fuse with the denser spheres, the biosphere and the geosphere, and the three will be transformed into a super-

---

[13] Definition of "Gaia," *The Oxford Encyclopedic English Dictionary*, p. 566 (New York: Oxford University Press, 1996).

consciousness that will then become the mind of Gaia. There appears to be a higher degree of probability of this happening than the previous speculation, but it presumes that the mind of Gaia has not yet come into existence. My personal belief is that Gaian mind already exists; therefore, I reject this hypothesis as well.

A view close to my own is the one suggested by Terence McKenna during a telephone interview:

> [Interviewer]: Gaian mind?
>
> [McKenna]: Yes, the planet is some kind of organized intelligence. It's very different from us. It's had 5– or 6–billion years to create a slow moving mind that is made of oceans, and rivers, and rainforests, and glaciers. It's becoming aware of us, as we are becoming aware of it, strangely enough. Two less likely members of a relationship can hardly be imagined—the technological apes and the dreaming planet. And yet, because the life of each depends on the other, [we have] a feeling towards this immense, strange, wise, old, neutral, weird thing, and it is trying to figure out why its dreams are so tormented and why everything is out of balance.[14]

In this stream-of-consciousness answer by McKenna, he incorporates a number of interesting concepts about Gaia:

-The Earth is intelligent.

-This intelligence is extremely old.

-This intelligence is slow moving.

-The human species and the intelligence of Earth, which we call Gaia, are becoming aware of each other.

While the existence of Gaian mind may be open for debate, it is hard to deny the fact that often we have very personal encounters with Gaia, or, if you prefer, with Mother Nature. One thing I do know is how I *feel* about the Earth when I walk on a beach. As I watch a wave break into foaming surf, I think of how far that wave traveled to reach the shore on which I am standing, and I think of the energy that entered the water to

---

[14] Interview for *bOING bOING #10*, found at http://deoxy.org/t_sunami. htm.

create that wave; a wave of energy flowing across miles and miles of ocean, eventually being released on the western shores of North America. The sound of the surf, as it breaks at the shoreline, calls to mind the purr of some gigantic, symbiotic creature composed of all the life in the ocean. While walking along the shoreline, I sense the presence of some wise old being as it whispers into my ear. That is when I *feel* the essence of Gaia. Try this yourself sometime. The next time you are in a forest, on a mountain, near a river, or at any other place far from the noise and congestion of a city, listen, and feel, carefully. I believe that if you approach nature with a spiritual intent, you will experience the feeling that you are in the presence of some great, mysterious, and very old, being.

McKenna's final point is the one I find most intriguing. Are Gaia and the human species becoming aware of each other? The fact that humans are becoming aware of Gaia can hardly be contested. Ever since James Lovelock first published his Gaian Hypothesis, there has been an ever-increasing flurry of books, tapes, lectures, and discussions on the subject. A quick search on the Internet for occurrences of the word "Gaia" returns tens of thousands of **hits**. It is obvious that the human species has begun to learn about Gaia, but questions remain: Is Gaia aware of us? Does she want to communicate with us? And if so, how will our communications take place?

My personal metaphor for the mind of Gaia is that it is a *meta-collective consciousness* composed of the collective consciousnesses of everything on this planet. Also, I envision our species-consciousness, in other words the noosphere, as having two parts, the collective *un*consciousness and the collective consciousness.

Accordingly, in my view, the noosphere is not the only component of Gaian mind. It is rather the entirety of *human* collective consciousness, and it includes *every* present and past member of our species. If this is too big of a hypothetical step for you to take, remove the reference to past members of our species from the metaphor. It works either way. The point is, the consciousness of *every* member of the human species is *already* a part of the noosphere. One does not have to be connected to the Internet to participate. We are, every one of us, already an indivisible part of the planet Earth's noosphere.

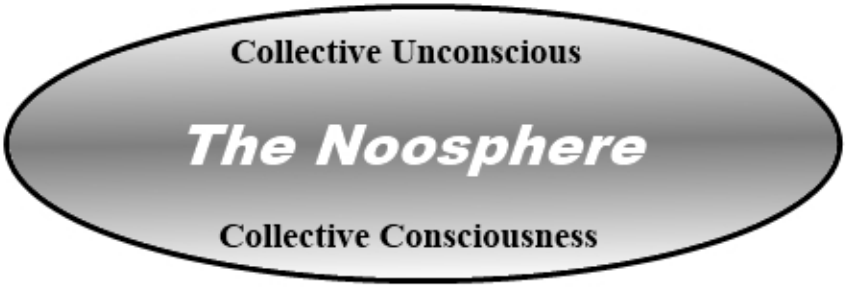

Figure 2
Human Species-Consciousness ... The Noosphere

Consider again for a moment, the concept of Gaian mind as a "meta-" collective consciousness. Viewed from a solar perspective, this collective consciousness can be regarded as a single mind. But viewed from afar like this, our little planet may also appear to be out of its mind. What else would cause a planet to destroy its own biosphere? Is it conceivable that Gaia has gone mad? While I do not believe this to be the case, I have come to think that Mother Nature, of which the human species is an integral part, has seen a small part of her mind slip away. If we view the Earth-mind (Gaia, Mother Nature, or whatever other term most resonates with you), as encompassing all of the collective consciousnesses that exist on the planet, the way I picture it is like this:

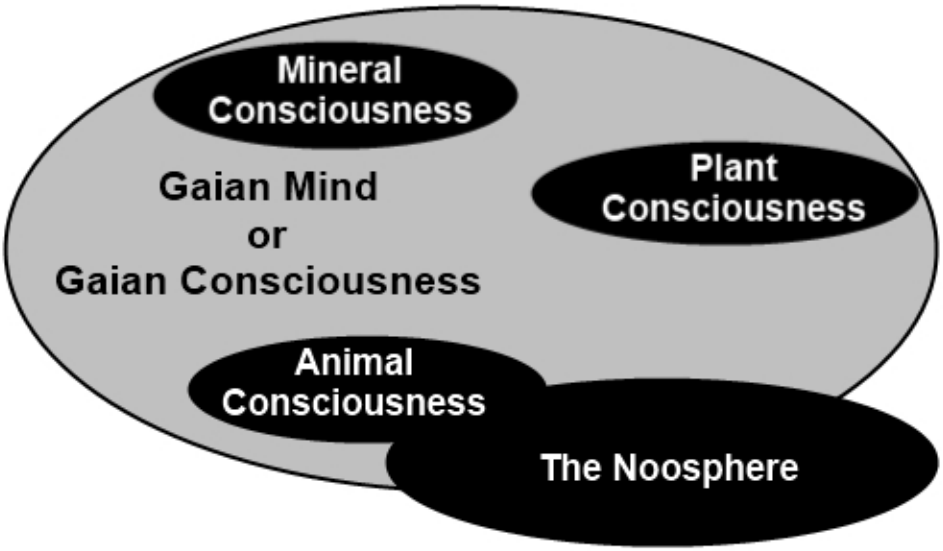

Figure 3
Gaian mind shown with human consciousness (the noosphere) as not yet fully incorporated.

It is my belief that our species-consciousness, the noosphere, has not yet been fully integrated into Gaian consciousness, the mind of Gaia. By this I do not mean to imply that one day there will be some sort of mind meld where the noosphere becomes indistinguishable from Gaian mind. Rather, I am suggesting that such a unifying of consciousness would be experienced more in the context of being of the same mind.

Many readers of this book, no doubt, have already attained a degree of Gaian awareness, as is illustrated by showing the noosphere partially incorporated into Gaian mind. As you will soon see, I believe the Internet has evolved as another tool for us to use to accelerate the transformation of the entirety of human consciousness into the larger sea of Gaian awareness.

Is it Possible for the Noosphere and Gaian Consciousness to Harmonize?

Like all living organisms, the Earth's first imperative is survival, and like other intelligent beings, it uses whatever natural resources are at hand to create the tools required to help it survive. Regrettably, the most complex tool the Earth has yet created, a tool we call the human species, has begun to run amok, and is destroying the vital organs of the planet. Let us hope that Gaia still believes we can grow into the role of symbiotic helper and not remain deadly parasites. (Perhaps it would be a good thing if the Gaian mind is slow moving, as Terence McKenna postulates, for evidence of the parasitic behavior of the human species abounds. A quicker mind may have already eliminated the problem.) The question remains, of course, whether there is enough time left for the human species to change its course of planetary rape and environmental destruction and then let Gaia know we have mended our ways.

The challenges we face in learning how to more closely couple our species-mind, the noosphere, with the Earth-mind are not only ones of *how* to establish this relationship, but how to do so *quickly*. How can we come into unity with Gaian mind *today*? How are we going to let the Earth know that there are some people who are already awake and are trying very hard to awaken the rest of our species to the fact that our life support systems may soon fail? One of the best places to begin such an inquiry is to look into some of the technology cultures have used to achieve intimacy with Gaia for tens of thousands of years. I am speaking here of shamanic practices.

Most people credit Mircea Eliade with first describing shamanism as a "technique of ecstasy." I point this out for those readers who may mistakenly equate shamans with priests of one form or another. Such a comparison is far off the mark. Readers who have taken the time to investigate the techniques and practices of shamans know that there is far more depth to these men and women than first meets the untrained eye. If you have not yet discovered the multiple worlds of shamans, I recommend that you take the time to investigate some of the very substantial practices they have established for communicating with entities in non-earthly

domains. These technologies include drumming, trance dancing, fasting, and the use of **entheogens**. According to Dr. Richard Yensen:[15]

> Among many native groups in the Americas, shamans employ plants that are regarded as having spiritual power or as being sacred. Most of these plants fall into the pharmacological category of hallucinogenic, psychedelic or mind-manifesting substances. The shamans, however, prefer to conceive of these unusual plants as powerful in a spiritual sense.[16]

Elsewhere he says:

> The attitudes or perceptual paradigms of cultures using psychedelic plants include the following elements: 1) The plants are held to be sacred. 2) They are used in specific ceremonies or rituals that support and renew the world view of the culture. 3) *There exists a world apart from this one to which the plants give access.* Useful experiences take place in this hidden realm of existence and valuable knowledge may be gained there. 4) The use of these substances is an acknowledged part of membership in the group or some significant sub-group, for instance shamans. 5) These plants can be used by those adept in their application to heal and to effect other changes in the ordinary world.[17] [Emphasis added]

Readers who have no personal experience with entheogens may find it difficult to imagine anything other than hallucinations taking place

---

[15] Richard Yensen, Ph.D., studied psychedelic psychotherapy with Stanislav Grof, M.D. at the Maryland Psychiatric Research Center. During his time there he treated patients with substance abuse disorders, cancer, and neurosis. He also trained other health professionals. Currently, Dr. Yensen is the Director of the Orenda Institute.

[16] Weston La Barre's "Hallucinogens and the Shamanic Origins of Religion," in Furst, P.T. (Ed.), *Flesh of the Gods—the Ritual Use of Hallucinogens*, pp. 261–278 (New York: Praeger Publishers, 1972), quoted in Richard Yensen's "Prologue," to Janine Rodiles' *A Prohibited Therapy – Biography of Salvadore Roquet*, 1998.

[17] Richard Yensen's "Prologue," to Janine Rodiles' *A Prohibited Therapy – Biography of Salvadore Roquet*, 1998.

under the influence of what shamans call their plant teachers, yet a careful reading of the vast literature on the subject tells quite a different story.[18]

From time immemorial, descriptions of the state of consciousness entered into while under the influence of sacred plants, such as ayahuasca or peyote, are hauntingly similar, independent of the culture in which they are used. Before jumping to the conclusion that people who use sacred plants are just getting high, take the time to read some of the voluminous detail on this subject that is available on the Internet.[19] If you do, you will come away with an entirely new understanding of what takes place after ingesting an entheogen.

An unbiased review of prehistoric, early historic, and what we have misnamed primitive cultures, clearly shows that one of the ways in which they communicated with non-human entities is through the use of entheogens. In Vedic India, it was *Soma*. The Greeks observed the mystery rites of Eleusis, which were informed by the use of the *kykeon*. Some scholars believe *kykeon* to have been an aqueous extract of ergot-infested barley, which produces a visionary experience like its synthetic counterpart, LSD. Today, native people in the rainforests of the Amazon use ayahuasca and other natural substances in their spiritual practices, while the shamans of Siberia, Mexico, and elsewhere continue to use sacred mushrooms to communicate with Gaia and other non-physical entities. Additionally, there is extensive literature concerning other ways used to enter shamanic states of ecstasy, such as deep meditation, chanting, yoga techniques, and so on.

While you might at first wonder what a discussion about ancient communications technologies has to do with the Internet, you will soon see the connection. We are looking here for a medium through which two dissimilar forms of consciousness, the noosphere and Gaia, can communicate, all the while keeping the fact in mind that these

---

[18] For a listing of current professional studies in this field, see the Web site of the Multidisciplinary Association for Psychedelic Studies (MAPS), at www.maps.org.

[19] At the time of this writing, the U.S. Congress is considering legislation that will severely restrict Internet access to information about entheogens. Those with an interest in such subjects may want to download this information to their personal computers while it is still accessible.

awarenesses are quite different in nature from what we consider to be the regular state of human consciousness.

Since before the dawn of recorded history, humans have been using certain practices, such as drumming and trance dancing, as well as sacred plants to induce shamanic states of ecstasy. The generic name for these sacred plants, mentioned earlier, is “entheogen.” This word was coined in 1978 by an informal committee of researchers convened by R. Gordon Wasson, which included Carl A.P. Ruck, Danny Staples, Jeremy Bigwood, and Jonathan Ott. Here is Ott’s account of how they arrived at the word “entheogenic:”

> We finally settled on the neologism *entheogen[ic]*, from the Greek *entheos*, a term used in the classical world to describe prophetic or poetic inspiration. The term means literally ‘becoming divine within’, and can be seen as the user realizing that the divine infuses all of the creation, or specifically that the *entheogenic* plant is itself infused with the divine. It is *not* a theological term, makes no reference to any deity, and is not meant to be a pharmacological term for designating a specific chemical class of drugs (*psychedelic*, for example, has come to be seen by some *sensu strictu* as a term to designate mescaline-like β-phenethylamines or DMT-like tryptamines). Rather, it is a cultural term to include all of the shamanic inebriants—sacraments, plant-teachers, the stock-in-trade of shamans the world over.[20]

It is important to understand that the space (if one can even use such a concept as space in discussing this subject) in which entheogens operate is not precisely the same as what some call psychedelic space. While entheogenic space and psychedelic space may be partially congruent, the word “psychedelic” has lost most of its usefulness because of its corruption by the popular press.

Coined in 1957 by Dr. Humphry Osmond to mean “mind manifesting,”[21] the word “psychedelic” is generally misused by the popular media to denote altered states of consciousness that always involve hallucinations. By definition, a hallucination involves an illusion.

---

[20] Jonathan Ott’s *The Age of Entheogens & The Angels’ Dictionary*, p. 37 (Natural Products Company, 1995).

Reports from **psychonauts**, many of which may be found on the Internet, indicate that their experiences are not illusions at all. Rather, they involve an expansion of consciousness into a much larger realm than our minds encounter in the world of consensual reality. Not only are these brave explorers aware of what you and I call reality when they ingest psychoactive substances, their minds also seem to encompass a much larger, all-inclusive reality, in which the human species, for the most part unknowingly, plays a significant part.

While a detailed discussion of the use of entheogens and other techniques used to enter shamanic ecstasy states is beyond the scope of this book, it is important to have a metaphorical understanding of these concepts. A comparable "space" in the world of computing would be the concept of an operating environment. This is a concept programmers use to describe the variable conditions in which a computer program executes, or runs. Much like the environment in which human biological activity takes place, a computer operating environment is a place where computer programs live, and most programs require certain environmental variables to be in place so they can run (live) properly. I find it helpful to think of communications with non-human entities as requiring such an operating environment, and this is how I think of **entheospace**. Although there is debate in the psychedelic community as to whether or not using entheogens is the only way in which to enter into such a state, I use the concept of entheospace here to more broadly describe the deeply seated sense of being infused with, and a part of, divine mind.

To better understand pure mind-to-mind interactions, it helps to think of these communications as taking place in various environments, or operating spaces. In metaphysics, this concept is sometimes referred to as a "plane," *e.g.*, the astral plane. Unlike the physical environment on planet Earth, which facilitates face-to-face communications between humans, email requires the environment of cyberspace in which to operate. When we move beyond the area of pure human-to-human communications, such as human-to-Gaia communication, yet other environments, common to the different consciousnesses that want to communicate with each other, are required. One of these environments, or planes, is what I call entheospace.

---

[21] Humphry Osmond's "A Review of the Clinical Effects of Psychotomimetic Agents," *Annals of the New York Academy of Sciences*, Vol. 66(3): 418–434, 1957.

Metaphorically, one can think of entheospace as an environment in which many disparate types of consciousness share a common language with which they may communicate. Shamans enter entheospace by ingesting entheogens, fasting, dancing or other such methods. Many psychonauts believe entheospace may also be entered by ingesting certain laboratory-produced chemicals, such as LSD.

Keep in mind that this is a discussion about communication with an alien intelligence. People sometimes mistakenly think that the only type of alien contact possible is with mindful organisms from other planets. It is important to remember that there are many mentally and spiritually alien organisms, such as plants, animals, fungi, *etc*., all around us. Furthermore, contact with an alien intelligence does not necessarily imply contact through verbal exchanges. Just because the species of primate we call human uses sounds made by complex tongue wagging to communicate with other members of its species does not mean other intelligent beings have evolved their system of communications along similar lines.

A few intellectuals who remain rootbound in what has become the stagnant pot of 19th century scientific thinking, will no doubt scoff at any suggestion that supposedly primitive cultures are able to communicate with the mind of our planet by expanding their consciousness into a larger mind-space. If, however, one *does* accept that human awareness flows into the sea of Gaian consciousness in an altered mind-space, where does this lead us in our search for a means to unite that membrane of thinking substance, the noosphere, with Gaian consciousness? Must our entire species simultaneously practice shamanic techniques and expand each individual's consciousness before our species-consciousness, as a cohesive entity in its own right, gains entry into the space where Gaian consciousness operates? Or is there a new technology for the noosphere to use? Has a new sacred plant, or *sacred medium*, evolved?

A New Sacred Medium

If our hypothesis that *humans* are able to join with Gaian consciousness in entheospace is correct, then how is the *noosphere* to enter this space? Drumming, chanting, deep meditation, yoga, *etc*., work

fine for humans, but they will not work for the ethereal noosphere. Even the ancient use of entheogens is not an option for a *mechanically grounded* sphere of thought. If the noosphere has no way to enter entheospace, how is this great collective consciousness going to engage in a meaningful dialogue with Mother Nature?

Consciousness always seems to find ways in which to communicate with other forms of awareness. That is why, I believe, Gaia herself has been instrumental in the evolution of the Internet. Perhaps one of the reasons we humans have been inspired to build, and then so quickly embrace, this new technology we call the Internet, is to provide a focal point for the noosphere so it can more easily achieve communication with Gaian consciousness.

Ancient Entheogenic Communications Technologies

As you may know, deep spiritual seekers have long used a wide variety of methods to expand their awareness beyond the realm of what is called normal human consciousness. These explorers of consciousness seek to enter into other realms of mind. Through meditation, yoga, entheogenic plants and drugs, drumming or any of a multitude of other techniques, shamans and psychonauts struggle to reach deep states of entheogenic awareness. As in all spiritual practices, the more time and energy we apply to our preferred techniques, the better the chance that an epiphany of consciousness will take place.

Such techniques are often used by very introspective persons who seek to more deeply explore their own inner landscapes. As well tested as these practices are, however, they lack mass appeal. Only a few shamans and psychonauts are courageous enough to tread down some of these arduous paths. Yet the rewards are beyond description, for all of these techniques, in their highest form, lead to a portal through which entheospace can be entered. In Figure 4, I group shamanic practices into two main categories, plants and techniques. Both branches lead to the same inner core. To reach that deep inner core, however, often takes a shaman or psychonaut years of training and practice.

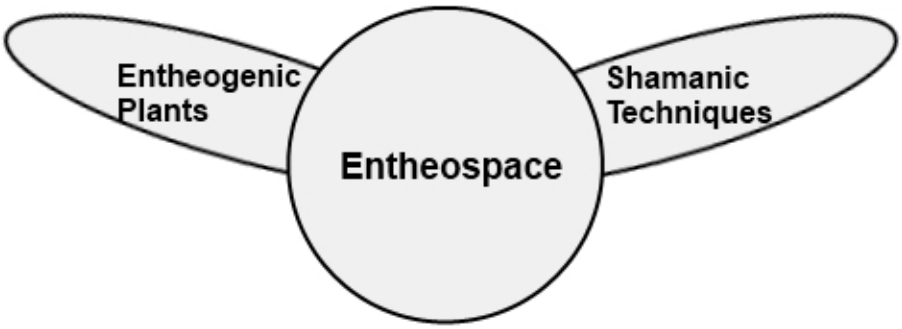

Figure 4
Ancient means of entering entheospace.

Modern Entheogenic Communications Technologies

During the 20th century, new techniques for entering into states of shamanic ecstasy were developed by brilliant chemists in laboratories all around the world. I refer to the invention and proliferation of what are commonly called psychedelic chemical substances. Although there is debate in the psychedelic community as to whether a human-made chemical is an acceptable substitute for a natural entheogen, it seems clear from many accounts found on the Internet, that at least some experiences enhanced by synthetic psychedelic chemicals are as entheogenic in nature as are those achieved with natural counterparts.

For purposes of this discussion, we will call these new shamanic tools "psychedelic chemicals." I separate these new techniques for deep exploration of inner landscapes from the plant group, not because of any differences in experience they may invoke, but rather because of the way in which these new tools affected society. Instead of providing universal access to the Mysteries of Eleusis, these substances have inadvertently caused widespread suppression of the use of *all* entheogens, synthetic *and natural*, in most parts of the world. Thus, while our picture of shamanic ecstasy techniques has been significantly enlarged with the addition of

psychedelic chemicals, the number of people actually employing these techniques has experienced only modest growth.

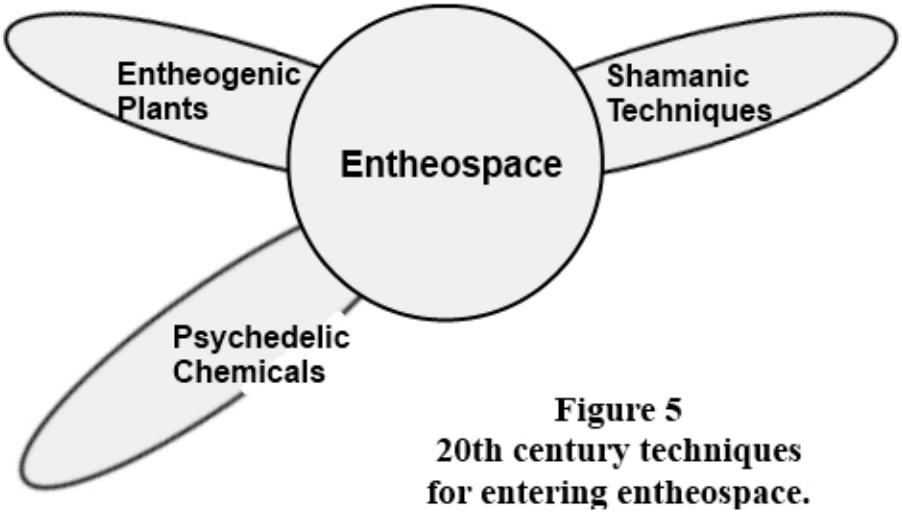

Figure 5
20th century techniques for entering entheospace.

The Evolution of Cyberdelic Space

Recall our earlier discussion about cyberspace where we said, "A mind that is in cyberspace is a mind that is *altered* from its normal, walking around state." The first thought that enters some minds when they hear about altered states of consciousness often involves psychedelic substances. It seems inevitable, then, that the word "cyberdelic" would find its way into our language. One of the first uses of the word "cyberdelic" is in an article John Perry Barlow wrote in 1990.[22] In this early analysis of the profound potential of Virtual Reality, Barlow said:

> The closest analog to Virtual Reality in my experience is psychedelic, and, in fact, cyberspace is already crawling with

[22] John Perry Barlow is a retired cattle rancher, a lyricist for the Grateful Dead, and co-founder and executive chair of the Electronic Frontier Foundation.

> delighted acid heads. . . . The Cyberdelic Experience isn't like tripping, but it is as challenging to describe to the uninitiated and it does force some of the same questions, most of them having to do with the fixity [*sic*] of reality itself. [23]

As Barlow points out in his article, "cyberspace is already crawling with delighted acid heads." This fact was also pointed out by Erik Davis in his ground-breaking book, *Techgnosis*:

> In 1968, Marshall McLuhan prophesied that "the computer is the LSD of the business world." But in today's Silicon Valley and San Francisco's multimedia gulch, computers *plus* LSD sometimes seems like the formula for success. . . . Silicon Valley's corporate heads didn't just come to accommodate the fact that many of their most brilliant employees liked to gobble weird drugs—they also realized that "weirdness can be an export commodity." Experienced and intelligent trippers are often characterized by a fluid sense of perception, a willingness to tinker with cognitive structures, and a sensitivity to what Gregory Bateson called "The pattern that connects"—just the kind of mental gymnastics that come in handy when you're crafting the giddy complexities of information space.[24]

It is as if a bond of some sort exists between the psychedelic and computing communities. What may perhaps always remain a mystery is whether this symbiotic relationship is primarily due to the nature of the people who are actually laying the deep foundations for cyberspace, or whether cyberspace itself has a psychedelic component. In any event, the fact that there may be yet another tool that could be of use in the exploration of inner landscapes is important news. Perhaps a socially acceptable way for large numbers of people to enter entheospace has evolved.

As in the case of the word "cyberspace," there does not seem to be an all-inclusive definition of the word "cyberdelic." An informal survey of

---

[23] John Perry Barlow's *Being in Nothingness: Virtual Reality and the Pioneers of Cyberspace*, found at www.eff.org/pub/Publications/John_Perry_Barlow.

[24] Erik Davis' *Techgnosis*, p. 170 (Three Rivers Press, 1998).

Web sites on which the word can be found reveals that people assume this term represents some combination of computers and psychoactive substances. To further refine the use of this term, I would like to introduce the concept of **cyberdelic space**.

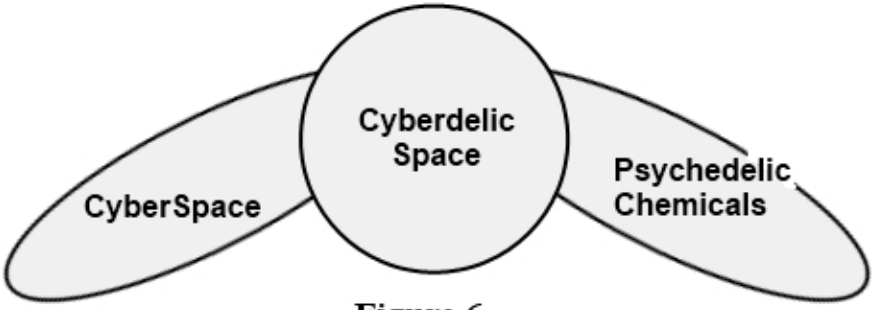

Figure 6
Cyberdelic Space

Just as psychedelic chemicals provide a portal to entheospace, cyberdelic space also acts as a portal to entheospace.

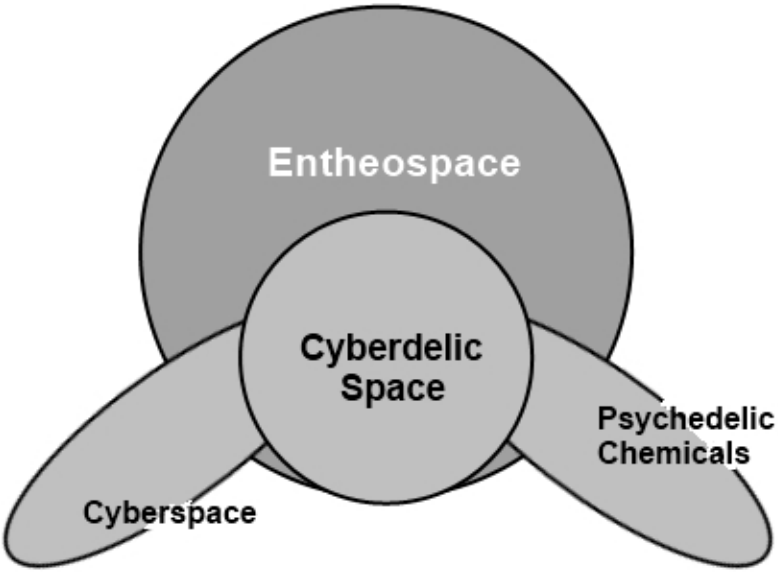

Figure 7
Cyberdelic space and enthespace.

When this piece of the puzzle is put in place, we see that there now may be a technology that large numbers of people can legally use to expand their consciousness into entheospace, using the portal of cyberdelic space. Mother Nature herself began this picture with the plant entheogens. Humans followed her lead and came up with other technologies for consciousness expansion. Thus developed a wide variety of shamanic techniques. Never content, humanity continued its quest for expanded awareness by inventing psychedelic chemical compounds, and now we may have built the Internet for precisely the same reason.

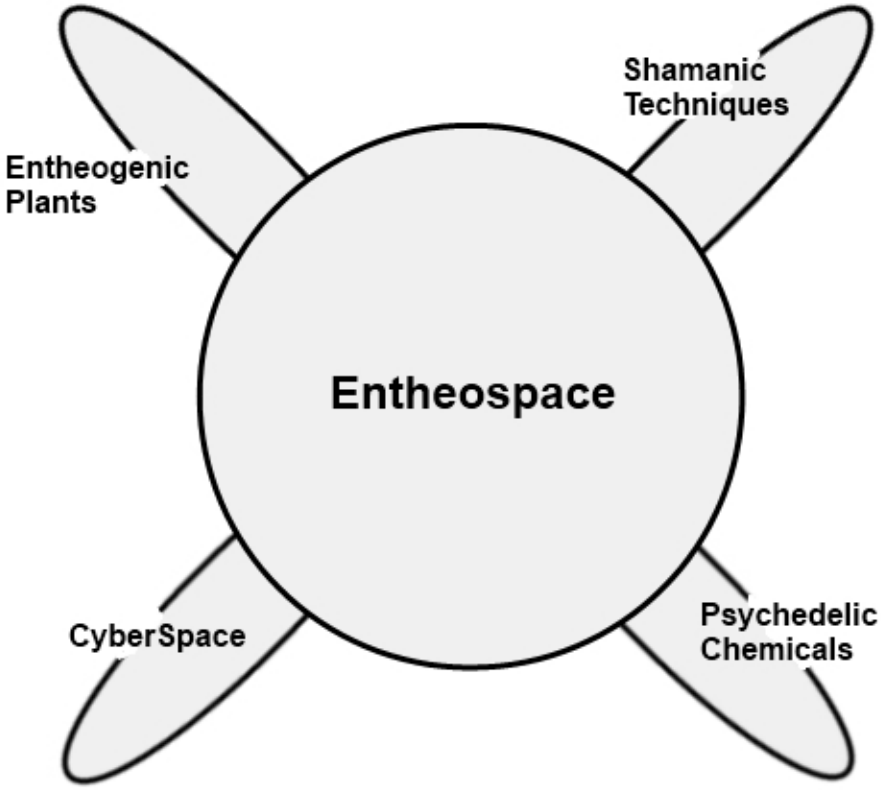

Figure 8
Portals into entheospace.

It is important to remember that not everyone can break into entheospace through the portals of entheogens, psychedelics, and shamanic techniques. The same holds true when it comes to using the new tool of cyberspace. With today's technology, it takes a strong intent and a reasonable amount of experience to even be able to *glance* into entheospace through the portal of cyberdelic space. Yet it can be done, as I believe the following account by Bruce Damer illustrates:

> I recently chaired a cyberconference held inside a complex of worlds, Avatars99 (www.ccon.org/ conf99), and while this event progressed, I tracked several thousand people, handling 2 interrupts a second while warping my avatar body from the exhibit hall to the breakout rooms to the art gallery, all for 20 hours nonstop. For a week afterward, I drifted in and out of a totally different mind state. This is not to say that these virtual world trips are just about being neuronially [*sic*] taxing. In fact I believe that my mind is now capable of an order of magnitude more complexity both on a conscious and subconscious level. I "run" multiple worlds, scenarios, lines of reason and dialogue at once.[25]

The Cyberdelic Communication Alternative

As you look at Figure 8, keep in mind that Cyber Space is where both human brain/mind consciousness and Internet/noosphere consciousness can operate. The other three portals are available only to human consciousness as entrances to entheospace. The natural course of speculation, therefore, leads to the possibility that deep cyberdelic space and entheospace are fully congruent. If so, it is possible that one day we will be able to use the power of Virtual Reality technology to enter Inhabited Virtual Worlds, which in turn will provide us with the same sense of place one experiences in entheospace. If this can be achieved by individual humans, it seems at least possible that the same will hold true for the noosphere as well.

If you haven't personally experienced being in both deep cyberspace and entheospace, the thought of these two places having points that are congruent might seem farfetched. If this is the case, recall the discussion in the previous chapter where the concept of cyberspace was presented as:

-Mind-space.

-A pure mental experience.

-A pure spirit experience.

---

[25] From a transcript of an interview of Bruce Damer by Erik Davis, found at www.digitalspace.com/papers/erikdavisinterview.html.

-Having no physical limits, no boundaries.

You will also find that a perusal of reports from shamans and other psychonauts will yield an abundance of descriptions of the places to which they traveled that are strikingly similar to, if not exactly the same as, what has been said about cyberspace. As Erik Davis points out, “Etymologically speaking, after all, computers are literally *psychedelic*; that is, they manifest the mind.”[26] It is difficult, if not impossible, for me to avoid the conclusion that deep cyberspace and entheospace are at least partly coincident, if not actually the same place of unbounded consciousness.

Once a mind is established in cyberspace it becomes larger; it expands; it becomes manifest in this new medium; it becomes psychedelic. Perhaps the Internet is evolving into a 21st century version of the sacred plant, or *sacred medium*. The Internet is a machine that can be used to catapult one’s mind into cyberspace. If, as we speculate, deep cyberspace and entheospace have areas in common, it then follows that our species-mind, the noosphere, which rests upon the mechanical infrastructure of the Internet, now has a way to achieve unity with Gaian mind in its own right.

You can personally test this hypothesis that the Internet has the power to alter your mind. The next time you have several hours at your disposal, log onto the Web and begin at a site that has information about a subject that deeply interests you. Then spend four or five hours following the information trails that fascinate you. Simply let your mind enjoy itself in the discovery of new information. Relax. Don’t look at a clock or worry about the time you are spending. Then at some prearranged time, have a friend come into the room and begin a conversation about a topic that is totally unrelated to the one you were following on the Web. Unless you are very different from most people, you will find the first few minutes of this conversation quite difficult, and you will discover that *your mind is still in cyberspace*. In effect, you will have to go through the same process of coming down that is experienced by practitioners of the various ecstatic techniques used by shamans and others. The *intensity* of the experience of being in an altered state may be less in cyberspace than in a pure entheospace, but the *feeling* of expanded consciousness is much the same.

---

[26] Erik Davis’ *Techgnosis*, p. 162 (Three Rivers Press, 1998).

Just as individual humans are not represented in Figure 8, the noosphere is not pictured either. While it would be interesting to show the noosphere encircling entheospace, such is not the case. As you recall, entheospace is in essence the sense of place sentient beings experience when on deep spiritual quests. Entheospace is not confined to any particular place, unlike the noosphere which is confined to planet Earth.

These are revolutionary speculations to be sure, but the day has arrived for us to join together in a revolution of consciousness. We no longer have the luxury of waiting until we get it all figured out exactly right. Where these speculations, if correct, might lead us is the subject of following chapters. Before sailing deeper into such uncharted waters, however, let us first consider a few of the implications of our hypotheses that the Internet and the noosphere are so inseparably intertwined.

The Evolution of Global Consciousness

Humankind is at its most significant crossroad yet. Our species has tapped the power of the atom and set foot on the moon. We are responsible for the fact that the number of inter-connected machines continues to grow exponentially, and yet the human species on this beautiful little planet remains plagued by war, suffering, hunger, and desperation. Although our species has evolved at an incredible rate, we still seem to have one foot stuck in the swamp from which we first crawled.

Few will argue against the concept that human beings are the highest and most complex forms of biological substance known to exist. What distinguishes us from much of the observable universe is our minds, our consciousness, the fact that we know we know. Now reflect for a moment on the fact that, at the most basic level, what the Internet is actually all about is the interconnection of these conscious minds into a more unified global consciousness, a collective consciousness, the complement of our collective unconscious. For you *Star Trek* fans, I am in no way implying that the Internet will turn us into some form of **Borg**. Rather, I envision this elevated state of human consciousness to bestow a form of super-psychic abilities on our *entire* species, as is discussed in the following chapters.

Thus, by connecting our minds in a unified global consciousness, I mean that while we remain individuals, each with an independent mind,

we also have the ability to tune in to some psychic voice infused with Gaian consciousness, a voice that does not let us pass up an opportunity to take proper care of the biosphere. This voice most likely will be very subtle, and no doubt has already been heard by many who are drawn to this book. What a unified global consciousness implies is that *everyone* on the planet will be in harmony with this sense of Gaian consciousness.

This sensation is easy to spot, by the way. For example, you might be walking down a beach at low tide and spot a shard of glass from a broken bottle. Perhaps the first thought that begins to form when you see the glass is, "There is no trashcan nearby. I'm not going to carry that piece of glass all the way home." But before that thought is fully formed, you hear a little voice saying, "When the tide comes in someone wading at the ocean's edge won't see that little piece of glass and could step on it. This is not a natural artifact, so remove it." While readers of this book may find the foregoing soliloquy not only familiar but also a bit quaint, it is a sad fact that the majority of our species has not yet paid attention this little voice. Terence McKenna may have put his finger on the problem when he said, ". . . half the time you think you are thinking you are actually listening."[27] Perhaps our species can learn to use the Internet to help us *listen* better, and thus use the Net as a lever to nudge the entirety of the noosphere back into the serenity of Gaian consciousness.

Picking up a small piece of glass on the beach may not sound like the herald of a revolution in consciousness, but perhaps such a higher level of awareness and action *on the part of every member of our species* is the only way possible to change our current course of environmental destruction. When I mentioned this simple idea to a friend, he said, "Sure, it actually is that simple, but it would also be simple for pigs to fly if only they had wings." Well then, we conscious apes should learn to fly. Perhaps if we all spend enough time in Inhabited Virtual Worlds, where our consciousness can be expanded into Gaian awareness, we *can* learn how to fly, and maybe we will also learn how to clean up after ourselves.[28]

If every member of our species takes an active role in preventing and correcting assaults on the environment, life on this planet will begin to

---

[27] Terence McKenna's "Psychedelic Society," from Robert Forte's (ed.) *Entheogens and the Future of Religion*, p.60 (San Francisco: Council on Spiritual Practices, 1997).

improve overnight. All that is required is an *expanded awareness* of the fact that we are simply parts of a much larger whole. It is time for our species to realize that the Earth is not here solely for *our* use and enjoyment. We are here to serve as Gaia's most sophisticated tools, which have evolved for purposes we have not yet fully discovered. Expanding the consciousness of our entire species is a tall order, indeed. It may even require magic. Fortunately, we live in magical times.

[28] Evidence that our species is capable of living in harmony with both the environment and each other may be seen at the annual Burning Man event. Each year, thousands of people assemble in a Nevada desert location and erect a temporary city, dedicated to radical self-expression and radical self-reliance. They bring their own shelter as well as all the food and water they will need for the entire event. When they leave, the vast majority leave no trace that they were there—taking their refuse with them and dismantling their shelters. The Internet has been instrumental in the growth of this event from 1,000 participants in 1993 to over 20,000 in 1999. For more information on Burning Man, see www.burningman.com.

Chapter 3: Conscious Evolution and the Evolution of Consciousness

"The replicating and evolving processes that have been confined to the natural world are about to become realms of human endeavor."
Bill Joy
"Why the Future Doesn't Need Us"
Wired 8.04 (2000)

"If at first the idea is not absurd,
then there is no hope for it."
Albert Einstein

Have you ever considered the extraordinary speed at which we humans evolved from our initial state of self-awareness to where we now possess the ability to manipulate the genetic material of our own species? On a cosmic time scale, the swiftness of this progression of knowledge is unprecedented as far as we know. Along the way, an important milestone on the road of biological evolution has been passed, for no longer is organic life at the mercy of evolution's previously glacier-like speed. We have entered an era in which conscious awareness is taking over the machinery of evolution, striving to improve the very species in which this consciousness has taken root. No longer are changes in our biology primarily dependent upon random mutation.

Almost daily, we hear of some new advance in the science of genetics. The concepts of gene splicing and cloning are entering mainstream awareness. Yet, as important as it is to improve the biology of our species, it is even more important that we accelerate the evolution of consciousness itself. As technologically advanced as we are, the human species has yet to attain a cohesive, global view of itself, let alone arrive at an understanding of how to manage the environment and resources required to sustain the biological life we all hold so dear.

As Teilhard de Chardin tells it, the story of evolution is a story of the struggle between the unified multiple and the unorganized multitude. In other words, evolution pits organization against individualization, cell

systems vs. large numbers of *single* cells, human *organizations* against the great mass of *individual* human beings. Teilhard also postulated that self-aware consciousness evolves from animal intelligence only after some critical mass of complexity is reached in the brain/body organism supporting that intelligence. In a way, this concept brings to mind a nuclear explosion, which takes place when a critical mass of fissionable material is brought together. In the case of self-awareness, however, the energy released by a critical mass of complexity results in consciousness rather than in an explosion.

As Teilhard saw it, when an essential amount of complexity is restricted to a small enough space, the *density of the information* underlying that mass of complexity is what creates self-awareness on the part of the structure in which the complexity is contained. The only case in which we know that this has likely occurred is in the human species. As important as it may be to search for other self-aware beings, both off this planet and among other life forms found in our biosphere, it is equally important to discover ways in which human consciousness can evolve to a higher, more intensely self-aware level.

At what rate do you suppose human biological evolution is taking place? My personal belief is that the tempo of our evolution as a species is actually accelerating. This is particularly evident if the rate at which our increase in *knowledge* about life's processes is taken into account. It took our species millions of years to evolve from lower life forms to the point of self-awareness. Yet it took only a few hundred years for these same self-reflective beings to move from the discovery of the microscope to our present age of gene splicing. Ever since that first moment of self-awareness, the consciousness of our species has been evolving at a stupendous rate when compared to other life forms on Earth of which we are now aware. The significant change in direction, or **bifurcation**, the course of biological evolution took when self-awareness entered the picture, also caused complexity to enter a new era—one in which complexity itself is now increasing exponentially. The Internet is an exemplary manifestation of this phenomenon.

An Evolutionary Bifurcation

If Teilhard is correct in his Law of Complexity and Consciousness[1] we may be approaching a bifurcation along the road of human evolution, a point at which complexity reaches yet another critical mass. It is at this point we can expect to see a new form of super-consciousness arise in the human species. As organisms become ever more complex, conditions may become favorable for consciousness to arise—that is, for one to know it knows. Teilhard extrapolated this observation into his hypothesis that, eventually, the human species, *en masse*, will constitute, or merge into, a single, *symbiotic organism*. He further envisioned the noosphere itself becoming so incredibly complex that it ultimately will become self-aware in its own right. What is meant by the noosphere becoming self-aware is the question that interests me the most.

When reading Teilhard de Chardin's description of the noosphere as "a stupendous thinking machine," I am reminded of the Internet/noosphere combination discussed in the previous chapter. In a 1947 paper, Teilhard said:

> Complexification due to the growth of consciousness, or consciousness the outcome of complexity: experimentally the two terms are inseparable. Like related quantities that vary simultaneously. Surely it is within this generalised cosmic process that the noosphere, a particular and extreme case, has its natural place and takes its shape. The maximum of complication, represented by phyletic infolding, *and in consequence the maximum of consciousness emerging from the system of individual brains, coordinated and mutually supporting*.[2] [Emphasis added]

Teilhard here implies that for human consciousness to evolve to its utmost limits requires a richer substrate than is to be found in an

[1] Briefly stated, Teilhard's Law of Complexity and Consciousness holds that increasing complexity *always* results in an increase in consciousness and vice versa.

[2] Teilhard de Chardin's "The Formation of the Noosphere," *Revue des Questions Scientifiques* (Louvian), pp. 7–35, January 1947, found in Teilhard de Chardin's *The Future of Man*, p. 174 (New York: Harper & Row, 1964).

individual human brain. He sees this further evolution of consciousness arising from a "system of individual brains, coordinated and mutually supporting," which, by definition, is significantly more complex than any single human brain. Without knowing exactly how such a system would come into being, it seems clear that Teilhard foresaw an interactive communications technology like the Internet as a precondition to the further evolution of human consciousness.

Keep in mind that Teilhard's work took place during the first half of the 20th century, when radio and television were new technologies. It was through these tools that he saw the promise of dynamic inter-human communications taking place. What he did not foresee was that democracy would pass these media by. How was he to know that by the end of the 20th century the vast majority of the world's television, radio, and print media would be controlled by a mere handful of global corporations? Of course, with hindsight it is now obvious that those in positions of power could not let any form of mass communications fall under the control of the public at large. As authoritarian governments the world over have shown us time and again, control of *information* must be absolute if they are to maintain control over any *knowledge* which, if widely disseminated, would lead to a restructuring of their power base. As early as 1990, Alvin Toffler pointed out that:

> Knowledge itself, therefore, turns out to be not only the source of the highest-quality power, but also the most important ingredient of force and wealth. Put differently, knowledge has gone from being an adjunct of money power and muscle power, to being their very essence. It is, in fact, the ultimate amplifier. This is the key to the *powershift* that lies ahead, and it explains why the battle for control of knowledge and the means of communication is heating up all over the world.[3]

If the growth of the noosphere requires an increase in interpersonal communications by which people can freely access and exchange information, the near-monopoly control of our current mainstream media forces us to look elsewhere for ways to bring an ever-increasing number of human minds into closer contact with each other.

---

[3] Alvin Toffler's *Powershift*, p. 18 (Bantam Books, 1990).

The Internet, of course, promises a different outcome than we have seen with other forms of mass media. Although, as it now may appear, corporate advertising has taken over the Web, *control* of the Internet by a small number of global companies is simply not possible as long as enough of the Net's citizens remain vigilant.[4] Consider the anarchical manner in which the infrastructure of the Internet is managed.[5] Because of the Net's lack of a single, central controlling body, it is going to be very difficult for a small group of corporations, or nations for that matter, to take over the communications network of networks we call the Internet. If the current egalitarian spirit of the Net continues to grow, I see a very bright future ahead for freedom of information, and the knowledge to which it leads. Of course, the freedom of speech we see on the Net today is not guaranteed to continue indefinitely. Our ability to continue to build an Internet that does not restrict communications between individuals might even depend on you. Like the butterfly of chaos theory, whose fluttering wings cause an almost imperceptible disturbance in the atmosphere, which in turn leads to a hurricane, the future of this great venture we call the Internet might well depend upon a single word, or act, or gesture from you. At this delicate point in the space/time continuum, *everyone's* actions become extremely important. This is certainly not the time for you to have a casual attitude about the future of human life on planet Earth.

It is important to understand that by joining our minds together in pursuit of a common goal, there will be not just an accumulation of ideas, but rather a *synthesis* of ideas. Teilhard makes it clear that this is not to be a synthesis that creates some new autonomous being, but rather one that will create a "domain of interwoven consciousness, the site, support, and instrument of super-vision and super-ideas." What is the Internet if not a domain of interwoven consciousness, a habitat in which the human species can nourish a unified, global vision *of* itself and *for* itself? I believe the Internet provides a perfect focal point for consciousness to continue its process of complexification, as Teilhard calls it. Of all the technological advances made by the human species, the Internet provides the most fertile

[4] In the concluding chapters, I will describe ways in which one can become a vigilant **netizen**.

[5] See page 175 for a description of the "anarchy" that rules the Internet.

ground yet in which the noosphere, our species-consciousness, can take root and evolve to its next level of complexity.

A Working Definition of Consciousness

What follows is not intended to be a universal definition of consciousness. It is only included to provide the reader with a sense of what I mean when I use the word "consciousness" in this book.

Specifically, I am referring to the state of mind human beings find themselves in when they are self-aware. This strict use of the word consciousness does not include any forms of consciousness that may be experienced after the human body dies, unless I specifically make a statement to that effect. Thus, the *type* of consciousness is human *in form*. This does not, however, tell us *what* consciousness actually is. The short answer is that *consciousness is a form of energy*, but this is too brief to be a very satisfying answer.

Another way to conceptualize consciousness is to begin with its foundation, the living human brain. As we all know, our bodies, which include our brains, are kept alive by food. Although some of our food may include animal protein, the food which underlies all of animal life comes from plants. In turn, plants synthesize water and carbonic acid into edible organic matter. Basic chemistry teaches us that chemical synthesis requires an energy source. In the case of plants, this energy comes from the sun. Without the energy provided by our sun, life on this planet would not exist. I will let Albert Hofmann tell the rest of the story:

> Light is the original cosmic energy source. All life, the life of plants, animals, and human beings, is formed and sustained by light. Even the thought process of the human brain is fed by this energy source. Therefore the human mind, our consciousness, represents the highest, most sublime energetic transformation of light. We are light beings; that is not only a mystical experience but scientific knowledge as well.[6]

---

[6] Albert Hofmann, Ph.D., "Natural Science and the Mystical World View," from Robert Forte's (ed.) *Entheogens and the Future of Religion*, p. 51 (San Francisco: Council on Spiritual Practices, 1997).

Light, of course, is a form of energy; thus consciousness (in my view) is energy that has taken human form; in other words, energy incarnate.[7] Energy itself, therefore, is the underlying substance of all that is, both material and spiritual. Whether or not this assumption is correct, it provides a working metaphor to explain such things as the contacts with other entities of which shamans speak. Perhaps the entities they encounter on their deep shamanic journeys are concentrated fields of energy composed of other than human consciousness. I have heard more than one shaman say of his work, "It is all about energy." *Why* energy seeks form is something that is not yet clear, but this has no bearing on the way in which I use the word "consciousness."

The Evolution of Consciousness

Until now, I have been using the word "evolve" primarily in its general, non-biological sense, that is to develop. My use of the word in this chapter is also meant to carry with it the sense that, overall, the development, or growth, of consciousness has been in an upward, or more fulfilling direction. Using a biological metaphor to describe the evolution of consciousness is not necessarily inappropriate, since human consciousness *is* biologically grounded.

If we were to say that consciousness itself fell under nature's processes of evolution, ideas would be analogous to genes. Just as our genes determine our biological makeup, our ideas shape our consciousness. Continuing with this metaphor, we can see how, from time to time, mutant ideas can alter the genetic makeup of our consciousness and cause the emergence of a completely new state of mind.

I once witnessed a dramatic demonstration of the power a single mutant idea can have over an individual mind. You have most likely seen a similar demonstration. It involves hypnotism.[8] One evening I was in a nightclub that featured a hypnotist's act. Although he went through a full range of startling presentations of the power of hypnotism, what most captivated my attention was the transformation that took place in a young

[7] For an intriguing discussion of the amount of energy required to hold a single thought in one's mind, see Adam McLean's *Quantum Consciousness*, found at www.levity.com/alchemy/quantum.html.

woman from the audience who responded to a post hypnotic suggestion she had received.

Earlier, when this woman was seated on the stage with other volunteers from the audience, she was so unassuming as to be nearly invisible. In fact, I was not even sure she had been hypnotized when she was told that later, when the band began playing a particular tune, she would become the embodiment of a then famous popular singer. As we witnessed the other volunteers going through what seemed to be super-human feats, no one paid any attention to the young woman who had by then returned to her table. Eventually, the band struck up the prearranged tune, and this woman, quite literally, metamorphosed before our very eyes.

It is difficult to convey the transformation of personality we witnessed that evening. This previously shy and unassuming person suddenly had a radiance about her that defied description. She not only came back on stage singing in a clear and beautiful voice, she took over the show. Until the hypnotist released that post hypnotic suggestion from her mind, she *was* the show. I witnessed this performance over 30 years ago, yet I can still recall everything about the moment that young woman, under the influence of a single mutant idea, actually became a different person. Everything about her changed, not only her self-assuredness, but even her physical appearance changed. Before our very eyes, this woman transformed herself into the gorgeous, vibrant, enchanting, and very talented being she had been hiding from us when she first volunteered to be hypnotized. Her consciousness encountered a mutated idea and out of it evolved a new person. I will never forget that evening, for it was the first time I actually understood the virtually unlimited power of mind.

It is this type of transformation I envision when I speak of the evolution of consciousness. As important as the daily growth and development of our consciousness is, it is the mutations that I see as triggering an evolution in consciousness. Granted, I am putting a positive spin on the direction such mutations can cause. This does not mean to

---

[8] The above description of a public display of the powers of hypnotism is in no way meant to denigrate hypnotherapy. For information about the medical uses of hypnosis see the Web site of The International Medical and Dental Hypnotherapy Association at www.infinityinst.com/aboutim.html.

imply that mutant ideas come only in pleasing flavors. During the last century we certainly experienced many powerful mutations in consciousness, some of which led to world wars. It is my passionate hope that negative mutations such as these can be avoided in the future as our species-mind becomes better coordinated through the same self-organizing properties other complex systems exhibit.[9]

Just as biological life has evolved through mutation, trial, and error, consciousness also seems to follow a similar trajectory. By now our species should be convinced that ideas of war, hate, and social injustice are negative mutant memes that should be studied in academic institutions, not unleashed on the planet at large. Let us take a new tack and see whether ideas that lead our collective consciousness in the direction of Gaian awareness can provide us a better chance of surviving.

The destruction of our biosphere is not a new phenomenon. Our species has been pillaging the environment for at least 14,000 years. Why? Because the collective consciousness of our species has not yet evolved to the point where it can take precedence over individual wills. Until our species began to over-populate this planet, the biosphere was able to absorb the negative effects of our misconduct. Now that the only real threat of predators comes from within our own species, the time has arrived to evolve new strategies for survival. Each day more people come to the realization that all life *is* actually interconnected, deeply interconnected. With the aid of the Internet, it is now possible for our species to bring our collective unconscious to the surface and more closely examine what it means to be human and to share this planet with so many other incredible forms of life. Viewed from this perspective, it becomes even more imperative that we do all that we can to ensure that *everyone* has access to the Net. Internet access *should* be a basic human right, and it is up to those who are already connected to see that this right is extended to the rest of our species.

---

[9] For a detailed, but easily understood, analysis of the laws of self-organization and complexity, see Stuart Kauffman's *At Home in the Universe* (Oxford University Press, 1995).

Conscious Evolution

As we know, the processes of biological evolution appear to take place ever so slowly and behind the scenes, so to speak. At least that has been the case until our recent advances in the science of genetics. It was not until the 20th century that we saw large-scale efforts on the part of the human species to play an active role in evolution. Although gene splicing, gene therapy, cloning and other new technologies are still in their infancy, it seems clear that there is no longer any possibility of turning back and abandoning these new fields of research. Consciousness has now taken its place alongside nature and joined in the work of evolution.

While it may not yet be fashionable to speak of genetic research in terms of consciously directing evolution, it seems clear that this is precisely what is taking place. The human species is now actively involved in the continuing process of evolving not just itself, but other animals and plants as well. Just as we breed farm animals with a certain genetic predisposition, we also modify our food. For example:

> The USDA has already approved about 50 genetically engineered crops for unlimited release; US researchers have tested about 4,500 more. Over half the soybeans and a third of the corn [grown in the U.S.] now contain genes spliced in from other forms of life.[10`]

What concerns some people who have given serious thought to our headlong rush into the genetic manipulation of life is that many of our best scientists are focused more on the *economic value* of their work than on its meaning to all life on this planet. Scientists are now purposively creating life forms primarily because they are patentable, not because they may lead to an improvement of life on this planet. If for no other reason than to keep up with the exponential advances in the biological sciences, it seems imperative that we also evolve our species' consciousness to a much higher level. As respected computer scientist Bill Joy so clearly states, "We should have learned a lesson from the making of the first atomic bomb and the resulting arms race. We didn't do well then, and the parallels to our current situation are troubling."[11]

---

[10] Amory B. Lovins and L. Hunter Lovins' "A Tale of Two Botanies," *Wired 8.04*, p. 247, April 2000.

From this moment in time forward, it is even more important that the pace of the evolution of human consciousness dramatically increase if we are to match the increased rate at which we have taken control of our biological evolution.

We are talking apes who now have the tools required to do everything from exploring the atom to walking on the moon. Our skills in science and technology are growing at an ever-increasing rate; yet when it comes to inter-tribal relations among our species, we have not evolved much above the level of our prehistoric ancestors. The time has arrived for us to consciously direct the evolution of human consciousness itself, before our technology and innate selfishness drive our species to extinction. Fortunately, we now have a very powerful tool to assist us in the conscious evolution of human consciousness. We have the Internet.

With few exceptions, people from all cultures share intimate bonds with their immediate families and close friends. Even in families where there are strong sibling rivalries, it is common for warring brothers to come together to repel a threat to their family. The best hope for us to survive as a species is to take the bond of family to its highest level. The time has arrived for us to clearly see that the entire human species is our family. But how, you ask, are we to accomplish such a task? In the final chapters, we will explore some of the possibilities evoked by this question. First, let us take a closer look at this strange cosmos in which human consciousness has come to evolve.

---

[11] Bill Joy's "Why the Future Doesn't Need Us," *Wired 8.04*, p. 248, April 2000.

Chapter 4: The Internet as a Chaotic Attractor [1]

"Reality is merely an illusion, albeit a very persistent one."
Albert Einstein

The word "chaos" once had a profoundly different connotation than it does today. According to Ralph Abraham:

> This first time the word appeared in literature, it had nothing to do with what we now mean by chaos in the English language and in ordinary life. At the time, it meant a sort of gaping void between heaven and Earth out of which form emerged. Creation came out of chaos, but chaos did not mean disorder or anything negative; it only meant a gaping void.[2]

Today, for most people, the word "chaos" carries with it the negative connotation of disorder or disarray. When one takes into account the original meaning of the word, however, the seemingly negative aspect of chaos begins to melt into a sea of creative possibility. Persons experiencing the World Wide Web for the first time sometimes come away with the impression that their minds have been immersed in a vast, chaotic new universe of information. Yet, as they become more experienced at using the Internet, a sense of form begins to emerge.

Although it may seem counter-intuitive, scientists and mathematicians have discovered that many large scale systems reach their maximum potential when poised between chaos and order. This is the area Stuart Kauffman calls "the edge of chaos." In his work on complex systems, Kauffman found that:

---

[1] Originally, mathematicians used the term "strange attractor" when dealing with certain aspects of probabilistic behavior. Today, most scientists and mathematicians prefer the term "chaotic attractor."

[2] Ralph Abraham, Terence McKenna, and Rupert Sheldrake's *Trialogues at the Edge of the West*, p. 3 (Santa Fe: Bear & Company, 1992).

> Networks in the regime near the edge of chaos—this compromise between order and surprise—appear best able to coordinate complex activities and best able to evolve as well.[3]

As used in this book, the word "chaos," while still denoting a state of extreme disorganization, is also meant to impart the sense of a *desired* condition, for without chaos, creativity's prospects are considerably limited.

Abraham also provides a definition for the concept of a chaotic attractor:

> Chaotic attractors consist of fractal (infinitely folded) sets of states, over which the model system moves, occupying different states in a sequence called a *trajectory*, or time series. This trajectory, while appearing irregular or random, actually progresses in a deterministic manner. Chaotic attractors display, at once, features of chaos and features of order. They represent systems in states of agitation, as in the case of turbulence.[4]

Another definition of a chaotic attractor comes from Adam Combs:

> Speaking informally, an attractor is a condition to which a system is drawn by its own nature. If a cup is placed slightly tilted on a table, it will roll about in a spiral [until] it comes to rest standing up. This latter condition is termed a *static attractor*, because it represents the static position to which the cup is disposed. More interesting are *cyclic* or *fixed cycle attractors*. The human heart, for instance, runs through its cycle many times each minute. The moon passes through its various phases each month. These, and many others, are instances of systems that naturally settle into predictable cyclic routines. Most interesting, however, are [*sic*] the class of attractors that are neither fixed nor precisely predictable. These are termed *strange* or *chaotic* attractors.
>
> On close inspection the cyclic rhythm of the human heart is found not to be precise, like the motions of a clock, but only

---

[3] Stuart Kauffman's *At Home in the Universe*, p. 26 (Oxford University Press, 1995).

[4] Ralph Abraham's *Chaos Gaia Eros*, p. 60 (Harper San Francisco 1994).

> approximately so. It's [*sic*] global form is well known and easily recognized, but the precise action of an individual heart differs from beat to beat, thus defying exact prediction. Moreover, it is unlikely that the heart ever, in the strictest possible sense, repeats itself the same way twice. This situation of global familiarity but non-predictability, along with the idea that the system never exactly repeats itself, is exactly what defines a chaotic system, one whose action is described by a strange attractor.[5]

I believe that the Internet is serving as just such an attractor, or basin of attraction, drawing the Earth's most creative minds into a synergistic union out of which a new form of human consciousness can arise from the wells of chaos. Before you dismiss such a thought as too fanciful, you may want to take a closer look at this strange universe in which our consciousness is now operating.

In this chapter we will take a look at a few of the more amazing ideas, both modern and ancient, that have begun to slip into the consensus reality of a significant number of people who give serious thought to the technological changes we are now experiencing. Perhaps one or more of these ideas will strike a resonant chord with you.

A Probabilistic Universe

"Quantum particles are the dreams that stuff is made of."
David Moser
Quoted in *The Age of Spiritual Machines* (1999)

Until early in the 20th century, most Western scientists labored under the assumption that the universe is deterministic; that is, we can predict the precise result of every physical action. Large-scale problems, like predicting the weather, were thought to be solvable in time, given sufficient computer power. With the advent of quantum mechanics, however, the picture began to change. At the subatomic level, at least, it was found that the universe was not deterministic, but that it was instead

---

[5] Adam Combs' "Consciousness: Chaotic and Strangely Attractive," found at http://www.goertzel.org/dynapsyc/1995/COMBS.html.

probabilistic. In other words, while it is possible to determine a range of results from a given action, we cannot precisely predict the exact outcome. The best we can do is come up with the *probability* that a certain result will flow from a given action. This situation is perhaps easier to see on a larger scale. For example, if we set off an explosion on a snow-covered mountainside, there is the chance we will cause an avalanche. Depending upon the depth and consistency of the snow and the slope of the mountainside, we can predict the probability of an avalanche occurring, and even forecast the possible path it will follow. However, it is not possible to forecast with 100% certainty what the exact outcome of our explosion will be. The predicted results can only be estimated within some degree of probability.

What is more difficult to understand is that this same situation exists *for every movement of every particle* in an atomic cloud. As Werner Heisenberg[6] postulated in 1927, it is possible to know an electron's position, and it is possible to know an electron's momentum, but it is impossible to know both at the same time. We can come up with a *probability* for the value of both, but not with absolutely certain values. This uncertainty factor sometimes arrives wearing the cloak of chaos. However, when the *creative* aspect of chaos is taken into consideration, the uncertainty of position within the electron cloud can be seen not as disorder but as holding infinite possibility for creation.

From the chaos of the universe, all creativity springs forth, and all possibilities may be realized within certain probabilistic limits established by the laws of nature. It is in this sense that I see the Internet as a chaotic attractor that has the potential to draw to it the minds of people who are willing to do the work necessary to build a global awareness of the issues that are to be confronted if our species is to survive. To overcome the propensity of species to become extinct requires thinking beyond one's personal concerns and working in unison with others to search out the path that holds the greatest probability for our survival.

---

[6] Werner Heisenberg (1901–1976) was a German physicist, philosopher and Nobel laureate whose indeterminacy, or uncertainty, principle has had a profound influence on modern physics and philosophy.

The Illusion of Reality

Sometimes, after leaving a movie that has succeeded in totally captivating my imagination, I have difficulty in letting go of the characters and ambiance of the film. For hours after I leave the theater, my mind continues to draw me back into the scenes I witnessed through the magic of the movies. Most of us have had similar experiences. There is a corollary to this experience that is also interesting to observe.

Have you ever noticed, after returning home from a stage play or concert, for example, that it can seem as though you just imagined the whole thing—that the play or concert didn't actually take place? If not, a day or so after the next major public performance you attend, try imagining that you didn't actually attend the event. Instead, pretend that it took place only in your mind. With a little practice, you will be able to perform this feat with almost every experience you have.

Once you are in such a state of mind, you will come to the *emotional* realization that your *memory* of life's episodes is their only continuing reality. Could it be that memory, or thought, is the true bedrock of our Earthly reality? It was, after all, Mnemosyne, the goddess of memory, who gave birth to the muses, the sources of creativity who continue to teach us the arts of civilization.

As physicists continue to probe the atom, searching for ever more fundamental particles of which all matter is composed, they seem to plunge deeper and deeper into the structure of matter until eventually reaching some sort of wall beyond which no smaller particle is postulated to exist. Then, after years of research, that wall is also breached and even smaller particles are found.[7] Ultimately, science may conclude that the fundamental particle of nature is nothing other than pure mathematical thought.

Primacy of mind, of course, is one of the tenets of many Eastern religions. While I am not saying I believe that everything we call consensus reality doesn't actually exist in some absolute form, I do believe that we have yet to unlock the mysteries of existence as viewed from a quantum mechanical point of view. As Teilhard de Chardin once said:

---

[7] As difficult as it may be for us to accept a "quantum world," **superstring theory** promises to reveal even greater strangeness.

> At the end of its analyses, physics is no longer sure whether what is left in its hands is pure energy or, on the contrary, thought.[8]

As the Internet becomes ever more deeply ingrained in our everyday lives, our concept of reality becomes even more problematic. For example, late in 1999 debate began about virtual child pornography. With a truly perverted sense of taste, technically astute pornographers have taken to creating realistic images of children engaged in sex acts. Unlike the smut comics of the 1950s, modern technology provides the ability to build a realistic model of a person and then program that computer-generated model to interact with other computer models. Interestingly, millions of people have already witnessed the power of this technology in the form of the dancing baby of Internet and television fame.[9] The underlying *reality* of these programs is that they are nothing more than electronic signals in a computer chip, yet some of these images are so profane, and so realistic, that many groups want them banned. While it is not unprecedented for people to want to censor works of art, as some pornography may be classified, what is new is that these images are being attacked primarily because they are so realistic. We may soon be in need of a new definition for reality. However, modern physics is making it increasingly difficult to define exactly what we mean by reality, let alone grasp its significance.

Fallout from Bell's Theorem

In 1964, Irish physicist John S. Bell published a paper in which he postulated the "non-separability of two contingent events."[10] In layman's terms, this means everything is merely a part of a much larger whole. To a non-scientist like me, Bell's Theorem did not at first seem very revolutionary. Yet when people like Henry P. Stapp, a theoretical physicist at the Lawrence Livermore Laboratories, called Bell's Theorem "the most profound discovery of science," it caused me to wonder what all the fuss was about. As I understand it, the essence of Bell's Theorem is that there is

---

[8] Teilhard de Chardin's *The Phenomenon of Man*, p. 281 (New York: Harper & Row, 1959).

[9] Found at http://burningpixel.com/Baby/BabyMus1.htm.

[10] John S. Bell's "On the Einstein-Podolsky-Rosen Paradox," *Physics 1*, pp. 195–200, 1964.

a mechanism whereby the setting of one measuring device can influence the *simultaneous* reading of another instrument, *however remote*. After contemplating the phrase "however remote," I found the implications of Bell's Theorem became much more profound. Now that experiments appear to support this theorem, it seems that we are due for yet another significant paradigm shift in science.

According to Bell's Theorem, if one measures one photon of a photon-pair, after it splits and travels in a different direction from its twin, its measurement will be influenced by taking a measurement of the companion photon. In other words, measuring one photon *directly influences* the measurement of its twin, and vice versa. This, Bell says, is true even if they are separated by a distance so great that a signal (traveling at the speed of light) from the first photon could not reach the second photon in time to influence the measurement. The question then becomes: If the distance between the photons is so great that there is no way in classical physics to account for a signal to pass between them (with the upper speed limit that of light), how do these two particles communicate? According to Bell's Theorem, there is no need for faster-than-light communications because our universe is not what it appears to be. According to Bell's Theorem, our universe isn't made of independent, or stand-alone, objects; it is instead *an indivisible whole*. Not wanting to appear as New Age scientists, modern physicists shun the phrase "all is one," and instead state the same observation as "non-locality appears to be a fact of nature."

The concept that the entire universe, including you and me, is an indivisible whole is not new to metaphysics; however, it is revolutionary and unsettling to the world of modern physics. If science can ultimately prove that everything in the cosmos is indeed an indivisible part of a single whole, what does this mean to religion, science, and philosophy? It amazes me that discussion of these matters has not permeated the mainstream media to the degree of visibility it already has on the Internet. Just think what it will mean when every human on Earth comes to the *full* realization that, just as members of the New Age movement have said for years, "All is one. We are all intimately connected to one another. There is no part of *you* that is not also part of *me*." It is one thing to hear this from mystics and religious leaders, but think of the impact it will have on human consciousness if this idea is scientifically proven beyond all doubt.

As the 20th century came to a close, reports of experiments proving the correctness of Bell's Theorem were being published in scientific journals. Although not enough time has yet elapsed for these discoveries to be assimilated into scientific and philosophical frameworks, it may be in our best interest to quickly come to grips with the cosmic importance of these findings. How wonderful, and ironic, it would be if mainstream science confirmed what mystics have been saying for ages.

The Dawn of a New Era

There is an ancient Chinese curse that goes, "May you live in interesting times." I have never understood the curse part about that expression. I *want* to live in interesting times. In fact, it appears that we now are living in some of the most interesting times ever experienced on this planet. Without belaboring the point, technology is advancing at rates never before seen. At the beginning of the 20th century there were no cities filled with automobiles, no airplanes, no space stations under construction, and no production of electricity by atomic energy, just to name a few of the technologies most of us take for granted today. The changes that will be brought about by technology in the next three decades promise to be even more breathtaking. Whether or not such rapid change is good is open to debate, and, of course, dependent upon one's definition of "good." What is not debatable is the fact that we are in a period of great and rapid change.

For example, consider the speed of change in computer science. In 1975, the cost of one megabyte of computer memory was over one half of a million dollars. Today, a megabyte of memory for a personal computer costs only a few dollars. The speed of the **CPU** for personal computers at the end of the 20th century was over 100,000 times as fast as it was when **integrated circuit** technology was first invented in the 1950s. If these trends continue, and most experts agree they will, before the first three decades of the 21st century have passed we will see single, affordable, desktop-sized computers with truly incredible capacities. According to Ray Kurzweil, "your personal computer will be able to simulate the brain power of a small village by the year 2030, the entire population of the

United States by 2048, and a trillion human brains by 2060."[11] The cost of building these machines most likely will be no higher than the cost of building one of today's home computers.

Many technically informed people now believe that our machines will reach and/or exceed levels of human intelligence before the 21st century is half over. With the price/performance ratio of personal computers constantly improving, it will not be only the large businesses and governmental organizations who own these super computers that match or exceed human intelligence. These computers will most likely be available to a large number of moderately affluent people, and, of course, these powerful machines will also be connected to the Internet. These are indeed interesting times. Is it any wonder then, that there has been a resurgence of interest in the possible advent of a new world age—one that was long ago predicted by the Mayans?

The Mayan Calendar

In the mid-16th century, a Franciscan bishop, the infamous Friar Diego de Landa, took it upon himself to burn every Mayan book he could get his hands on. While the full extent of his defilement of the human species will never be known, it is well documented that de Landa destroyed a significant number of valuable codices of Mayan history, as well as most of their chronicles of advanced astronomy. Fortunately, recent scholarship has brought to light enough information about the Mayan calendar for us to arrive at a good understanding of the advanced astronomical knowledge these ancient people possessed. Of particular interest to us here is the Mayan calendar, which is based upon the **precession of the equinoxes**.

As most of us once learned and then quickly filed away somewhere in the dim recesses of our minds, the Earth *wobbles* slightly as it spins on its axis, somewhat like a child's top does as it begins to lose its momentum. While this effect is physically unnoticeable to us, this wobbling is the reason we see changes in the night sky over millennial periods of time. Technically referred to as the precession of the equinoxes, this effect has been known at least since the days of ancient Egypt.

---

[11] Ray Kurzweil's *The Age of Spiritual Machines*, p. 105 (New York: Viking, 1999).

However, few cultures possessed as deep an understanding of the mathematics involved in the precession of the equinoxes as did the Mayan. In fact, some scholars now believe that it was equinoctial precession that provided the underlying basis for the Mayan world view.

Over time, precession causes the meridian of each seasonal equinox, in turn, to come into alignment with the center of the Milky Way Galaxy. The period between these seasonal alignments with the galactic center is exceedingly long by human measure. In fact, only once in approximately 25,800 years does the meridian of the Winter Solstice come into direct alignment with the center of our galaxy. The next date on which this alignment will take place was thought by the ancient Mayans to be the harbinger of a major turning point for the human species. That date is December 21, 2012.

Unlike our present age, when a 30–second sound-bite on television sometimes seems long, the Mayans had a truly cosmic sense of time. Accordingly, their long count calendar measures not just a single year, but what they called Great Cycles, each consisting of one World Age. According to John Major Jenkins:

> The much-discussed 13–baktun cycle is completed 1,872,000 days [13 baktuns] after 0.0.0.0.0. This period of time is the so-called Maya Great Cycle of the Long Count and equals 5,125.36 years. The Maya conceived of the Great Cycle as one World Age, one growth cycle, at the end of which humanity reaches the next stage in its spiritual development. As the life of an individual goes through distinct stages, so too the collective lifewave of humanity grows through several distinct phases. These phases are the five World Ages, or "Suns," spoken of in Mesoamerican mythology.[12]

By the Mayan's reckoning, we are now within a few years of the end of a Great Cycle that began over 5,000 years ago. What this may mean, of course, is open to debate.

---

[12] John Major Jenkins' *Mayan Cosmogenesis 2012*, p. 22 (Santa Fe: Bear & Company, 1998).

The Galactic Center

While poets have often rhapsodized about our being made of stardust, it now appears that science is backing up this claim. Modern physics has discovered that all but the lightest elements on Earth were originally forged in the great cosmic furnaces we call stars. Therefore, as creatures that are physically composed solely of atoms from this planet, we can trace our material lineage directly to the heart of an ancient star. Furthermore, it is possible that the entire Milky Way Galaxy sprang from the colossal explosion of one or more gigantic stars. Interestingly, modern astronomers have confirmed that there is a **black hole**, densely packed with matter, at the center of our galaxy. It is probable that this black hole still contains the remnants of that gigantic star or stars, which supplied the atoms that now make up our bodies. The poets are correct, we are all made of stardust.

In their own way, did the Mayans know that this black hole at the center of our galaxy exists? What is it about the alignment of the Winter Solstice meridian with the galactic center on December 21, 2012 that captured the Mayan imagination to such a degree that they may even have anchored their long count calendar to this event? Again, I defer to John Major Jenkins:

> The "energy" field emanates from the Galactic Center and includes the entire electromagnetic/ photon field in which our planet exists. There are dimensions of subtlety within this field—the telluric or astral realms—extending beyond the physical forces of science to include spiritual planes of being. If we imagine this field as being similar to the lines of force surrounding a magnet, we can understand that our changing orientation to this field has immediate consequences, and has little to do with cause-and-effect transmission of energy between us and the Galactic Center. We are, instead, in a relationship of *resonance* with our source, one that connects us deeply within to each other, and, in fact, to all other beings in this Galaxy.[13] [Emphasis original]

As electrical engineers who have studied the work of Nicola Tesla[14] know, unimaginably strong forces can occur when a system

[13] Jenkins, p. 328.

reaches a state of resonance, or perfect tuning. Here is what Erik Davis says about resonance:

> Not so much a law of nature as a deep habit, resonance pops up across the board, emerging in electrical systems, steam engines, and molecular dynamics, as well as Tuvan overtone changing and the tuning of TV sets. Everything vibrates, and when the oscillating vibrations of different systems coincide, or resonate, large quantities of energy can be exchanged from one system to the other. That's why powerful singers can shatter wineglasses; by energetically belting out a tone that matches the resonant frequency of the container, they are able to amplify the vibrations until the vessel explodes.[15]

In his article "The Formation of the Noosphere," Teilhard de Teilhard also discussed the importance of resonance:

> In becoming planetised, humanity is acquiring new physical powers which will enable it to super-organise matter. And, even more important, is it not possible that by the direct converging of its members it will be able, *as though by resonance*, to release

---

[14] Nicola Tesla was an electrical genius without whose work our world would be very different today. At beginning of the 20th century, Tesla was perhaps the world's best known scientist. He was one of the first researchers to discover / investigate X-rays, the vacuum tube amplifier, radio, fluorescent bulbs, neon lights, the speedometer, the automobile ignition system, and the basics behind radar, the electron microscope, and the microwave oven. Tesla obtained patents for many other devices as well, including many of the fundamental patents for alternating current motors. Without Tesla's determined stand against the unscrupulous behavior of the powerful Thomas Edison, we might well be living in a dimly lighted world of DC power. His pioneering work on the mysteries of resonance has never been equaled, and much of it has been lost.

[15] Erik Davis' *Techgnosis*, pp. 70–71 (Three Rivers Press, 1998).

psychic powers whose existence is still unsuspected?[16] [Emphasis added]

While the Maya most likely knew nothing about the resonance of electronic circuits, who is to say that they did not understand what it means for conscious beings to be in spiritual resonance with the source from which the matter supporting their consciousness sprang? In the Mayan world view, the alignment of the Earth and Sun with the center of our galaxy will be the event that precipitates the most significant transformation we have seen in the human species for thousands of years.

The Next World Age of the Maya

From what we now know, it appears that the ancient Maya believed their long count calendar measured, among other things, the amount of time required for the human species to evolve to each succeeding level of awareness. Accordingly, they believed that when our planet and sun come into a resonant alignment with the galactic center, humanity will step over another threshold of consciousness and begin the next great World Age. In essence, the Maya believed the alignment of December 21, 2012 would provide the resonant catalyst for the next quantum leap consciousness takes as our cosmos continues to awaken.

Unlike the fanatical groups who frequent the airwaves with apocalyptic predictions of a shift in the orientation of the Earth's magnetic poles, the pole shift foretold by the Mayans is one of a shift in the collective psyche of our species. As they saw it, we are headed for a fundamental change in the way we relate to one another, as well as for a change in the ways in which our species relates to the rest of the biosphere. Such a change in world view, of course, will come about when a sufficient number of people consciously elect to adopt a more humanitarian and planetary view of life. For many people, this will require a complete revision of the way in which they relate to the environment and to each other. As most readers of this book already know, what is required

---

[16] Teilhard de Chardin's "The Formation of the Noosphere," *Revue des Questions Scientifiques* (Louvian), 7–35, January 1947, found in Teilhard de Chardin's *The Future of Man*, p. 177 (New York: Harper & Row, 1964).

is both an intellectual and an *emotional* understanding of John Donne's[17] admonition that "No man is an island, entire of itself; every man is a piece of the continent, a part of the main . . ." Or, as modern physics is proving, every person is a part of a unified cosmos.

Given the perspective of 21st century science, there does not appear to be any physical event that is going to occur when (or if) our planet is aligned with the center of our galaxy. Although there are some people who eagerly anticipate some such grand physical transformation, I believe the Maya were being more metaphysical than physical in their anticipation of a great change taking place at the end of their current calendar. Of course, one may ask why it is even necessary for the Earth to go through an entire cycle of precession before humankind is ready for its next great evolutionary leap, and no satisfactory answer can be found. However, I see this as no reason for *not* championing the idea that it is time, once again, for our species to move to some higher level of awareness. The 2012 date, which is not an end-date that is exclusive only to the Mayans, is as good a time as any for such a transformation. In fact, what is wrong with beginning to effect such a change today?

A Technological Singularity

"The universe may not only be stranger than we suppose; it may be stranger than we can suppose."
J.B.S. Haldane

In mathematics and science, a singularity is a point at which a function takes an infinite value and thus loses meaning in normal terms. For example, as you divide the number "one" by an infinitesimally small decimal number the answer approaches infinity. The point at which you attempt to divide the number "one" by "zero" is the point of singularity. To greatly understate the concept of a singularity, one could simply say that strange things happen there.

In 1993, mathematics professor and award-winning writer Vernor Vinge presented a paper titled "Technological Singularity" at the VISION-

[17] John Donne (1572–1631) was a poet, prose writer, and clergyman, considered to be one of the greatest of the metaphysical poets.

21 Symposium sponsored by NASA's Lewis Research Center and the Ohio Aerospace Institute. In Vinge's view, a technological singularity will soon occur because of the advent of computers possessing a level of intelligence that exceeds the level of human intelligence. With startling directness, Vinge began his paper by saying:

> Within thirty years, we will have the technological means to create superhuman intelligence. Shortly after, the human era will be ended.

A few sentences later, he continued:

> I argue in this paper that we are on the edge of change comparable to the rise of human life on Earth. The precise cause of this change is the imminent creation by technology of entities with greater than human intelligence.[18]

It is interesting to note that Vinge uses the phrase "creation *by* technology." At first, I took this to mean humans were actually in charge of these creative processes *through* the use of technology. A closer reading causes me to consider the possibility that technology itself may take a hand in the act of creating "entities with greater than human intelligence." If this is the case, Vinge is correct in asserting that the human era may well be nearing its end. In many ways we are already seeing signs that a new era, dominated by some form of human/machine symbiosis, has begun to dawn.

Vinge went on to propose several alternative ways in which such a technological singularity could come about, which is another reason for having confidence that the event will occur:

> -There may be developed computers that are awake and superhumanly intelligent. (To date, there has been much controversy as to whether we can create human equivalence in a machine. But if the answer is "yes, we can," then there is little doubt that beings more intelligent can be constructed shortly thereafter.)
>
> -Large computer networks (and their associated users) may 'wake up' as a superhumanly intelligent entity.

---

[18] Vernor Vinge's "Technological Singularity," *Whole Earth Review*, December 10, 1993.

-Computer/human interfaces may become so intimate that users may reasonably be considered superhumanly intelligent.

-Biological science may provide the means to improve natural human intellect.

Before you jump to the conclusion that Vinge is a voice of techno-apocalyptic gloom, you would be well served to read his paper. If you do, you will discover that he closely follows the long-honored traditions of science, which tell us what is possible out of a range of possibilities but does not predict exactly what will happen. The range of possibilities resulting from Vinge's concept of a technological singularity, however, boggles the mind, for by definition a singularity is a point at which conventional analysis breaks down. If scientific knowledge and technological innovation continue to increase at their present rates, approximately doubling over constant periods of time, then, by Vinge's analysis, it may soon be possible to create superhuman intelligence. When/if that point is reached, we will experience the technological singularity of which he writes. This is no small matter; like entering a black hole, what lies beyond such a singularity cannot be known ahead of time.

While the topic of a technological singularity is not one that has inspired a significant number of texts, it has generated more information on the Web than is possible to read in any reasonable amount of time. Much of this discussion, while extremely fascinating, concerns life in a post-singularity world. Frankly, I don't see that such speculation is a productive use of our time, for by definition we cannot conceive of what takes place beyond the event horizon of a singularity. This is the realm for our best science fiction writers to explore. For the current discussion, we will focus our attention on some of the possibilities Vinge sees that may produce this technological singularity.

Thinking Machines

In his "Technological Singularity" paper, Vinge speculates that computers might be developed that are awake and are more intelligent than humans. This statement, of course, opens up the Pandora's Box of "Artificial Intelligence," or AI, which has been the subject of serious debate ever since computers became widely available. Obviously, a full

discussion of AI is beyond the scope of this book. In fact, the field is so large, so important, and so controversial that I considered not even including a brief reference to it here. Yet the possibility that we can build a computer that possesses superhuman intelligence has become so realistic it simply cannot be ignored. Keep in mind, we live in a probabilistic universe. Even if the probability of superhuman machine intelligence is very low, it remains a possibility that may actually be realized within the lifetimes of most of the readers of this book.

Although the specter of super-intelligent machines may not be something everyone wants to think about, the fact remains that a lot of brilliant women and men are hard at work trying to evolve just such machines. It seems to me that *all* of humanity has a right to take part in discussions about how these unimaginably powerful devices will be used. This is not the time to sit on the sidelines and let only our scientists and engineers consider the implications of deep and rapid technological advances. These are times when the entire chorus of human consciousness is called upon to raise our voices in discussions about technology that will have profound implications on the future of our species. There are many **newsgroups** and electronic mailing lists dealing with issues surrounding machine intelligence. Perhaps it is time to add your voice to these conversations.

My personal view is that if advanced machine intelligence can be realized, we will see this development well before the end of the 21st century. If you are interested in looking deeper into this subject I recommend you begin with Erik Davis' book, *Techgnosis*, and with Ray Kurzweil's book, *The Age of Spiritual Machines*.

Networks Awaken

Another possible catalyst for a technological singularity, as suggested by Vinge, is that "large computer networks (and their associated users) may 'wake up' as a superhumanly intelligent entity." It is important to keep in mind here that Vinge's singularity paper was written in 1993, before widespread use of the World Wide Web began. The prospect of the *Internet* awakening appears to me to coincide nicely with speculations about a technological singularity. The big question, of course, is what is meant when it is said that the network and its associated users collectively wake up. In the final chapter of this book, I will explore some possible

ways in which the Internet/noosphere combination may experience such a waking up singularity.

Computer / Human Symbiosis

One of the less controversial paths to a technological singularity postulated by Vinge is one where "computer/ human interfaces become so intimate that users may reasonably be considered superhumanly intelligent." We already can see advances in this area taking place. For example, in his book, *The Age of Spiritual Machines*, Ray Kurzweil describes an experiment in which an electrode was inserted into the brain of a paralyzed stroke victim allowing him to control the cursor on a personal computer with his thoughts alone. In a recent article, Kurzweil says, "In the 2020s, these neural implants will not be just for people with disabilities, but will be used to improve our perception, memory, and logical thinking, and even create virtual sensory experiences."[19] It appears to me that this is precisely what Vinge means by "intelligence amplification," another phrase he uses to describe advanced human/computer symbiosis.

One pioneer in **cyborg** research, Kevin Warwick, has already tested an implant in his arm that sent information about his physical location to his building's computer. After having the chip implanted in his arm, Warwick's laboratory building would greet him when he arrived in the morning and unlock the door as he approached. But this is only the tip of Warwick's research iceberg. His current project calls for a more advanced device to be directly coupled to his nervous system. Once his new device is in place, he plans to conduct a wide range of experiments to determine how well the human brain can process sensory input from non-human interfaces. In an article for *Wired* magazine, he wrote:

> . . . we can't normally process signals like ultraviolet, X-rays, or ultrasound. Infrared detects visible heat given off by a warm body, though our eyes can't see light in this part of the spectrum. But what if we fed infrared signals into the nervous system, bypassing the eyes? Would I be able to learn how to perceive them? Would I

[19] Ray Kurzweil's "The Web Within Us: Minds and Machines Become One," *Business 2.0*, pp. 173–175, December 1999.

feel or even “see” the warmth? Or would my brain simply be unable to cope? We don’t have any idea—yet.[20]

Neural implants are no longer the stuff of science fiction. They are a part of today’s version of reality. All around the world, researchers, software developers, experimenters, benign hackers,[21] and other scientists continue to blur the boundaries between human and machine mind. As our interfaces to the Internet become ever more biological in nature, we also see the Net moving deeper into wireless transmission. It is certainly within the range of probabilities that one day soon there will be neural implants, which allow us to tap into the total body of human knowledge stored on the Internet simply by executing mental commands. Perhaps the day will arrive when we reach a critical mass of such highly connected individuals, and the resulting resonance of this group mind will precipitate the technological singularity that Vernor Vinge foresees.

Ubiquitous Computing

While widespread use of neural implants may still be many years away, ubiquitous, or immersive computing is now upon us. Already we are swimming in an ever-thickening soup of electronic data as wireless transmissions begin to saturate the radio frequency energy spectrum. You may think that by electing to not own a cell phone, pager, or other wireless communication device, you can avoid becoming caught up in this growing web of instantaneous communications. The rising tide of technology, however, will eventually float your consciousness onto this vast sea of information without your even realizing it.

---

[20] Kevin Warwick’s “Cyborg 1.0,” *Wired*, p. 146, February 2000.

[21] It may come as a surprise to some readers to learn that there are both “good,” or ethical, and “bad,” or unethical, hackers. Many companies today hire ethical hackers who attempt to circumvent existing security barriers looking for weaknesses that can be shored up before they are discovered by unethical hackers who seek only to cause damage and try to steal valuable information. Before the widespread deployment of the Internet, the word “hacker” generally carried a more positive connotation than it does today. Originally, the term was used to describe a computer professional who was the master of her of his technological artifacts.

My grandparents came into a world without electricity and indoor plumbing. My parents came into a world without television. My children came into a world without personal computers. In the span of a single century, those of us fortunate enough to live in a technologically developed country have evolved our expectations of everyday reality from that of life on a farm, with no electricity or plumbing, to the point where it would seem strange indeed if we could not view live broadcasts of newsworthy events coming from any place in the world, or where we could not pick up a telephone and speak with our friends, no matter where they might be at the time. This dramatic change in world view has come about in a single century. Just imagine what a "normal" world view will mean to children born at the beginning of this century, as they look back over their life when the 22nd century is about to dawn.

Long before this century is one-half over, even what is now called the third world will be immersed in an unseen web of interconnected computing devices. Sooner than most people think, many of the things we manufacture will be tagged with invisible sensors. Containers will know when their contents are getting low. Refrigerators will automatically prepare grocery lists as items are removed. Over time, cyberspace will hold a mirror image of our physical world, and the distinctions between Virtual Reality and every day consensus reality will begin to blur. Our living environments will be saturated with technology. Many objects will recognize us as we come near them. Things we now think of as inanimate will seem almost alive as they respond to our movements and even to our moods.[22]

"STOP!" some say. "This is a nightmare scenario. We must not let this happen."

I suspect my great grandparents would have said the same thing when their children were born, had they been able to visualize our 21st century world. Yet most of our children and grandchildren would probably not want to live in a world without cell phones, pagers, and the Internet. To stop the exponential growth of ubiquitous computing is not only impossible, it would be unwise. What *is* called for is for each and every one of us to become personally involved in debates about the ethical

---

[22] For a clear and compelling description of how we can expect to be living fifty years from now, see George Johnson's "Only Connect," *Wired 8.01*, pp. 148–160, January, 2000.

considerations and human issues that will shape the future of technological growth on this planet in the century that lies before us.

As with everything else in this universe, technology embodies both positive and negative elements. If we want, we can simply throw up our hands and say these issues are too big for us to deal with and let others decide how these invasive devices will be deployed. Or we can become involved. The dark side promises an Orwellian future, with Big Brother knowing everything about us from movements to thoughts. The alternative is for us to build into this technology the basic human right of privacy—the right to be left alone as long as we are not causing harm to others or to the planet. The future is, quite literally, in our hands.

The Chaotic Attraction of the Internet

The sheer magnitude of new theories, scientific discoveries, and futuristic experiments that are taking place every day, coupled with our ever-growing body of knowledge about ancient cultures, is enough to overwhelm even the most well grounded mind. While this rush of events is driving some of our neighbors back to the deceptive security of fundamentalist religions, our most forward-looking and fearless minds are being drawn ever more deeply into the chaotic embrace of the Internet. In times like these, when the old world view of Newtonian physics is being supplanted by one of quantum reality, it becomes increasingly important that we remain both open to and skeptical of radical new ideas. This is certainly not the time to bury our heads in the sands of old thinking. Instead we would be wise to firmly plant our minds in the silicon of cyberspace and see what new ideas begin to grow.

As much as some people fear the incredible change that is about to sweep over our societies, there simply is no longer any way to stop it. A technological tsunami, the size of which has never before been experienced on this planet, is about to engulf our entire globe. Even many of the less technically developed countries have begun to feel its approach. The wireless communications revolution, with the ever expanding network of networks we call the Internet playing a significant role, is already underway in almost every nation on Earth. The technological revolution this new century promises is about to change our world forever.

Whether such unprecedented change will have a positive effect upon this planet remains to be seen. In the chapter ahead titled “Your Future in Cyberspace,” I will point out some steps you can take to make your voice heard in the ongoing discussions of issues that will directly affect the social direction ubiquitous computing and its nervous system, the Internet, will take for the next decade or so. It is my hope that by the time you finish reading this book you will share my optimism that we are heading to higher ground. First, however, we will take a look at a few of the potential detours that might be encountered along the road to an Internet that is readily available to anyone in the world who wants to use it, without having to submit to government or corporate censorship. A delicate balance between free speech and social responsibility must be maintained if our utopian dreams of a free global exchange of ideas, which are the genes of consciousness, is to become a reality.

Chapter 5: Freedom in Cyberspace

"The right to control one's own consciousness is the quintessence of freedom."
Richard Glen Boire [1]
"On Cognitive Liberty (Part I)"
Journal of Cognitive Liberties (2000)

What does the word "freedom" mean to you when used in the context of cyberspace? It might be worth your time to pause for a moment and reflect on this. How the world community-at-large answers this question in the decade that lies ahead will have a profound effect on the future of free speech and free thought on this planet.

As you recall, the opening chapter in this book defined cyberspace as a synergistic collection of concepts, all denoting a sense of place, or mind-space. In essence, cyberspace exists primarily in our minds. It is from this perspective that I suggest we consider what is meant by "freedom in cyberspace."

Each day, as we make our way through this world, we are confronted with the thoughts of others. Governmental bodies tell us that we *must* act, and therefore think, in certain ways if we are to be considered law-abiding citizens. Businesses want to influence our thinking in ways that make their products and services attractive, so we will spend our money on them. Our friends, churches, and families all compete for their share of our mental freedom as well. Since this is how the world works, it should be no surprise to find life to be much the same in cyberspace.

To my mind, the word "freedom" never stands alone. It is always accompanied by its faithful companion, "responsibility." In cyberspace as in everyday reality, we walk on a high wire, strung between these two old

---

[1] Richard Glen Boire, Esq., is the Executive Director of the Alchemind Society (www.alchemind.org) and holds a Doctorate of Jurisprudence from the University of California, Berkeley. He is an expert on constitutional and criminal law, specializing in the jurisprudence of extraordinary states of consciousness, dissident thinking, and shamanic inebriants.

friends. As long as we maintain our balance, all is well. Today, however, with the onrush of new technology, such as the omnipresent computing environments described in the previous chapter, a strong wind has begun to blow, one which threatens our precarious balance on the wire. As Richard Glen Boire asks:

> What are the implications for mental autonomy when wearable computers become wet-wired to our own minds and memory is augmented by a high-speed wireless connection to the Web? Similarly, advances in biotechnology and drug-design increasingly raise legal and ethical questions related to cognitive liberty, including what rights people will have to access these and other technologies, and what rights we will have to avoid them.[2]

These are very important questions, and how they are answered will have a direct impact on the future of biological life on this planet for many years to come.

[2] Richard Glen Boire's "On Cognitive Liberty (Part I)," *Journal of Cognitive Liberties Vol. 1, No. 1*, p. 8, Winter 1999/2000.

Transcending the Corporation/Nation State

"It took man 250,000 years to transcend the hunting pack. It will not take him so long to transcend the nation."
J.B.S. Haldane

"Control can never be a means to anything but more control."
William S. Burroughs
Naked Lunch (1959)

When one thinks of a country other than her or his own, one usually thinks of it as a collection of individual people who have a common culture. Yet when we think about a transnational corporation we generally do not think of the individuals who make up that company. Instead we tend to view these large entities as having a will and life of their own, independent of the people who compose them. I find it ironic that so many people think of corporations as autonomous living entities but view nation-states as large groups of people in which individuals carry the full weight of their nation's actions. When we are slighted or injured through the fault of a corporation we say, "The XYZ Company's widget ruined my carpet." Yet when our country acts harmfully, the victims say, "Those Americans ruined our economy." So which is it to be? Should corporations and countries both be viewed as independent entities, responsible only as some kind of super-person, or should we see them as assemblages of individual people pursuing some form of common objective? It seems to me that for the sake of consistency they both should be thought of in the same way.

If we are to remain committed to the principles of democracy, then let us view all human organizations for what they truly are, groups of people. With that view in mind, consider once again the title of this section, "Transcending the Corporation/Nation State." This title isn't meant to imply that we overthrow our governments and wreak havoc on our companies—quite the contrary. What I mean by "transcending" is that each and every one of us not only take responsibility for the actions of our countries and companies, but that we also view the actions of organizations we encounter to be the joint responsibility of every one of

their members. Let us proclaim this century's motto to be "Assume Responsibility."

Ever since the rise of the dominator society, the great mass of humanity has been content to let leaders run the show. Even in pseudo-democracies like the United States, we have abrogated most of our rights and allowed a system to evolve which has little relationship to a true democracy. If you go to our nation's capital and seek an appointment with your congressperson, most likely you will have to wait in line behind a legion of lobbyists. Those are the people who have the real influence over our elected officials. Our national elections have been reduced to a contest in marketing 30–second sound bites. One of the reasons I do not like our current electoral process is that it often makes me *feel* the way I do when I push a WALK button on a downtown traffic signal. I *know* that the button is connected to the traffic light in some way, but my *sense* is that the light is going to change when it is programmed to change and not before. In the United States most of our elected officials are pre-programmed by the people and organizations that donate campaign funds, and we button-pushers in the voting booths are being led to believe we have more to do with the process than is actually the case.

Most members of our species have spent the past thousands of years living in subjugation to those who see fit to control access to any and all information that may, in some tangential way, pose a threat to their base of money and power. This control of information began in ancient times, when priests first took control over the lines of communication with the spiritual world. They told us that we were not ready, or did not have the proper training to hear these messages directly, and we accepted these pronouncements with little question. Today, priests of all manner continue to impose their ideology on everyone who will listen. Without access to the same underlying information on which they base their claims, we have been unable to directly challenge what they tell us.

Fortunately, the Internet now provides a way for us to change this situation. Armed with information that was previously controlled by those in positions of power, we now have the means to transcend the feeling of powerlessness we once felt when encountering the vast structures of government and business. What is more, we can instantly communicate this information to other like-minded people all over the world. The ability to communicate with one another, globally and instantly, is the real

advantage the Internet brings to those who live outside the walls of the rich and powerful. This is why the Internet presents a serious threat to the people who are running the show today. Only by joining together in a community of minds blanketing the entire planet, touching every human organization, will we be able to overcome the barriers erected by nations, religions, corporations, ethnic groups, and on down to the barriers most of us erect around ourselves. *It is imperative that we not allow any government, business, or other organization to hold control over our personal cyberspace.*

If you do not think governments want to do exactly that, listen to the words of Richard A. Clarke, the U.S. National Coordinator for Security, Infrastructure Protection, and Counter Terrorism: "The accompanying National Plan is the first attempt by any national government to design a way to protect its cyberspace."[3] Notice the subtle use of "*its cyberspace*." If we are not *extremely vigilant* in the next few years, those now in positions of power, both in government and in business, are going to succeed in carving cyberspace into territories, just as they have done on land. In the U.S. government's plan, just beneath the sentence quoted above, is the heading, "A New American Dependence . . . A New Threat to America." Once again the military/industrial/prison complex is attempting to create enough fear in the minds of Americans that we willingly surrender even more of our hard-won freedom. Granted, the U.S. plan clearly states, "The government will not dictate solutions and will eschew regulation. Nor will the government infringe on civil liberties, privacy rights, or proprietary information." But anyone who was a political activist in the 1960s can remember how easy it is for a small group of fanatics within the government to disregard such boilerplate. While I do not mean to downplay the threats that terrorists present to our networks, I believe that these threats can be defended against by means that fall far short of putting a military controlled cybercurtain around our nation's information space.

It is time to stand up and be counted in these crucial days of Internet policy formation. Let us tell our policy-makers that we do not want to waste our time and energy on a never-ending series of wars in

---

[3] *National Plan for Information Systems Protection Version 1.0*, available at www.whitehouse.gov/WH/EOP/NSC/html/documents/npisp-execsummary-000105.pdf.

cyberspace, trying to prove the superiority of one culture, religion, or country over another. Instead, let us channel all of our energy into building a civilization, a *planetary civilization* ruled by our species-mind and encompassing all the cultures, races, religions, and governmental bodies on Earth. For decades, motivational speakers have been saying, "What the mind can conceive, and the heart believe, the hand can achieve." Nothing is more true in a quantum universe.

The Survival of our Species

"In the history of the collective as in the history of the individual, everything depends on the development of consciousness."
Carl Jung

It is difficult to raise the specter of the extinction of our species and at the same time paint a glowing picture of the endless prospects for human advancement that lie just over the horizon. Yet life always seems to remain in some sort of precarious balance, so the greater our potential for finding ways to extend human life expectancy beyond 100 years, the greater is the potential for eliminating our species completely.

Some of my acquaintances strongly disagree with my views about the magnitude of the ecological crises we now face. Although many of them admit we have serious challenges ahead, they also think we have several centuries left before these ecological problems reach crisis proportions. A few are quite cavalier, believing that these warnings are nothing more than political maneuvers on the part of some fuzzy-headed liberals. If only this were so. Unfortunately, we appear to be approaching a point of no return. On November 18, 1992, approximately 1,700 of the world's leading scientists, including the majority of living Nobel laureates in science, issued the "World Scientists' Warning To Humanity." Here is what they said in their introductory paragraph:

> Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the

> manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.[4]
>
> This important document ends with the following "Warning:"
>
> We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.[5]

Keep in mind, that document was published in 1992. At the beginning of the 21st century, although small victories for the environment have been won, the overall state of our planet's biosphere is in even worse shape than it was when the above warning was issued. We pride ourselves on being a culture steeped in science, yet we have ignored this clear warning from our leading scientific minds. Without a massive and rapid expansion of awareness about the problems caused because of the way in which we humans are using technology, I fear we will soon enter the twilight of the human experiment.

Of course, there are those who will say, "So what. After all, this planet is nothing but a little speck of dust when considered in the context of the cosmos. The human species, as it is presently constituted, does not appear to be the kind of intelligence required to bring peace, love, and harmony to the universe. Maybe it is better that we do not survive." These people, however, miss the point. When considered in the context of the *entire universe*, human consciousness exists *only* on Earth!. Are we not obligated to do everything in our power to see that this unique form of awareness continues to grow and prosper? By so doing there is hope that one day our entire species will awaken to the fact that we are, in fact, all an integral part of a much larger whole, that we are truly all connected, and that our environment is a part of ourselves.

Although I am not optimistic enough to believe that a last-minute solution to our environmental crisis is *inevitable*, it is my personal belief that we still have time to change our current course of planetary destruction. If we act quickly and decisively, we can restore the ecological

---

[4] Found at www.deoxy.org/sciwarn.htm.

[5] *Ibid*.

systems required to support human consciousness for another millennium. Without the Internet I would not be this optimistic, for I believe the Net is the most powerful technology yet developed that has the potential to ensure our continuing evolution and survival as a species. If my expansion on Teilhard's idea is correct, the Internet is the physical infrastructure of the noosphere, which therefore makes it the *focal point* for the continuing evolution and expansion of human consciousness. Let us not stunt this growth in consciousness by restricting free speech on the Net.

With the exponential increase in inter-human communications brought about by the Internet, and particularly with the speed at which these communications can now take place, we are well suited to move ahead and evolve our consciousness to a higher, more global, level. The days of "talking the talk" without "walking the walk" of environmental correctness have passed. The time has arrived for each of us, in our own microcosmic way, to let others know what we have already observed, that it is no longer enough to recycle a few cans, bottles, and papers. Let us help others elevate their consciousness to the level where they also clearly see that *all* of our daily actions and decisions have a direct impact on the biosphere. For example, if you happen to believe that organically grown food is healthier for both yourself and for the planet, then encourage others to follow your lead. Let your friends know that you are not waiting until organic products become so plentiful that their prices are as low as those of foods produced by our massive agri-chemical industry.

If you know of companies that are harming the environment, make the decision to no longer purchase *any* products they sell, and suggest to your friends that they do the same. Often it is a small community or neighborhood that suffers from the shoddy environmental practices of these corporate polluters. If you live in such a community, tell the noosphere about these corporate criminals by posting the story on the Internet. Gradually, there will evolve a global awareness about these polluters, which seeps into our species-mind. The same is true in politics and in business around the world. There are many questionable practices that should be brought out into the open where we can give them a fair hearing. If you know of someone or some organization that is harming the planet, do not keep this information to yourself. You no longer have the luxury of waiting for someone else to take these measures. With sound daily actions and decisions on the part of each and every one of us, we will not only survive this crisis, we will thrive.

The Importance of Your Daily Decisions

It isn't just the citizens of cyberspace who are aware of the speed at which change is taking place today. Virtually everyone I know has a sense of events rushing at them at an ever increasing rate. One of the things that makes this particular moment in time so unique is the incredible speed at which technology is advancing, and by that I mean *all* technology, not just what we see in relation to the Internet. Advances in the fields of gene therapy, nanomechanics, and wireless communications, for example, are taking place at rates undreamed of just ten years ago. I know of no experts in any of those fields who predict a slow-down in new discoveries and techniques.

Although *what* you currently believe about issues such as global warming does matter, what is just as important is that you *act* on your beliefs. If you sincerely believe that we are simply in the warm part of a cyclic change in weather patterns, then, after thoroughly researching the issue, you have a duty to marshal all the facts you can about your point of view and share this information with everyone you can. On the other hand, if you believe as I do that overpopulation is bringing our environment to a point where it can no longer support life, then you have an obligation to tell that story as you see it. In addition to what you are already doing, such as buying the proper detergents, conserving water, and recycling, for example, put up a Web page explaining your point of view. Encourage your friends to become involved in one of the global discussions on environmental issues that may be found on the Net. Remember the butterfly and chaos? You never know how a small, simple action will upset the balance of complacency and inaction and become the catalyst for a transformation of our entire species to a higher order of ecological awareness.

Humanity is truly at a millennial moment. More and more people are beginning to sense that something big is already underway. No one seems to know exactly how to explain this feeling, but it appears to be spreading in both the material and the cyber worlds. It is my personal belief that *now* is the time for each and every one of us, as conscious beings, to stand up and be counted. It is time for us to take charge of our own destiny. We *can* seize this moment in human time and lead the way forward, to higher realms of being. This is not the time to be timid or

afraid. It certainly is not the time to remain stuck in the old systems of thought and belief that have been imposed upon us since birth.

A new age is dawning before our very eyes. It is time to awaken and join in the dance of creative human activity. The day has arrived for each of us to tune in to our deepest feelings about what we have to contribute to the collective consciousness of our species. Although we are all ultimately the same at the deepest levels of our humanity, each one of us has a unique perspective to add to the universe of knowledge. What better way for you to do your part than to become a participating member of the cyberspace community? It is time to connect to the matrix we call the Internet and add your mind to our ever-evolving sense of global consciousness.

The Importance of Cyberspace

"Cyberspace is a mirror that gets held up to the third eye. And the third eye, ajna chakra, is the light that removes illusion. It shows things as they are."
Mark Pesce

Is it possible that the technology we call the Internet could bring an end to human aggression? During my service in a war that made little sense to the troops on the ground, I reasoned that if *everyone* involved, down to the last GI and rice farmer, had a sufficient amount of accurate information on which to base his or her decision about continued participation in the madness of that war, things would have turned out differently. Perhaps this is only a pipe dream, but the truth is we do not yet know what the political impact will be once the majority of world citizens have uncensored access to information from all sides of every issue. Is it too far-fetched to believe that once everyone realizes that we really are all next door neighbors that we will work a little harder to maintain civility throughout the world? Two generations from now there will be few world leaders who did not grow up chatting online with friends in a dozen or more countries. Online communications seem to quickly reach a level where we can clearly see how much alike we all are, regardless of race, nationality, religion, or other seeming barriers that might separate us.

The Internet at least provides a platform, a soap box in the global town square, from which to exchange ideas more directly. No longer does one have to fly to Paris and speak with café patrons about their real feelings during the World Cup. Today we just log on to the Net, jump into a chat room and join a discussion. Distance is no longer an issue. In fact, with the Internet, all of the minds in the world are joined at a single point, the phone jack in your home. What we, as humans, do with this opportunity is up to us. But the technology is certainly here to help whenever we are ready. The time has arrived for each of us to join the global mind—the global conversation that is taking place on the Internet.

Through an extraordinary chain of events, the Internet has come into being. Without any doubt, this is the most powerful communications medium in the history of our species. Its importance can almost be measured on the same scale as that of speech itself. A technology as powerful as this, however, carries equal degrees of risk and reward. What appears to be an incredible gift to humanity can quickly be turned against us. It is for this reason that *each and every* member of our species has a stake in seeing that this rapidly advancing technology remains under the control of our species-at-large, and not in the hands of just a few individuals or corporations. *This is certainly one of the single most important tasks of this decade*.

As John Perry Barlow says in his “Declaration of the Independence of Cyberspace:”

> Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.
>
> We have no elected government, nor are we likely to have one, so I address you with no greater authority than that with which liberty itself always speaks. I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear.
>
> Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world.

> Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. *It is an act of nature and it grows itself through our collective actions*.[6] [Emphasis added]

How each of us protects this "act of nature" is our test, our destiny. Unfortunately, there is no simple or universal answer as to *how* one should deal with the onrushing press of events and problems we face. In my own life I handle the constant and rapid change by visualizing change itself as a beautiful, perfect wave approaching a tropical beach. Although I have never been a surfer, I have always enjoyed watching these great athletes. So, in my own little Walter Mitty way, I see myself riding a surfboard on this great wave of change, speeding toward shore, the wind in my face, cool spray all around, and I hear the great roar of that powerful wave in my ears. While I am excited about eventually reaching the beautiful beach and all of its pleasures, I never take my concentration off the wonderful ride on which the wave is taking me. In short, I simply embrace the wave of change, always on my toes to sense a shift in the direction of the wave, so I can adjust my board and extend my ride.

Some of my fellow surfers occasionally wipe out. A few simply give up and paddle to shore. But most of them just point their boards out to sea and look once again for that perfect wave. To me, the Internet is exactly that. It is a perfect wave of change, excitement, power, and fun. And, like it or not, whether you are in the seas of business or just "an average guy," you are eventually going to be swept away by this great wave of technology we call the Internet. So you wipe out a few times. Big deal. But when you finally get your balance and catch the wave, you will be in for the ride of your life.

There is one more thought I would like to bring in to this metaphor. Whatever you do, do not lose your sense of humor as you become ever more deeply involved in the great events that have begun to unfold. Yes, these are precipitous times, but what a great time it is to be alive! Whenever I begin to take myself and life too seriously, I recall a story that

---

[6] John Perry Barlow's "Declaration of the Independence of Cyberspace" may be found at www.eff.org/pub/Publications/John_Perry_Barlow/barlow_0296.declaration.

J.B.S. Haldane told about a scene he witnessed one evening in India during the First World War. As he told it:

> The other picture is of three Europeans in India looking at a great new star in the milky way. These were apparently all of the guests at a large dance who were interested in such matters. Amongst those who were at all competent to form views as to the origin of this cosmoclastic explosion, the most popular theory attributed it to a collision between two stars, or a star and a nebula. There seem, however, to be at least two possible alternatives to this hypothesis. Perhaps it was the last judgement of some inhabited world, perhaps a too successful experiment in induced radioactivity on the part of some of the dwellers there. And perhaps also these two hypotheses are identical, and what we were watching that evening was the detonation of a world on which too many men came out to look at the stars when they should have been dancing.[7]

As important as it is to grapple with the problems of 21st century life on the planet Earth, it is just as important that we take time once in a while to fully relish this wonderful dance of life. As Alan Watts[8] once pointed out in a taped lecture I heard, "There is no beginning or ending point to a dance. There is only the dance itself, and the purpose of life is to dance."

---

[7] J.B.S. Haldane's "Daedalus or Science and the Future," 1923, found at www.santafe.edu/~shalizi/Daedalus.html.

[8] Alan Watts is best known for his books and lectures about Zen and other Eastern philosophies.

Chapter 6: Your Future in Cyberspace

"Whatever you do will be insignificant, but it is very important that you do it."
Mahatma Gandhi

"Mindfulness must be engaged. Once there is seeing there must be acting. Otherwise what is the use of seeing?"
Thich Nhat Hanh

"If you bring forth what is within you, what you bring forth will save you. If you do not bring forth what is within you, what you do not bring forth will destroy you."
Timothy Leary (quoting Jesus)

"Reality is a network of relationships."
Fritjof Capra

Cyberspace is already tugging at your mind through the attraction of the Internet, otherwise you would not be reading this book. Some readers may have already made a decision about the part they intend to play in the colonization of this new land of mind. Others instinctively realize that changes of great evolutionary importance are underway and are beginning to see that the Internet can be pivotal in these developments. Then there are those who still are not sure what all the fuss is about. After all, the year 2000 arrived rather uneventfully. There was no apocalyptic end to the world, nor was there a global computer crash, as foretold by some.[1] Now, as the 21st century begins its inexorable march into the future, the odds seem to favor a continuation of the rapid, yet steady progress we witnessed during the last century, *without* any quantum change in our species' consciousness taking place. Of course, some of us believe otherwise.

---

[1] This statement is not intended to lessen the importance of the vast amount of work that went into preparing the world's computer systems for the year 2000 rollover. Without the long hours and billions of dollars spent in preparation, we would surely have experienced numerous calamities.

It is true that the vast majority of the human species remain unconnected to the growing global consciousness now taking root in the Internet. By the end of the 20th century only a few hundred million people had access to the Net.[2] From the perspective of total world population, this represents an extremely small minority, particularly when one considers the fact that almost one-half of those with Internet connections, at the beginning of the 21st century, reside in the United States and Canada. However, when one compares the amount of time it has taken to connect 300 million people to the Internet with the amount of time it took for telephones and television to achieve a significant number of users, this number becomes quite significant.[3] Keep in mind here that we are talking mainly about a technology, the World Wide Web, that was only ten years old at the beginning of the 21st century.

The speed with which this technology has been adopted is several orders of magnitude greater than we have ever witnessed before. Something much more powerful than money is pulling our minds into cyberspace at this incredible pace. Even government and business leaders who abhor the Internet's anarchy are being drawn into its chaotic embrace. Along with the exponential growth the Internet is experiencing, we are also seeing major advances being made in other important new technologies, such as human stem cell research, biology-based computers, and high-speed wireless communications, just to mention a few. Underpinning much of this progress is the communications medium we call the Internet.

With each passing day, the Internet extends its tendrils of information ever more deeply into our lives. In hundreds of little ways, most of which are never even noticed, our species-mind is growing and evolving in cyberspace. Each day brings with it a new wave of minds, each one experiencing the Internet for the first time. There are now only a few hundred million minds that frequent cyberspace, but before the next two decades have passed there will be *billions* of minds with access to the Net. What will a first Internet experience be like for them? I speak not about new technology here but about the degree of freedom we will have

---

[2] Nua Internet Surveys, Nua, Ltd., www.nua.ie/surveys.

[3] For example, at the end of its first *fifteen years* of operations, the Bell Telephone Company had installed fewer than 250,000 telephones in the United States.

in cyberspace at that time. The answer to that question, of course, is wide open. It has not been predetermined that speech will remain free on the Internet, nor has it been clearly established what is even meant by "free speech" in relation to the Net. These great issues remain for us, as a global community-at-large, to define. Reality is in our hands.

Consciously Evolving Reality

"Man is born free, and everywhere he is in chains."
Jean-Jacques Rousseau
Social Contract (1762)

In what kind of universe do *you* live? Is your world view still governed by Newton's laws of mechanics, or do you live in a quantum mechanical universe? If you hold a belief in the laws of quantum mechanics, then, if you haven't already done so, you may want to adjust your world view to fit your physics. In a quantum mechanical universe, "reality" depends on observation to precipitate the objective world out of a myriad of quantum possibilities. The fact that you are not a nuclear physicist does not mean you can ignore the implications of their discoveries. A revolution of consciousness has already begun!

How do you read the title of this section? Do you think it means, "[We are] Consciously Evolving Reality," or do you think it means that reality is evolving on its own, but in a conscious manner, *i.e.*, "Reality, Consciously Evolving?" I see it both ways. My point is that it is wise to keep in mind that the various ways in which we use and interpret our language is what shapes our view of reality. Listen to what Terence McKenna has to say about evolution and language:

> That's why it is so important to communicate, for all of us to put our best foot forward, to put our best metaphors on the table. Because we can move no faster than the evolution of our language. And this is certainly part of what the psychedelics are about: they *force* the evolution of language. And no culture, so far as I am

aware, has ever consciously tried to evolve its language, with the awareness that evolving language was evolving reality.[4]

If McKenna is correct, and I believe he is, what can we do to accelerate the evolution of language itself? Sadly, we have allowed ourselves to reach a point where we have actually *outlawed* most entheogens, and where we have marginalized persons who practice various shamanic techniques, which are some of our best tools for linguistic evolution. We have been so arrogant as to brand Mother Nature an outlaw for evolving and continuing to grow these plants. For all but a few brave psychonauts and shamans, using entheogens to accelerate the evolution of language is far too dangerous to undertake. Fortunately, a new communications technology has evolved—one that can launch us into a mind-space in which we can more rapidly evolve our language, and thus our reality. Those who hear Gaia's plaintive cry for help can now use the portal of the Internet to launch their minds into cyberdelic space. It is there that the collective human species-mind, the noosphere, can enter into union with Gaian consciousness and form a true World Soul, which has the power to evolve our common reality any way we choose.

By suggesting that the Internet serve our species as a new sacred medium, I am in no way implying that the shamans and psychonauts of this world discontinue using various archaic techniques for entering entheospace. However, I think most of these bold warriors will agree that only those with the requisite mind-set will want to undertake some of the more demanding ecstatic practices. What I *am* saying is that we now have a tool, the Internet, which all persons on Earth can eventually use to expand their consciousness. Within twenty years, virtually all people on the planet will be able to launch their minds into cyberspace. Once there, the minds that are most in tune with Gaian consciousness will find their way to cyberdelic space where they can come together, in all their complexity, and jointly awaken in the noosphere.

Will entering entheospace by way of cyberdelic space provide less potential for mind expansion than the ingestion of entheogens? This depends upon how one defines "potential." I see the different portals for entering entheospace as having more of an effect on the *type* of thinking than on a *potential* for expansion of mind. For example, reports from

---

[4] Terence McKenna's *The Archaic Revival*, p. 21 (Harper San Francisco, 1991).

shamans about their journeys after ingesting a sacred plant sometimes convey an other worldly or cosmic perspective of the reality they encountered. This is both good and necessary, but as *The Tibetan Book of the Dead* warns, “Do not take pleasure in the soft white light of the gods, do not be attracted to it or yearn for it.”[5] Only extremely well grounded people are able to resist the lure of the ecstatic experience that is found in psychedelic space. It takes years of training for a shaman or psychonaut to learn how to move beyond the god-realm, where existence is full of pleasure but is often unproductive. Entering entheospace through the portal of cyberspace may provide a degree of protection from this appealing trap for those who do not have a serious enough intent in the beginning.

Recently, I had the good fortune to receive a copy of a little book titled *Brainticklers II*. Imagine my delight, when reading the introduction to this book, to hear the authors say:

> Questions jump start thoughts. Within the world of chemistry and physics, thoughts can be understood as chemical reactions with electromagnetic effects in the mind and body. Since every action ripples subtly through the universe, it appears that all thinking has universal impact. Our thoughts also shape our beliefs which, in turn, frame our every action, whether as individuals or as nations. As technology propels us forward into the age of information, thoughts have become more transformative than in any previous millennium.
>
> Often a question must be asked before significant new thoughts occur.[6]

In addition to being a tool to use in tailoring one’s world view to quantum reality, this book exemplifies the old adage that questions are far more important than their answers. What sets *Brainticklers II* apart from other such exercises is that to answer them you first move your mind forward in time to the year 3000. If you follow the authors’ brief

---

[5] Francesca Fremantle and Chögyam Trungpa (translators), *The Tibetan Book of the Dead*, p. 43 (Boston: Shambhala, 1987).

[6] Elizabeth Arnold and Rod Beckström’s *Brainticklers II*, p. 2 (San Francisco: Brainticklers Publishing, 1999).

instructions, I think you will find that the questions they pose will actually force your mind to expand. Here are a few examples:

> To what degree will humans be able to manage and prevent what we now call natural catastrophes—tornadoes, earthquakes, lightning? How would society decide when to intervene?[7]
>
> If we find positive proof of extraterrestrial life, how will this affect our view of God, angels, ourselves?[8]
>
> In 3000, what 20th century human-built structure will be visited by the most people? Why? What human-built structure of the 20th century is most likely to confuse people in 3000 as to its purpose? Why?[9]

Before you ponder these questions, first try answering them from the perspective of a person living in the year 1000 who is being asked these questions about the year 2000. By so doing you will stretch the bounds of your consciousness just enough to let it expand into a space where it begins to form rational answers to questions like these. If you take the time to think about such large questions you will soon see how they effectively stretch your mind. By joining discussion groups that are working on similar questions, your consciousness cannot help expanding. Already there are thousands of global discussions taking place on topics that are directly related to the long-term survival or our species and the environment in which we live. Maybe it is time for you to add your voice to this worldsong, if you have not already done so.

The evolution of our consensual reality is one of the most important projects to which we can apply the new technology we call "Virtual Reality," VR. As the pioneers in this new medium of mind improve their art, everyone will benefit. Before long, this technology will reach the point where you can enter a VR world that is governed by the laws of nature *you* establish, and is also very realistic in its primary details. As you become the master of your virtual worlds, you will find it much easier to bring these visions to physical fruition once your mind returns from cyberspace. By first exploring new modes of living in virtual

---

[7] Arnold, *Brainticklers II*, p. 21.

[8] *Ibid*., p. 45.

[9] *Ibid*., p. 77.

worlds, we will be much better equipped to navigate our way through the infinity of parallel universes that await our arrival. For our species to survive, it seems imperative that we build a new consensual reality, one that fosters a deep understanding of our planet's ecology.

A Recapitulation

"We see what we believe and not just the contrary; and to change what we see it is sometimes necessary to change what we believe."
Jeremy Narby
The Cosmic Serpent (1999)

While it is not my intention to provide a specific plan of action, throughout this book I offer suggestions on ways in which one might better infuse oneself with the spirit of the Internet and thus become a more integral part of the noosphere. The following is a brief summary of these earlier suggestions.

Have Daily Conversations with Gaia

From time to time I have read scholarly speculations about the birth of the ego. One school of thought on this subject is that, until around the time of the Greek poet Homer, when men and women heard a little voice in their head they thought they were hearing the voice of the gods speaking directly to them. Eventually, some hypothesize, it was recognized that this little voice was actually the human ego and not the gods speaking directly to us. Perhaps it is time to reconsider the source of those little voices. Perhaps our ancient ancestors actually *did* hear voices other than their own.

During this past year, I have paid more attention to the source of some of my thoughts. In doing so, I have come to the realization that more and more of my thinking has to do with this planet, her ecology, and the biosphere as a whole. My Western-trained mind, of course, notes that these thoughts obviously come from somewhere in the depths of my psyche, that my subconscious has deemed it time to bring these thoughts to the surface of my mind. Yet I cannot help thinking that perhaps, just perhaps, it is Gaia's voice I am hearing. Is it possible, I wonder, that

humankind became so enamoured of this thing we call the ego that we lost our awareness that there *are* other entities who still communicate with us in some non-verbal ways? Shamans claim to have the ability to communicate with non-human entities. Why shouldn't everyone be able to use this facility, I ask myself?

Now I approach these questions from a different point of view. To satisfy my Western *mind*, I allow for the possibility that these thoughts of deep ecology that seem to spring forth unbidden are simply evidence of my own consciousness becoming more aware of the world in which it finds itself. To satisfy my *soul*, I like to think that Gaia is speaking directly to me. So, when I see a little shard of glass while walking on the beach, it isn't my conscience telling me to pick it up, it is Gaia, herself. For me, the message has more meaning if I think of it in this way. In the end it really does not matter where these thoughts are coming from, as long as I heed them.

If you give it just a little thought, you *know*, deep in your heart, that it is important that we quickly change the way we are treating our environment. Our little planet is groaning under the weight of the billions and billions of human beings who have come to live here. Most nations on Earth have strict laws governing the admission of new residents. Yet where are our planetary restrictions on the admission of new spirits who come to live in human bodies? Common sense alone reveals population control as the starting point for much environmental action. Recycling is no longer an option, it is one of our more important survival strategies. Searching out and supporting companies that have a Gaian consciousness, "green" companies, is no longer just a nice thing to do, it is a survival strategy for our species.

Unfortunately, most of us do not have the luxury of spending as much time outdoors as we would like. In fact, most of us spend more time involved with our technology than we do with what we think of as nature. Think of how many daily interactions each of us has with technology. Our kitchens, bathrooms, sources of entertainment and news, books, even the shoes we wear while walking in the woods are all technological artifacts. Just because our species has become quite expert at harnessing technology doesn't mean our technology is without spirit. This book is about some of the ways in which the Internet is infused with spirit. It is not a cold or dead piece of machinery. The Internet is as much a product of the evolution of

life as we are. It is the physical manifestation of our species-consciousness. Through the proper use of this sacred medium we can not only communicate with each other, but also better understand what is on Gaia's mind.

Join and Build New Communities

It is belaboring the point to continue encouraging you to become more active in the universe of global villages that are to be found on the Internet. Yet this may be a good place to make it clear that there are many important online communities that do not have their focus only on the ecological crisis our species is now facing.

Virtual communities are forming around every aspect of our lives and the life of this planet. One of the great advantages the Internet brings us is that no longer are we restricted to *only* the physical communities in which we spend our daily lives. Granted, it is very important for us to remain involved in our local communities, be they small towns, farming communities, or a neighborhoods in a larger city. It is to these communities we can bring the lessons we learn from the virtual communities to which we also belong.

The human mind is far too great to be constricted to just the confines of these physical bodies that now support our consciousness. Human consciousness is, or at the very least appears to be, one of the high points reached in the evolution of biological life on this planet. This great gift of consciousness is far too precious to remain in just one geographic location. There are countless communities of mind already functioning in the Internet, but if you don't find one to suit you then begin to build your own community in cyberspace.

While I appreciate the concept of virtual communities, I would like for us to develop a better way to think of these assemblages of minds. Again, I am dissatisfied with the word "virtual." Online communities are every bit as *real* as the community in which your body interacts. As you become more involved with this new form of community you will experience, at your deepest level of awareness, just how *real* are these minds with whom you have connected. Not one of us is alone on this journey through space and time. At times our situations may seem to be without hope, yet we know better. We are truly all connected, both to each

other and to all life forms. So it really comes down to opening up your life a little more. If you do, you will most certainly find one or more communities of mind in which you can live quite comfortably.

Assume Responsibility

I find it remarkable that there are still so many people who do not see how their daily actions, collectively compounded by millions of others, are destroying our environment. In the United States, our gluttony has made millionaires out of many fast food kings. That same gluttony is one of the primary reasons the Amazon's rainforests are being decimated. Fully one-third of all the species of life to be found on this planet live in this incredible place. Yet we endlessly quest for another hamburger, more lumber, more captive birds for our homes, and on, and on, and on it goes until the day arrives that we discover that it actually is too late! What are we going to do then?

Hopefully, there may still be time to stop this rape of Gaia's body. It is important that we quickly come to an understanding, on the level of our species-consciousness, that we are literally ripping out our own lungs, not just in the Amazon, but in forests throughout the globe. The Internet is a good place to begin spreading more awareness of these important issues. Perhaps what we are now seeing, as the green movement continues to grow in cyberspace, is the first stirrings of awakening in the noosphere, the awakening of our *collective* consciousness.

Just because the Internet provides nearly instantaneous access to information, patience and advance planning are still required when purchasing material objects from online merchants. The next time you order something online, take a deep breath just before selecting the shipping option, and then select the most energy-efficient method your schedule will allow. This is not always going to be an easy decision. It may even take some research on your part to find the best shipping methods for a given product.[10] Assume responsibility for even the smallest details in your life, for they are directly connected to everyone else's little

---

[10] See Joseph Romm's "The Internet Economy and Global Warming," December 1999, found at http://www.cool-companies.org/ecom/pr.cfm for an interesting study of the relationship between shipping methods and total energy spent to deliver merchandise.

details, which if left unattended can sometimes roll up into a big problem for our environment.

If your company offers a work at home policy, take advantage of it. Telecommuters and other home-based workers are already reducing our nation's overall energy consumption. Today most of these savings are in the form of lowered energy requirements for commuting to and from work. As more businesses see the value in having home-based employees, we hope to also see a reduction in the construction of large office complexes along with their high energy demands. If your company does not offer the option of working at home a few days a week, promote the idea yourself if it makes sense for your type of business.

Now that human consciousness has become actively involved in directing some of the processes of evolution, we each have the option of deciding how big a part we wish to play in the conscious evolution of our species. These are serious steps we are taking, and if we let our hearts be guided solely by personal desires and greed, what are we teaching our children? It is by our examples that we teach our children, and *our children* are the ones who will soon be called upon to make some very difficult decisions—decisions that will affect the state of all life on this planet for millennia to come. Let us teach our children well.

Help Save Free Speech

It will come as no surprise that there are mighty forces being marshaled in an effort to end the freedom of speech we now enjoy on the Internet. The surprise to many people, however, may come in knowing the source of one of these threats. While we citizens of the U.S. smugly assume that it is only communist dictators who want to limit access to information, we have not been paying close enough attention to our own back yard.

One official United States government Web site has already been caught planting hidden **cookies** on the personal computers of some people.[11] Allied with businesses that record our meanderings through cyberspace to better target advertisements, the White House was caught using information gathered from reading cookies to track the Internet

[11] See "Privacy Advocates Call On Congress To Investigate "Cookiegate" at www.epic.org/privacy/internet/cookiegate_pr.html.

habits of people who appeared to have any kind of interest in “drugs.” This illegal monitoring of U.S. citizens even included surveillance of people who were reading about ways in which to keep their children from getting involved with drugs. If you ever visited the White House Web site and on some later date visited another Web site that discussed any aspect of drugs, there is a good chance your name still is filed under “drug interested person” in a government data base.

Another instance of a governmental attack on free speech and privacy comes from the United States Congress. In 1996, Congress passed legislation providing for censorship of a significant amount of online information. This was done under the guise of protecting our children. Fortunately, our courts struck down this proscriptive legislation.[12]

The fact that restricting free speech is unconstitutional does not seem to bother today’s legislator. Using our children as a shield to pass Internet censorship legislation did not make it past the courts. Today, the War on Drugs is the reason being given to restrict what is already widely available information, both on the Net and in print. Champions of the emotional anti-flag burning crowd, Senators Orinn Hatch and Dianne Feinstein have also teemed up to bring us the “Methamphetamine Anti-Proliferation Act of 1999.” From its title, this act sounds like legislation the majority of Americans would favor. The heart of this act, however, has something far greater in mind than controlling an outlawed substance. It is *information* that is the target of this act. Here is what one online news organization has to say about it:

> The Methamphetamine Anti-Proliferation Act shows a complete disregard for the First Amendment and the principles upon which it was based. Hatch and Feinstein’s alliance represents a desperate attempt to stop the flow of information to a public that has grown increasingly tired of a war on drugs that appears to be both ill-reasoned and socially harmful.[13]

---

[12] For an overview of the “Communications Decency Act” see www.epic.org/CDA.

[13] “Cashing free speech: Hatch Feinstein Act tramples First Amendment,” Editorial in *The Michigan Daily Online*, August 9, 1999, found at www.pub.umich.edu.

It may be difficult to understand what is going on here, but veterans of free speech battles involving the Internet are well aware that those in positions of power will take whatever means necessary, under any guise they choose, to restrict our access to information. Laws like those proposed by Hatch and Feinstein are obviously unenforceable. Even elementary school children know enough about the Internet to realize that there simply is no way to constantly check and re-check links on every Web page to see if they lead to some "unacceptable" information. What acts like this are meant to do is to force people to censor their Web sites for fear of being arrested if they provide a link to any information our esteemed members Congress do not think we are mature enough to have. Let us as least be honest in our debates and list these confrontations under their proper category, the War on Freely Available Information.

In the final analysis, free speech is actually the cornerstone of the Internet experience. Those who have already experienced this wonderful and exciting exchange of ideas and information have, I believe, an obligation to see that the Net remains a place where any and all ideas may be freely exchanged. As Erik Davis so clearly points out, however, we cannot simply sit back and expect to see the Internet's atmosphere of freedom remain unchecked:

> The Dutch media activist Geert Lovink calls the initial years of the Net's mass popularity Dream Time: "a short period of collective dreaming, passionate debates, gatherings, and quick money to be made." Unfortunately, such periods do not last long before they succumb to the tug of more prosaic historical forces, and especially to the powerful undertow of money and power. In different ways, this has been the sad story of communication utopias from the telegraph to radio to television. Creative possibilities and novel social forms are winnowed and routinezed [*sic*]; technologies are packaged for consumers rather than hacked; commercial interests and the state alike colonize the new communications space as a "natural" extension of their domains.
>
> Whether or not the Internet will simply replicate this admittedly simplistic scheme remains to be seen.[14]

---

[14] Erik Davis' *Techgnosis*, p. 263 (Three Rivers Press, 1998).

The Internet has given our species its best hope yet to break free from the shackles of those who want to control information for their own ends. Since the earliest days of the Net, the mantra has always been, "Information wants to be free." We all have a big stake in how securely the basic human right of free speech becomes established on the Internet, and it is up to every one of us to do our part, no matter how insignificant, to ensure that freedom of speech remains a fundamental characteristic of the Internet.

There are many things you can do about attacks on free speech. If you are technically inclined, become involved in the work of the Internet Engineering Task Force (IETF).[15] So far they have done a terrific job in keeping the government at bay. Or write to your Congressperson and Senators about your beliefs regarding free speech and the Internet. Perhaps you agree with legislation that I find too restrictive. If so, then do some research, establish your position, and then make your position clear to your family, friends, and neighbors. But in one way or another, take part in the global discussion of this issue. Whatever you do, please do not take your right of free speech and its resulting state of cognitive liberty for granted. It is perhaps our last and only hope for building a better world.

[15] See page 181 for a description of the activities of the IETF.

Chapter 7: The Internet as a Cathedral

". . . the sacred is equivalent to a power, and, in the last analysis, to reality."
Mircea Eliade[1]

"Nothing is at last sacred but the integrity of your own mind."
Ralph Waldo Emerson

Without intending to seem sacrilegious, another way to visualize the Internet is to see it as a great gothic cathedral. Picture spires stretching skyward. See the massive stained glass windows, some with images of saints, some with scenes of hell, and others filled with beautiful fractal designs. Hear the chanting as it floats in from unseen places. Smell the incense. Now visualize a single ray of light shining on where you are sitting.

Is this too fanciful? Perhaps, but consider for a moment the original purpose of these great churches and of the purposes served by other sacred places of antiquity. They are there to provide a sanctuary, a place for spiritual renewal, a place where one can go to experience a sense of wonder and joy and beauty. A place for transformation.

Today, many people are searching for a better way to live and a better way to run this planet. We are searching for a sense of purpose—a sense of meaning and belonging in a world that often seems out of control. For those of us who long to return to a simpler way of life, the Internet, paradoxically, may be our equivalent of a cathedral.

I was raised in a Christian tradition, which taught that love of one's neighbor was second only to a love of God. As children, we would hear this preached from the pulpit every Sunday. But during the rest of the week I would observe many of the congregation actively engaged in

---

[1] Mircea Eliade was educated as a philosopher. He published extensively in the history of religions and was editor-in-chief of Macmillan's *Encyclopedia of Religion*. The influence of his thought, through these works and through thirty years as director of the History of Religions department at Chicago University, is considerable.

getting all they could for themselves, and I read about crime and wars in the newspapers. This caused me to wonder whether the human race actually possessed the ability to progress much above the level of savages. A turning point in my thinking occurred when I saw the first complete images of Earth, which were beamed back from a spacecraft as it circled the moon on Christmas Eve in 1968. In an instant, both the fragility and the interconnectedness of all life on this little planet became clear to me. Along with millions of other people, I experienced a deep understanding of the fact that we are simply crewmembers on Spaceship Earth.

Of course, it doesn't take a rocket scientist to do the math required to see the effect population growth is having on our crew. We are using our natural resources at an alarming rate, and we continue to pollute our living areas, even as we carve new ones out of virgin forests. Where I see hope for the future, however, is in the fact that the nations most responsible for these problems are also the ones with the highest percentage of Internet connectivity per capita. It is up to those of us fortunate enough to live in these more technologically developed countries to rein in our excessive use of natural resources. It is up to us to begin setting a better example for the less technologically developed countries, as they continue to improve their own standards of living. Unless we make some drastic changes, by the time the entire world reaches the level of technological development found in Western nations today, this planet will surely strangle on its own waste and become uninhabitable for most forms of life.

Keep in mind, it isn't the *Earth* we are destroying; the Earth will survive just fine without our species, as it has during most of its existence. It is the plant and animal *environments*, including our own, that we have placed in danger. We seem to keep forgetting that *we are an integral part of the biosphere*. We *are* the biosphere, and it is us.

It is with thoughts like this in mind, I suggest we view the Internet as today's version of a great cathedral. We can meet there to learn and reflect on new insights we gain. It is not always necessary that one have a specific end-purpose in mind when using the Net. Why not take a little time each day just thinking about things that interest you? Many creative ideas can spring from thoughts that are not necessarily results-oriented. Why must such a lofty avocation as thinking be confined only to results-

oriented thinking? Try coming to the Internet occasionally just to experience the pure joy of unbounded thought.

For many of its inhabitants, cyberspace is a sacred space. Therefore, as in any other sacred place, it is essential that we be respectful and not attempt to *force* our beliefs and ideas on others, just as we expect others to respect our ideas and beliefs. Collectively, our minds are all part of the same unity, this growing noosphere where thought is sovereign. In cyberspace, ideas are a form of power. There, they patiently wait for us to inquire about and then to either accept, reject, modify, or build upon. In cyberspace people cannot physically capture and control you, but their ideas can. In turn, your ideas have the potential of capturing other minds. It is imperative, therefore, that we be very careful about the ideas we propagate in cyberspace. With the freedom to create anything one can imagine comes the admonition to act responsibly in this sacred place.

The Awakening of the Noosphere

"I believe that the World Wide Web is, as a matter of fact, the noogenesis of the noosphere."
Ralph Abraham
The Evolutionary Mind (1988)

Shortly after the conclusion of World War II, Teilhard de Chardin wrote:

> No one can deny that a network (a world network) of economic and psychic affiliations is being woven at ever increasing speed which envelops and constantly penetrates more deeply within each of us. With every day that passes it becomes a little more impossible for us to act or think otherwise than collectively. [2]

As you know, Teilhard was a Catholic priest first and a scientist working in the field of evolution second. While his thinking and writing about the noosphere was indeed ground breaking, much of Teilhard's thought has been rejected because of his insistence on forcing his ideas into the narrow confines of Catholic dogma. In fact, *The Phenomenon of*

[2] Teilhard Chardin's "The Formation of the Noosphere," *Revue des Questions Scientifiques* (Louvian), pp. 7–35, January 1947.

Man concludes with an epilogue in which Teilhard attempts to placate the Fathers of the Church, but which has a hollow ring for many of us. These apologetics are the great flaw of his work. Freed from the shackles of Catholic thinking, Teilhard's theory about the evolution of the noosphere is a perfect fit with the reality of the Internet. We will never know how he would view the situation today, but I imagine he would find it hard to contain his enthusiasm for the direction the evolution of consciousness has taken.

Of course, we are faced with the possibility that consciousness may eventually reach a pinnacle of its ability to evolve solely within the biological structure of a single human organism. In the terminology of chaos theory, this potential evolutionary dead end can be described as what happens when human consciousness becomes stuck in a less-than-optimal basin of attraction. The time may be close at hand, however, when the gift of self-reflection becomes embedded in a larger structure, one that embraces the entire human species. How else are we to rise above the narrow-minded thinking that results in wars and massive ecological destruction? Viewed from a planetary perspective, it appears that the natural evolution of the human species has run into some kind of invisible barrier, unable to overcome the demands of our individual egos. It is now up to consciousness itself to take control of the evolution of our species and oversee our transition from toolmaker, *Homo faber*, into a form of being that becomes virtually inseparable from the technology it creates, *Homo cyber*.

The Mental Life of Homo Cyber

Recall our earlier definition of Gaian mind as being a meta-collective consciousness composed of all the collective consciousnesses that exist on this planet. In that discussion I explained my belief that our species-consciousness, the noosphere, has not yet been fully integrated into a permanent state of Gaian awareness, as is illustrated in the figure on the next page.

In my utopian view of the mental life of *Homo cyber*, I see the possibility for our species to reach a constant state of expanded awareness to such a degree that a fully integrated Gaian awareness is the natural state of our being. I should point out here that what I understand to be fully integrated Gaian awareness includes significantly more than a fine-tuned

sense of ecological awareness. As shamans and psychonauts the world over will tell you, the realm of existence in which Gaian consciousness operates contains measureless treasures of mind. A deep love for the Earth and concern for its biosphere are actually the *result* of entering into the state of full Gaian awareness that is to be found in entheospace.

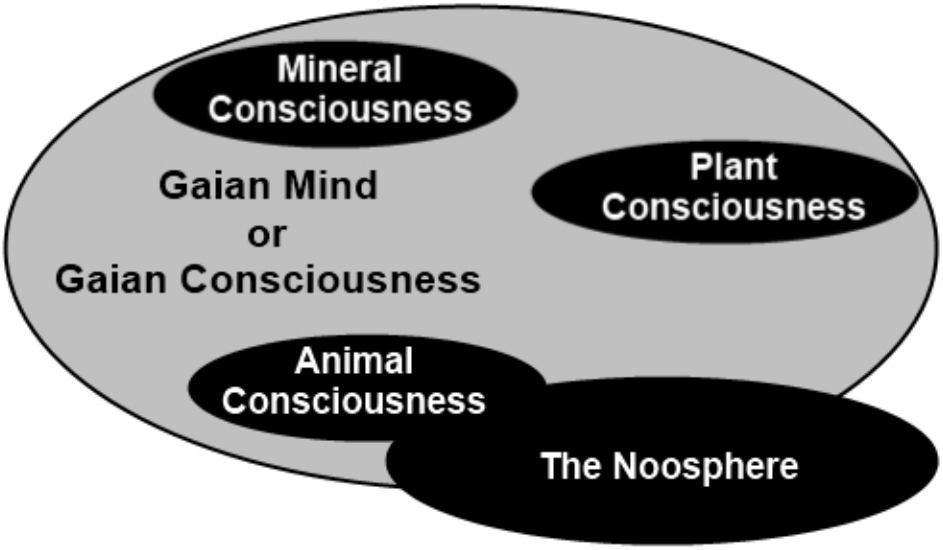

Figure 9
The noosphere on the edge of self-awareness

In *Homo cyber's* utopia, the *possibility* exists for a transformation of the consciousness of *the entire human species* to take place over an incredibly small amount of time. Here, the phrase "an incredibly small amount of time" carries two meanings. From the perspective of cosmic time, if such a massive transformation of consciousness takes place in less than a million years, this would be considered an incredibly small amount of time. The second meaning of this phrase, as I use it here, is that I see a possibility for an almost overnight transformation of consciousness taking place at some point in time, once the global transformation of our species into *Homo cyber* is complete.

Such a transformation may not be as far in the future as one might think. Consider the fact that soon there will be over one billion people who have some form of access to the Net. We are not talking only about affluent Westerners here. As the number of people using the Internet passes the one billion mark, the *majority* of these people will be living in countries that we today think of as being somewhat technologically disadvantaged. Inexpensive and pervasive wireless Internet connections are going to change the nature of the World Wide Web every bit as much as the Web itself changed the nature of the Internet. Listen to what respected futurist Nicolas Negroponte[3] predicts:

> Within three years, the developing world will represent more than 50% of the Web. Three years after that, the most widely used language on the Internet will be Chinese.[4]

Picture a world in which the distinctions between cyberspace and what we now consider to be consensual reality begin to blur. No longer would it be fashionable to say one is *in* cyberspace. Instead, each of us will bring a part of cyberspace into the material world. Over time, our cognitive distinctions between these worlds will dissolve, as devices such as the ones described in the following section become commonplace. If such an incredibly complex environment, packed with cybernetically enhanced human consciousness, follows the patterns discovered by Stuart Kauffman in his work on self-organizing complex systems, it follows that the possibility exists for some form of spontaneous new order to arise out of this densely complex soup of consciousness. One of the more fascinating experiments Kauffman and his associates conducted involved a series of computer simulations of large scale networks of lights, each of which can be either on or off. This work uncovered an amazing phenomenon. As each light flickered on and off, its state being influenced by the on or off state of its immediate neighbors, spontaneous order appeared. As Kauffman tells it:

> But at the edge of chaos, the twinkling unfrozen islands are in tendrils of contact. Flipping any single light bulb may send signals

---

[3] Nicolas Negroponte is a co-founder and director of MIT's futuristic Media Laboratory.

[4] Nicolas Negroponte's "Will Everything Be Digital?," *Time Magazine*, p. 87, Volume 155, No. 25, June 19, 2000.

> in small or large cascades of changes across the system to distant sites, so the behaviors in time and across the webbed network might become coordinated. Yet since the system is at the edge of chaos, but not actually chaotic, the system will not veer into uncoordinated twitchings. Perhaps, just perhaps, such systems might be able to coordinate the kinds of complex behavior we associate with life.[5]

Kauffman then sums up this part of his thesis in *At Home in the Universe* by saying, ". . . the reason complex systems exist on, or in the ordered regime near the edge of chaos is because evolution takes them there."[6] Could evolution be taking our complex world of people and machines in the direction of *Homo cyber*?

The Material World of Homo Cyber

In the chapter titled "The Chaotic Attraction of the Internet" we saw what the long range future of ubiquitous computing might bring. Such a world in which powerful computer chips will be as small as a spec of dust and every bit as omnipresent is still decades away.[7] However, *Homo faber* will not become *Homo cyber* overnight, and the transitioning stages may not always be clearly defined. In fact, we are already approaching what may later be seen as a pivotal moment in our symbiosis with the machines we have created.

It is now commonplace to see business travelers pull out a wireless device and retrieve information from the Internet. With these handy little machines one can not only look up prodigious amounts of information but also send and receive email. As sophisticated as these devices already are, they are only the tip of the iceberg of connectivity that lies just below us. Before long, it will be commonplace to see affluent teenagers carrying personal "electronic companions." An order of magnitude greater in function than the personal digital assistants used in today's world of

---

[5] Stuart Kauffman's *At Home in the Universe*, p. 90 (Oxford University Press, 1995).

[6] *Ibid*. p. 90.

[7] See http://robotics.eecs.berkeley.edu/~pister/SmartDust/ for a view of current device sizes and where they will be in the near future.

business, these small devices are going to create a new wave of personal communications unlike anything we have yet experienced.

Small enough to easily fit in a student backpack, these new "companions" will be able to access specifically formatted information on the Internet, send and receive email, and support chat sessions.[8] They will also know where they are because included in the device will be a Global Positioning System, which constantly calculates the handheld device's current position. Over time, these devices will become electronic clones of their owners, remembering what books are purchased, which movies are seen, where regular stops are made during the day, and so on. These devices will remember where one goes, what one does, and even what one thinks about the quality and importance of the advertisements that are constantly being streamed through them.

As Orwellian as this may sound, such devices will be quite common within five years. Evolution encourages their growth. Now that human consciousness is directly involved in the processes of evolution, however, there is always the promise that this brave new world of pervasive computing will lead to *more* freedom and not to a world of Big Brother.

The kind of world we are about to bring into existence is being shaped each day by thousands of little decisions being made in companies all around the globe. This is why it is so important for all of us become more involved in discussions about how this powerful technology is to be deployed. Many of the people participating in these online debates are the same ones who go to work each day and make these important decisions. Of prime importance in all of these decisions is the issue of privacy. If we do not clearly establish one's personal privacy as an absolute and inalienable human right, our grandchildren may never know what it is like to have a private moment.

Even the U.S. Supreme Court has jumped on the "no privacy allowed" bandwagon. As Jeffrey Rosen, associate professor at George Washington University Law School, reports:

---

[8] Although these devices will most likely be supported by proprietary networks, these networks, in turn, will retrieve a significant portion of their content from the public Internet.

> In an entirely circular legal test, the Supreme Court has held that constitutional protections against unreasonable searches depend on whether citizens have subjective expectations of privacy *that society is prepared to accept as reasonable*. This means that as technologies of surveillance and data collection have become ever more intrusive, expectations of privacy have naturally diminished, with a corresponding reduction in constitutional protections. More recently, courts have held that merely by adopting a written policy that warns employees that their email may be monitored, employers will lower expectations of privacy in a way that gives them virtually *unlimited discretion to monitor* whatever they please. [Emphasis added] [9]

The issue of personal privacy is of such immense importance as we continue our headlong rush into a world of ubiquitous computing, that the issue of whether privacy is a fundamental human right cannot be left for our technical people to solve on their own. Fortunately, the people who are developing the ubiquitous computing technology of the immediate future seem, for the most part, to hold personal privacy in extremely high regard. We should encourage these sentiments by closely questioning the ways in which our personal information, and the personal information about our children, is collected, stored, and shared by these seemingly innocuous little machines. Although these devices will likely first become popular among teenagers, it will not take long for their parents to find them useful as well. At a very minimum, it seems there should be no central repository for the very sensitive information these machines record. I believe each device should maintain its data offline, and that a high level of network security be mandated to prevent unauthorized disclosure of this extremely personal information. I am sure you have other points of view, issues, and concerns this new technology brings to mind. If you are not already doing so, why not exchange thoughts with some others who may share or dispute your views.[10]

---

[9] Jeffrey Rosen's "Why Internet Privacy Matters," *The New York Times Magazine Section 6*, p. 51, April 30, 2000, which is an excerpt from Jeffrey Rosen's *The Unwanted Gaze: The Destruction of Privacy in America* (Random House, 2000).

[10] Information about locating and joining Internet discussion groups may be found at www.matrixmasters.com.

It will take several generations before our evolution into *Homo cyber* is complete. As this transformation begins, however, it is extremely important that those who lead the way into this uncertain future be firmly grounded in well established principles of privacy and autonomy. Before we know what hit us, teenagers around the world will be always online, always able to chat with a friend, no matter where either of them may be at the moment. This constant sense of always being connected will bring with it a definitive change in the way they experience this world.

In addition to always being connected, many, if not most, of these pre-cyborgs will also be spending some of their time in one or more of the richly textured and densely populated Inhabited Virtual Worlds that will be springing up by the thousands in deep cyberspace, one of the portals to entheospace. As the number of people enjoying this close a union with technology gets larger, we can expect to see significant changes in the way many of them relate to each other and to this planet. For purposes of this discussion, I am going to make the very large assumption that within three generations *everyone* on Earth will be always connected, and that spending time in virtual worlds will be a common experience. At such a point, the stage would be set for the awakening of the noosphere.

The Enlightenment of Homo Cyber

The day will come (and many of us now alive will see that day) when only historians will be talking about "the Internet." As you know, the Internet is only a convenient way of describing the ever growing and ever interconnecting network of networks that carry our voice, video, and data communications. Without even noticing it, we will quit thinking about *how* our machines and ourselves are all interconnected, and instead we will focus on the *content* of our communications.

The day will also come when the expanded sense of awareness shamans and psychonauts seek in entheospace will be more widely experienced, for people will be using the portal of deep cyberspace—cyberdelic space—to launch their minds into the unlimited realm of entheospace where Gaian consciousness exists. As more and more minds constantly jump in and out of entheospace, the possibility arises for order to spring from this chaos of mind, and it is this new order I see as the awakening of the noosphere. It is anyone's guess as to what form this new order will take. It might become manifest in a kind of super-psychic

awareness we all share, in essence, a true global consciousness. Should ever such a moment occur, it would be fair to say that moment is also when the evolution of global consciousness actually begins.

What could trigger such an awakening? Perhaps a resonant event of some sort. It could be on a cosmic scale, such as the celestial alignment that is to take place in 2012, or it could be something as fundamental as the Internet reaching a critical mass of complexity. When this resonance (or singularity?) occurs, it could precipitate a crystallization of consciousness. I see this crystallization of our species-consciousness occurring in much the same way as what happens in one of Ilya Prigogine's complex chemical soups. As you may recall, the 1977 Nobel Prize in chemistry went to Ilya Prigogine for his discovery that *transition* to a higher order is *universally* accompanied by turbulence. According to one commentator on Prigogine's theory:

> . . . everything alive is *surprisingly* alive—and on a twitchy, searching, self-aware, self-organizing, upward journey. Such living systems periodically break into a *severe* twitchiness (*i.e.*, fluctuation or perturbation) and appear to fall apart. They ain't [*sic*]: it is actually at such vibrating times that living systems (humans, chemical solutions, whole societies) are shaking themselves to higher ground. …
>
> What [Prigogine] is saying is this: living things, always unstable even in good times, will occasionally go into extreme fluctuation and perturbation and appear to be falling apart. Take heart: this is an even *better* time! The apparent disharmony is the way that every living thing re-jiggles itself into new combinations and permutations for ever-higher, ever-newer levels of development.[11]

If Prigogine's theory holds true for the Internet/noosphere, the chaos of billions of interconnected consciousnesses may at some point, quite suddenly, crystallize into a state of organized complexity not yet seen in this little corner of the universe. At that point in the space/time continuum the hyper-consciousness of the human species will come into being, and our *cognitive world* will be forever changed.

---

[11] "Current Turmoil May Be Spawning a New Era," *The Tarrytown Letter*, p. 9, (Tarrytown, NY: The Tarrytown Group, March 1981).

Whether such a change will be for the better or the worse is yet to be determined. I can think of countless dark scenarios such a transformation could precipitate. However, I prefer to add my voice to the more positive chorus. My reason for being optimistic about the future is quite simple: It has been my personal experience that there are significantly more good-intentioned people in this world than there are bad-intentioned people. All of my optimism about life is based on that simple observation. I think our species will ultimately survive long beyond this new millennium because we deserve to. As more minds make their way via cyberdelic space to the tranquil ocean of Gaian consciousness, our destiny as a species may become more apparent.

Perhaps we will come to a universal understanding of our foundational values as human beings. As John Major Jenkins says in *Maya Cosmogenesis 2012*, "The real pole shift may thus be about a shift in our fundamental orientation to each other and to the world, stimulated by our recommitment to life-affirming values."[12] What such a change of consciousness would lead to, I believe, would be much like the utopian world of irreducible mysteries Terence McKenna describes in his lyrical essay, "Psychedelic Society."[13]

It does not matter that many people may hold different views, for ultimately the future we create will be a synthesis of many different points of view. What does matter is the part we each play in shaping the immediate future; for we are not just in a period of rapid change, we are in a period of *rapid evolution*. Cyberspace has revealed itself to be a great attractor, drawing our minds together into a cocoon of intelligence, knowledge, and light-filled fibers encasing the Earth. Perhaps in the not-too-distant future, the noosphere will shed its chrysalises, spread its beautiful wings, and take its proper place in the dance of the cosmos.[14]

---

[12] John Major Jenkins' *Maya Cosmogenesis 2012*, pp. 331–332 (Santa Fe: Bear & Company, 1998).

[13] Terence McKenna's "Psychedelic Society," found in Robert Forte's (ed.), *Entheogens and the Future of Religion* (San Francisco: Council on Spiritual Practices, 1997).

[14] For an interesting discussion of what such a singularity might entail, see Eliezer S. Yudkowski's "Staring Into The Singularity," found at www.singinst.org/singularity.html.

As you may recall, I prefaced this section with “the very large assumption that within three generations everyone on Earth will be always connected.” What if this transformation takes thirty generations instead of only three? Is this any less reason to lay the proper foundation for such a future? At this pivotal moment in the evolution of our species, we are all butterflies on the edge of chaos.

The Spirit of the Internet

"It is not required that we understand what is happening. It only matters that we do our part."
Terence McKenna

From the perspective of cosmic time, our species has been in existence for what would be the human equivalent of the blink of an eye. Yet we have already evolved to the point where we are beginning the colonization of space. By the time we have established permanent bases on other planets we may have completed our mutation into a new branch of our species, *Homo cyber*. What do you suppose those highly advanced people will think about us, the ones who began their branch? Some, I suspect, will wonder if we truly **groked** the significance of what we were doing when we built the first of the great Internets.[15]

With all of the commercial excitement caused by this new technology, we sometimes overlook the fact that a powerful new means of inter-human communication is evolving at an incredibly rapid pace. Like the clatter of souvenir vendors outside our historic cathedrals, the clatter of e-commerce can draw your attention away from the spirit-filled space you are about to enter. A deep layer of spirit is building within the Internet. Consciousness itself has taken hold and is beginning to expand inside of this great cathedral that is part human and part machine. Before our very eyes, the noosphere is taking root in the mechanical infrastructure we call the Internet.

Which means, in the final analysis, that *you* are the spirit of the Internet, for the spirit of the Internet is the spirit of humanity. The spirit of the Internet is your spirit, it is my spirit, it is *human spirit* in all its forms.

---

[15] Regarding the "next Internet," on May 29, 1998, in his keynote speech at "The Marshall Symposium," Vinton Cerf said, "And it is time now to start designing the interplanetary Internet. And I can tell you, it's already begun. I've started work with the Jet Propulsion Laboratory on a design for such a system, and we hope that we will get our work done in time for those colonies to show up in 25 years time and be on the interplanetary Internet" (www.si.umich.edu/marshall/docs/p106.htm).

Epilogue

These are my current speculations. What degree of probability do I assign to all of them becoming actualized? To be truthful, it changes from time to time. Most days I am extremely optimistic about my personal world view and would give the awakening of the noosphere a 100% probability of occurring within my lifetime. Then there are my more modest days when I admit that these speculations are at best only mid-points in a wide range of possibilities. Yet I don't let days like that dim my desire to speculate about such things, because I know that the *rate* of technical advancement is itself increasing at near exponential rates. Something has *got* to give. The wave of omnipresent, immersive computing is growing in size, and Inhabited Virtual Worlds are already a part of the everyday reality of some of the best minds on the planet. How can one help but feel positive with such consciousness-expanding events like these taking place?

The only things that shade my positive outlook from time to time are the dark shadows of censorship, invasion of privacy, and loss of free speech that occasionally pass over the Internet. If the awakening of the noosphere is a true singularity, arising on the edge of chaos, let us hope it organizes in a way that supports the cognitive liberty of every member of our species. Should such a transformation in human consciousness ever actually occur, this planet could truly become a paradise.

As R. Buckminster Fuller[1] explained in detail in his most comprehensive and accessible work, *Critical Path*, there is more than enough wealth and resources for everyone on Earth to live comfortably, if only the bureaucrats would stay out of the way.

> Technologically we now have four billion billionaires on board Spaceship Earth who are entirely unaware of their good fortune. Unbeknownst to them their legacy is being held in probate by general ignorance, fear, selfishness, and *a myriad of paralyzing*

[1] R. Buckminster Fuller's work to provide sustainable development around the globe is now being carried on in part by the Global Energy Network Institute, GENI. Details of their strategy and programs may be found at www.geni.org.

professional, licensing, zoning, building laws and the like, as bureaucratically maintained by the incumbent power structures.[2] [Emphasis added]

Since we live in a universe that is governed by the laws of quantum mechanics, why not hold a quantum world view? In a quantum universe nothing is *actual*, but all is *possible*. The future is up to us.

If you would like to add your point of view to these speculations, please join us at the Matrix Masters Web site, www.MatrixMasters.com. Along with numerous other sites, we provide a community forum where like-minded people can come together and exchange ideas.

See you in cyberspace!

Lawrence Hagerty

12.19.7.2.11

[2] R. Buckminster Fuller's *Critical Path*, pp. xxv–xxvi (St. Martin's Press, 1981).

Notes: *From a Dialogue between Ralph Abraham and Terence McKenna*

As I mentioned in the dedication, this book was inspired by a dialogue that took place on the evening of August 1, 1998 at Omega Institute in Rhinebeck, New York. That evening, Ralph Abraham and Terence McKenna, who were both conducting weekend workshops at the Institute, hosted a forum titled "The World Wide Web and the Millennium." The following excerpts from that discourse are not meant to be all-inclusive, but are offered only to provide the flavor of their conversation that evening.

Abraham — The World Wide Web is part of a quantum leap greater than the Renaissance.

There is a spiritual side to the Web.

McKenna — It's a brand new world out there folks. It's as profound a shift in cultural values as the introduction of the phonetic alphabet, or urbanization, or something like that.

Abraham — The World Wide Web is a spawning ground for spiritual wisdom. A natural process of accelerated evolution.

McKenna — Information is primary. More primary than gravity, or light, or matter. Information somehow precedes all of that.

Abraham — In these special times when a big leap is happening, we have enormous power. We have leverage. As Archimedes said, "Give me a lever big enough and I'll move the world." We really have the power to move the world through small deeds right now.

It doesn't matter what you do during the 1,000 year periods. Then we might as well go get rich. But *between* these periods we can *and must* do great things through small deeds. It is important to know when we're in a big leap.

McKenna — The World Wide Web may be a landing zone for a creature made of pure information. Perhaps all advanced intelligences exist solely as information. You may catch an alien intelligence in the Web—an intelligence which may not be

able to rest in the human mind or any environment other than digital.

The real issue with alien intelligence is knowing when you have it in front of you because it *is* alien!

Abraham Suppose it *actually mattered* what we thought and what we did and what we created. That the socks we bought, and the detergent we bought, and that every single thing we did mattered a thousand-fold more than at any other time. Then it is important that we not *predict* the future but that we work to *create* the future. This is our responsibility in a millennial moment more than at other moments. So don't ask about 2012, *build* it! That's what we say.

Bibliography

The following is a listing of some of the books I found useful while writing *The Spirit of the Internet*. These books provide many of the details that underlie what are no more than mere "headlines" as they appear in this book.

Abraham, McKenna, and Sheldrake
The Evolutionary Mind (Santa Cruz: Trialogue Press, 1998).
Trialogues at the Edge of the West (Santa Fe: Bear & Company, 1992).

Abraham, Ralph, *Chaos Gaia Eros* (San Francisco: Harper Collins, 1994).

Alexandersson, Olof, *Living Water* (Bath, UK: Gateway Books, 1990).

Arnold, Elizabeth and Beckström Rod, *Brainticklers II* (San Francisco: Brainticklers Publishing, 1999).

Capra, Fritjof
The Tao of Physics (Boston: Shambhala Publications, 1975).
The Web of Life (Doubleday, 1996).

Chardin, Teilhard de
The Divine Mileiu (Harper Torchbooks, 1960).
The Future of Man (New York: Harper & Row, 1964).
The Phenomenon of Man (New York: Harper & Row, 1959).

Chomsky, Noam, *Secrets, Lies and Democracy* (Odonian Press, 1994).

Davis, Erik, *Techgnosis* (Three Rivers Press, 1998).

Dawkins, Richard, *The Selfish Gene* (Oxford University press, 1989).

Dyson, George B., *Darwin Among the Machines* (Perseus Books, 1997).

Egan, Greg, *Permutation City* (Harper Paperbacks, 1994).

Eliade, Mirceau
Cosmos and History: The Myth of the Eternal Return (Harper & Row, 1959).
The Sacred and the Profane: The Nature of Religion (Harcourt, Brace and Company, 1957).

Ferguson, Marilyn, *The Aquarian Conspiracy* (J.P. Tarcher 1980).

Ferris, Timothy
The Mind's Sky: Human Intelligence in a Cosmic Context, (Bantam Books, 1992).
The Whole Shebang: A State-of-the Universe(s) Report (Simon & Schuster, 1997).

Forte, Robert (ed.), *Entheogens and the Future of Religion* (San Francisco: Council on Spiritual Practices, 1997).

Fremantle, Francesca and Trungpa, Chögyam (translators), *The Tibetan Book of the Dead* (Boston: Shambhala, 1987).

Fuller, R. Buckminster, *Critical Path* (St. Martin's Press, 1981).

Gelernter, David, *The Muse in the Machine: Computerizing the Poetry of Human Thought* (New York: The Free Press, 1994).

Gibson, William, *Neuromancer* (Ace Books, 2000).

Greene, Brian, *The Elegant Universe* (W.W. Norton & Company, 1999).

Hafner, Katie and Lyon, Matthew, *Where Wizards Stay Up Late: The Origins of the Internet* (Simon & Schuster, 1996).

Haldane, J.B.S., *The Inequality of Man* (Harmondsworth, UK: Penguin Books Limited, 1938).

Harner, Michael J., *The Way of the Shaman* (Harper San Francisco, 1990).

Harner, Michael J. (ed.), *Hallucinogens and Shamanism* (Oxford University Press, 1973).

Heinlein, Robert A., *Stranger in a Strange Land* (G.P. Putnam's Sons, 1961).

Hesse, Hermann
The Glass Bead Game (Henry Holt & Company, 1990).
Steppenwolf (Bantam Books, 1963).

Herbert, Nick, *Quantum Reality: Beyond the New Physics* (Anchor Press/Doubleday, 1985).

Huxley, Aldous
The Doors of Perception and Heaven and Hell (Harper & Row, 1990).
Island (Harper & Row, 1962).

Jenkins, John Major, *Mayan Cosmogenesis 2012* (Santa Fe: Bear & Company, 1998).

Kafatos, Menas and Nadeau, Robert, *The Conscious Universe* (New York: Springer-Verlag, 1990).

Kauffman, Stuart, *At Home in the Universe* (Oxford University Press, 1995).

Khaldûn, Ibn, *The Muqaddimah*, translator, Rosenthal, Franz (Princeton University Press, 1967).

Kurzweil, Ray, *The Age of Spiritual Machines* (New York: Viking, 1999).

McKenna, Terence

The Archaic Revival (Harper San Francisco, 1991).
Food of the Gods: The Search for the Original Tree of Knowledge (Bantam Books, 1992)
The Invisible Landscape: Mind, Hallucinogens and the I Ching (Harper San Francisco, 1993).
True Hallucinations (Harper San Francisco, 1993).

Narby, Jeremy, *The Cosmic Serpent* (New York: Tarcher/Putnam, 1999).

Ott, Jonathan, *The Age of Entheogens & The Angels' Dictionary* (Natural Products Company, 1995).

Otto, Rudolf, *The Idea of the Holy* (New York: Galaxy, 1963).

Pearce, Joseph Chilton, *The Crack in the Cosmic Egg* (Washington Square Press, 1973).

Rheingold, Howard, *The Virtual Community* (Addison Wesley, 1993).

Rico, Gabriele

Pain and Possibility (The Putnam Publishing Group, 1991).
Re-Creations: Inspiration from the Source (Absey and Co. 2000).
Writing the Natural Way (Tarcher/Putnam, 2000).

Sheldrake, Rupert, *A New Science of Life* (Rochester, Vermont: Park Street Press, 1995).

Stapledon, Olaf, *Star Maker* (St. Martin's Press, 1987).

Sterling, Bruce, *The Hacker Crackdown* (Bantam Books, 1993).

Talbott, Michael, *The Holographic Universe*, (Harper Collins, 1991).

Talbott, Stephen L., *The Future Does Not Compute* (O'Reilly & Associates 1995).

Tapscott, Don, *Growing Up Digital* (McGraw-Hill, 1998).

Tart, Charles T. (ed.), *Altered States of Consciousness* (Harper San Francisco, 1990).

Tipler, Frank J., *The Physics of Immortality* (Doubleday, 1994).

Toffler, Alvin, *Powershift* (Bantam Books, 1990).

West, John Anthony, *Serpent in the Sky* (Quest Books, 1993).

Wolf, Fred Alan, *Parallel Universes* (Simon & Schuster, 1988).

Zukov, Gary, *The Dancing Wu Li Masters* (Bantam Books, 1994).

Glossary

The following definitions are intended to help the reader through this book and are not intended to be a comprehensive definition of the terms. While all but four of the following definitions are mine, many of them were based on definitions found in the *Free On-Line Dictionary Of Computing*, or FOLDOC, which may be found at http://wombat.doc.ic._ac.uk/foldoc/index. html. I thank all of the 1,100+ contributors to that project for their helpful site and for the four definitions of theirs that I used intact.

aesthetic fitness score
A number assigned to the image produced by an electronically evolved organism that determines the organism's likelihood to breed and have offspring (see aesthetic selection).

aesthetic selection
Natural selection is the built-in process by which Nature chooses survivors and hence the shape of future generations; aesthetic selection is the external process by which an artist steers the course of image evolution and development.

algorithmic art
Computer-generated artwork that derives from mathematical functions or programs, as opposed to being drawn or painted by hand or by scanning in photographs. In “true” algorithmic art, the artist does not retouch the image in any way, *e.g.* by using software tools to add or remove features from the image. The majority of the work is in setting up the process that produces the image.

attractor
In dynamical systems theory, the term “attractor” refers to the tendency of a system to return to a specific pattern of activity.

avatar
An image representing the user in a virtual space.

backbone
The top level in a hierarchical network.

bandwidth
The range of frequencies in a data transmission channel that determines how much data per second can be transmitted.

bifurcation
A division into two branches; or, the point at which such a division takes place. In dynamical systems terms, a bifurcation occurs when a system moves from one attractor to another.

bit
The smallest unit of information used by a computer and represented by one of two values, generally 0 and 1. Also used to denote the smallest unit of computer storage.

black box
Generic term used to describe complex technology whose exact nature is only understood by those who built it.

black hole
A region where matter collapses to infinite density, and where, as a result, the curvature of space-time is extreme.

Borg
A fictional race of beings who are cybernetically enhanced humanoids. Seen on the television program *Star Trek*.

bridge
A device that forwards data network traffic from one part (segment) of a single network to another part of the same network.

buffer
An area in a computer's memory used to store messages.

cache
To temporarily store computer files somewhere other than on the computer of their origination.

chat
A form of online communication in which users exchange typed messages in "real-time."

chat room
A virtual space in which electronic conversations are held.

click
The action of pressing one of the buttons on a computer pointing device called a mouse.

client
A computer program or system that requests a service from another program or system.

closed reality
A consensus reality in which it is agreed that time travel and faster than light travel is not possible.

command line interface
A means of communication between a computer program and its user, based solely on textual input and output. Commands are input with the help of a keyboard or similar device and are interpreted and executed by the program. Results are output as text or graphics to the terminal. Command line interfaces usually provide greater flexibility than graphical user interfaces, at the cost of being harder for the novice to use.

computer code
A program; software.

cookie
An electronic file sent from a Web server to your PC and saved there for future reference by other Web servers. Cookies often contain information about your behavior at the Web site that sent the cookie. By reading someone's cookie files, it is possible to build a partial portrait of a person's most private thoughts. (See the "Help" file that comes with your Internet browser for instructions on how to block Web sites from sending cookies to your computer. Additional information about Internet privacy may be found at the Matrix Masters Web site, www.matrixmasters.com.)

CPU
The central processing unit of a computer.

cyberdelic space
The mental realm in deep cyberspace that coincides with deep psychedelic space and which provides a portal for entry into entheospace.

cyberspace
The limitless place one's mind finds itself in when using technology to communicate with others.

cyborg
A living organism that is part animal and part machine.

deep ecologist
Person whose view of life on Earth is ecocentric rather than human-centered.

download
To retrieve a file from another computer.

email
Messages, or letters, in electronic format.

email server
A computer dedicated to the sending and receiving of electronic messages.

emoticon
A combination of standard typing symbols used to indicate an emotional state; *e.g.* smiley face :-) , frown :-(, wink ;-). (Hint: Tilt your head to the left if you are having trouble seeing them.

entheogen
A substance which, when ingested by humans, facilitates the realization that the divine infuses all of creation.

entheospace
The realm of divine mind. Entheo-"space" is actually the "sense of place" one has at times when an exploration of one's inner landscape leads to the realization that this is much more than just a fascinating landscape, it is the entire universe. At moments when this realization is so deeply interiorized as to be an essential part of one's being, one is said to be *in* entheospace. When the focus of one's consciousness is on

entheospace, one experiences a deeply seated sense of being infused with, and a part of, divine mind.

Gaian mind
A hypothesized meta-consciousness, which is responsible for the regulation of all planetary systems.

gateway
A device used to convert the protocol used by one type of computer network to that of a different type of network.

geek
(Or “turbo nerd,” “turbo geek.”) One who eats (computer) bugs for a living. One who fulfils the dreariest of negative stereotypes about hackers: an asocial, malodorous, pasty-faced monomaniac with all the personality of a cheese grater. The term cannot be used by outsiders without implied insult to all hackers. A computer geek may be either a fundamentally clueless individual or a proto-hacker in larval stage.

grok
Robert A. Heinlein coined the word “grok” in his 1961 novel *Stranger in a Strange Land*. Essentially, “to grok something” means to understand it so intimately that it becomes a part of oneself.

graphical user interface
Contrasted to the “command line interface” defined above, a graphical user interface uses pictures and text instead of only text to mediate between a user and a computer. First developed in the 1970s at the Xerox PARC research facility, graphical user interfaces, or GUIs (pronounced “gooies”), make computers significantly more easy to use.

GUI
See “graphical user interface.”

hack
To break into a computer system without the owner’s permission; or, to have produced a high quality piece of work, often a computer program.

hacker
A person who enjoys exploring the details of programmable systems and how to stretch their capabilities, as opposed to most users, who prefer to learn only the minimum necessary to operate the device. In

recent usage, the term has also come to describe someone who breaks into computer systems without the owners' permission.

hit
A request to a Web server from a Web browser or other client; or, slang for a link found by a search engine.

Homo cyber
A symbiotic being, part human and part machine.

Homo faber
Latin, "man the maker."

host
A computer connected to a network.

hypertext
A term coined by Theodor H. Nelson during the 1960s that in Internet usage has come to indicate information that branches in multiple directions allowing the reader a choice of following different paths to related information in a potentially unending series of documents all of which are related to their nearest branching points. Essentially, hypertext permits the creation of non-sequential writing that allows readers to choose a line of thought they find most interesting.

hypertext link
Think of a Web page as if it were a page in a book. Remember those school books that had footnotes at the bottom of the page? Well, you can think of those footnotes as a "link." Thus, if you are looking at a Web page that is discussing ceramics and see a link (pseudo-footnote) that reads "Suzie's ceramic tips" you can click on that link/footnote and have Suzie's Web page come up on your screen. In its most basic form, that is what a hypertext link is.

integrated circuit
A small electronic device. A "chip."

internet
(Note: not capitalized.) Any set of networks interconnected with routers. The Internet (capitalized) is the biggest example of an internet.

Internet
(Note: capital “I.”) The Internet is the largest internet in the world. It is a three level hierarchy composed of backbone networks (*e.g.* ARPAnet, NSFNet, MILNET), mid-level networks, and sub networks. These include commercial (.com or .co), university (.ac or .edu), other research networks (.org, .net), and military (.mil) or government (.gov) networks that span many different physical networks around the world with various protocols including the Internet Protocol.

Internet Service Provider
Organization providing access to the Internet.

ISP
See Internet Service Provider.

Java™ technology
A computer programming language that is designed to enable a programmer to write an application that will run on a wide variety of computers with only slight modifications made to the original code.

killer application
A computer program generally agreed to be so important that it overshadows all other applications in its field.

LAN
See Local Area Network

layer
Networking protocols may be thought of as working in layers, with each layer providing services to the layer above it. This methodology makes it easier to change a part of a protocol without having to re-engineer the entire protocol suite.

link
Slang for “hypertext link.”

Local Area Network
A data communications network that is geographically restricted, often to a single building.

lurker
Someone who reads newsgroups or is on a mailing list but does not post messages of their own for others to read.

multi-gigabit router
A router capable of processing several billion bits per second.

multimedia
Media, often in electronic format, which contains two or more elements such as text, graphics, sound, and video in a single presentation.

netiquette
Etiquette as it applies to communications and interactions on the Internet.

netizen
A person who considers herself or himself a citizen of the Internet.

newsgroup
An online bulletin board dedicated to a specific topic.

noosphere
As hypothesized: an organized web of thought surrounding the Earth's biosphere; a sphere of mind encircling the planet; the collective consciousness of the human species.

online
Accessible through the use of a networked computer; or, a person actively using a computer that is connected to a network.

open reality
A consensus reality in which it is agreed that time travel and faster than light travel is possible.

packet
A generic term used to describe a unit of data.

packetizing
Slang term often used in technical documentation to describe the process of breaking messages into parts and putting them into packets.

peripheral device
Any part of a computer other than its central processing unit or working memory.

pixel
An individual tiny dot of color in an image or on the computer screen; a good computer screen may have a million pixels, while a high resolution image reproduced on film or other medium may have several hundred million pixels; in some forms of Evolutionary Art a pixel is analogous to a single cell in biological organisms.

precession of the equinoxes
The apparent motion of the equinoxes along the great circle in the celestial sphere that lies in the plane of the Earth's orbit.

printer
A device used to make a paper copy of text and images from an electronic file.

protocol
Formal rules specifying how to transmit data across computer networks.

psychedelic
Mind manifesting, or mind expanding.

psychonaut
A person who deeply explores her or his own inner landscape.

real-time
Slang for computer processes that take place almost immediately, as opposed to processes that are scheduled to be run at a later time.

router
A device that forwards packets between computer networks.

routing functions
Processes used by network routers to move packets of information.

routing table
A matrix that gives a hierarchy of routers and which is used in determining and prescribing the best path from a given router to a remote router on the network.

search engine
Software that uses keywords to find specific information on the Web. Most popular search engines are provided free of charge at the Web sites of their creators.

SEND button
The “button” on an email application that activates the commands necessary to forward an electronic message from one computer to another.

server
A computer that provides a service, such as delivering the content of a Web page, to other computers connected to it via a network.

shareware
Software for which the author requests a *voluntary payment*. Often such payment may buy additional support, documentation, or other service.

software
A computer program.

stack
A data structure in which new information may be thought of as being placed on the “top” or on the “bottom” of other information.

superstring theory
A single theory that, in principle, is capable of describing all physical phenomena.

surf the Web
Navigate from one Web site to another.

TCP/IP
See Transmission Control Protocol / Internet Protocol.

Transmission Control Protocol / Internet Protocol
The suite of network protocols, or instructions, governing the technical details of transmitting information over the Internet.

tunneling
The encapsulation of a protocol within another protocol. Often used to encapsulate encrypted data for transmission over the Internet.

traffic
Term used to describe the flow of information over a computer network.

URL
Uniform Resource Locator. The Internet address of a specific file.

virtual community
A group of people with a set of common interests whose organization has no geographical boundaries.

virtual computer
A simulation of a computer that is running as a program on a physical computer.

Virtual Private Network
An effectively private data network created by using encryption techniques to transport information over an otherwise public network.

Virtual Reality Modeling Language
A computer language used by some of the artist-philosopher-programmers who build virtual worlds in cyberspace.

VPN
See Virtual Private Network.

VRML
Virtual Reality Modeling Language.

Web site
The Internet location of a collection of information.

World Wide Web
A portion of the Internet consisting of hypertext servers (HTTP servers), which are the computers that allow text, graphics, sound files, *etc*. to be mixed and linked together.

WWW
See World Wide Web.

The Art of Steven Rooke

While working as a senior systems programmer at the National Optical Astronomy Observatories (NOAO) in Tucson, Arizona, Steven Rooke began spending much of his personal time investigating the fields of **algorithmic art** and ecosystem theory. A discussion of Gaia Theory with Drs. Ralph Abraham[1] and Rupert Sheldrake[2] inspired him to leave NOAO and begin a new career, combining computer and evolutionary sciences with art.

As in biological evolution, Steven Rooke's art is brought to life through a Darwinian cycle of reproduction, random mutation, and survival of the fittest adult "organisms" through competition and cooperation to reproduce again. Images are selectively "bred" from an initial population of approximately 100 images that were created earlier.[3] Offspring of this process are then examined by Rooke, who assigns an **aesthetic fitness score** to each image. After this subjective evaluation, the command to

[1] Ralph Abraham is a writer, lecturer, and Professor of Mathematics at the University of California at Santa Cruz. He has been active on the research frontier of dynamics in mathematics since 1960, and in applications and experiments since 1973. He has been a consultant on chaos theory and its applications in numerous fields (medical physiology, ecology, mathematical economics, psychotherapy, *etc*.) and is an active editor for the technical journals *World Futures*, and the *International Journal of Bifurcations and Chaos*.

[2] Rupert Sheldrake is a biologist and author. He received a Ph.D. in biochemistry from Cambridge and studied philosophy at Harvard. Dr. Sheldrake has conducted extensive field work and has carried out research on the development of plants and the aging of cells. His book *Seven Experiments that Could Change the World* received the Best Book of the Year Award from the British Institute for Social Inventions and was selected in 1998 as one of the 150 works in the *Utne Reader Loose Canon*: "Great Works To Set Your Imagination on Fire."

[3] A detailed description of Steven Rooke's process for creating evolutionary art may be found at http://www.azstarnet.com/~srooke/process.html.

"spawn" is given. The images then reproduce by a "sexual mixing" of the virtual genes of the parents. Random mutations are also introduced during this process.

Just as a fertilized animal egg grows into millions of cells, each containing an identical copy of its DNA, an image is "born" when its genetic structure is expressed as millions of colored **pixels**. Just as an animal is born with an identical copy of its DNA in every cell, each pixel in a piece of evolutionary art contains an identical copy of the "genes" of the entire work. After a visually appealing image has evolved, Rooke terminates the process of evolution (the equivalent of a mass extinction) and begins a lengthy process of fine-tuning the image for the production of a high quality photographic print.

The image on the cover of this book, "The Awakening of the Noosphere," took approximately 172 hours of processing on an SGI workstation to compute.

Addendum: A Brief Explanation of How the Internet Works

For many people, knowing *how* their automobile actually works is of little or no interest. The only technical details they want to know are how to get it started, how to drive it, and when to take it to a mechanic for service. The good news is that the Internet can be treated in much the same way. It really is not necessary to understand *how* the Internet works in order to be able to use it. People like myself, however, like to know a little bit more about how our tools work, and that is the purpose of this Addendum.

If you share my proclivity for understanding how things work, however, it may be worthwhile keeping in mind the fact that the Internet is the largest technological artifact yet created by humankind. Therefore, the following descriptions of email, chat rooms, mailing lists, and other such technical details are abstracted to their most basic levels so that the general reader will have a grasp of what goes on "under the hood." While the information in this Addendum is not necessary for an understanding of the main body of this work, it does answer some basic questions, such as:

-What is a hypertext link?

-How does email work?

-How does information get moved from one computer to another?

-Just what *is* the Internet?

-How is the Internet governed?

Background

Long before the World Wide Web's **hypertext** technology was deployed, the Internet community was already experiencing a commonality of spirit unknown to the rest of the world. All during the day and throughout the night, researchers, scientists, and information junkies roamed the world's computers, freely sharing information with one

another as they searched through electronic files like archaeologists digging through ancient libraries. Although several million people were already connected to the Net, it *felt* like a small community.

Without any top-down imposition of rules, a civilized society emerged, **netiquette** evolved, friendships were forged, and a global electronic village began to take shape. No one knew exactly where all of this was leading, but everyone was having a great time building the foundation of cyberspace. Then the Web arrived on the scene, and everyone who touched it was caught in its seductive embrace.

Even before the technology we call the World Wide Web was superimposed on the Internet, the spirit of cooperation, the friendship, and the lure of the future already pervaded the Net. Thousands of people were helping each other without any expectation of receiving compensation for their services. This altruistic behavior is still found in a great many places on the Internet today.

My first personal experience with this phenomenon came when I was leading a team of computer programmers at a large telecommunications company. We were developing a prototype for a multimedia training-program, and we could not get the **software** tool we were using to carry out an operation we thought would significantly enhance the program. After several days filled with futile attempts to get the tool to work properly, the team decided to discard that particular feature. At home that night, while continuing my exploration of the Internet, I found an electronic bulletin board used exclusively by programmers who were using the same tool our team was using. So, I posted a description of our problem on the board.

The next night I found a half a dozen email replies to my query in my electronic mailbox. One of them was from a woman researcher in Italy who gave us a solution to our problem. I was astounded! Here was a highly trained professional who freely gave away some valuable advice. It was an experience that made such a lasting impression on me I can still clearly recall my surroundings that night as I read her email message. It just seemed too good to be true. People, in a highly competitive industry, were actually helping each other just for the sake of being good Internet citizens. I was hooked. For the rest of the time I worked with that software tool, I checked that bulletin board regularly. Occasionally I was able to

answer someone else's question and did so to further encourage this public-spirited behavior. It not only felt good, it was fun to be a part of this growing community. Without realizing it, the spirit of the Internet had already captured me.

In its infancy, the culture of the Internet was defined by a relatively slow moving, close knit community of predominantly academic types. Much like great explorers from past ages, their ships gently rolled across seas of information, occasionally returning to port with stories of strange new lands and people. Today, life on the Internet is more like riding on an out-of-control bus that is being driven by a character out of a Jack Kerouac novel. But I think you will find that this change of pace, while not only inevitable, has been for the better.

Before getting too carried away with metaphors, however, this may be a good place to point out the fact that the World Wide Web, which is the part of the Internet the majority of people see, is not the same thing as "the Internet." As you will see in the next section, the Internet is an extremely large collection of interconnected computer networks. The World Wide Web is an easy-to-use graphical interface, which helps us find information on these networks. It is really that simple. The "Internet" is a "network of networks," many of which are awash in interesting information, and "the Web" is a *tool* that simplifies the process of finding information "on the Internet." Most people, however, call the process of finding information on the Internet "surfing the Web."

Don't worry if all of this talk about networks and interfaces doesn't mean a lot to you right now. By the time you finish this "Addendum" you will not only have a clear picture of what the Internet is, you will also be able to explain it in concise and simple terms to your friends.

In some ways the Web works like our brains do, making great leaps from one topic to another. Have you ever started thinking about the price of gas as you were driving to work, and by the time you arrived you were thinking of the cookies your grandmother baked on Christmas eve? How did your thoughts get from the initial topic, the price of gas, to what you were thinking of as you got out of your car? In essence, you were using a form of what computer programmers call hypertext. Hypertext, which is one of the underlying principles of the World Wide Web, works by connecting one topic to another by associating elements that two topics

have in common. Your mind does the same thing. For example, one minute you might be thinking about your favorite movies; then about the movie “Titanic”; then about what it must be like to be floating in a small boat in the middle of a freezing ocean, wondering if you are ever going to see land again; then about Christopher Columbus, who finally reached shore and “discovered” America; then about the Spanish Conquistadors who slaughtered great numbers of Native Americans, from both the North and the South; and finally you find yourself thinking about how much knowledge was lost when a fanatical Spanish bishop burned the great Mayan libraries. In one way or another, *everything* is interconnected. On the Web, these points of interconnection are called **hypertext links**.

You already know how hypertext works because you use it every day. Start paying attention to how your thoughts evolve, particularly when you are daydreaming, and you will see what I mean. While our minds and the Web may work in much the same way, there is one very important difference. The thoughts you place on the World Wide Web become part of an ever growing, and highly interconnected, global memory. Once you let information loose on the Web, it takes on a life of its own. You may set up a personal Web site that only gets a few visits a month from your friends and family. Because of the way the Internet works, however, your Web site may be **cached**, or copied, on other computers around the globe, and sometimes pages from Web sites are indexed by **search engines** and sometimes they are backed up on archive tapes. The information you place on your little Web site may, quite literally, live indefinitely, even if you decide at some point to remove it from your own personal site. Someone, somewhere in time, might **link** this information to another Web site, thus connecting one more patch in the quilt of information that is beginning to cover our planet. The speed at which this blanket of information is growing is increasing at an exponential rate. As is explained in the main body of this work, it is my belief that this rapid growth of interconnected information is setting the stage for the human species to make its next significant evolutionary leap.

How the Internet Works

“Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught

mathematical concepts. . . . A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity."
William Gibson
Neuromancer (1984)

We will begin our trip through cyberspace with a high-level (*i.e.*, not deeply technical) view of the Internet, the wonderful communications medium that is catapulting so many imaginations into a new realm of pure thought. By the way, you don't necessarily need a computer to journey into cyberspace because, as is explained in this book's opening chapter, your mind is where cyberspace actually exists.

As we travel from place to place on this mental journey, I recommend that you picture connections between the places we visit by stringing thin, imaginary fibers of light between them. Just like the old woodsmen who made crude diagrams of the trails they cut through a forest, it is helpful to build a mental map so we don't get lost. Imagining these fiber trails will make our trip more manageable.

Email

Let's begin our journey through cyberspace by traveling from your home to our first stop, your cyber-neighborhood's electronic post office. Using your mind's eye, connect one end of a clear plastic fiber, or fishing line, to your house and then reel it out behind you as we travel through cyberspace to what is technically referred to as your **email server**. (In case you are wondering, in the physical world your home computer is connected to your email server through telephone lines that connect you with your **Internet Service Provider**, or ISP. Your email server is often located in the ISP office.) You can think of this email server, which is simply a special purpose computer, as your neighborhood post office in cyberspace. Picture your email server as an actual post office building and attach the other end of your plastic fiber to its side. Now imagine that fiber as being filled with a pulsating light, which represents the "ones" and "zeros" of computerspeak. The ever changing patterns of this pulsating light are what carry the actual information flowing into and out of your personal mailbox.

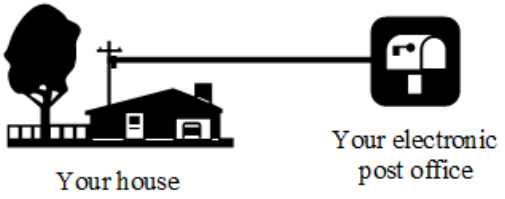

Figure A-1

Simple, isn't it? It might surprise you to learn how close this image is to the physical reality of the Internet.

You may also be surprised to see how alike cyberspace and our world of consensual reality actually are. Things just happen faster in cyberspace, almost as fast as the speed of light in many cases.

Now bring to mind all of the people with whom you would like to be in contact—people like your friends, co-workers, former neighbors, relatives, celebrities, and so on. Then picture a thin, lighted fiber running from your email post office to each of their neighborhood email post offices. In your mind, connect a lighted fiber from each of these post offices to the homes and places of business where the people you want to contact will be reading their electronic mail. Done? Congratulations, you have just begun to construct your own working image of cyberspace.

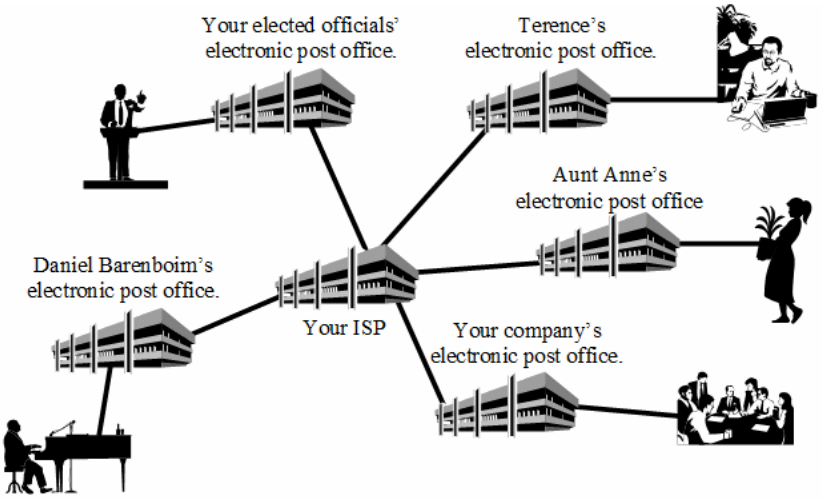

Figure A-2

What cyberspace looks like in your mind's eye isn't important. What *is* important are the lighted fibers connecting these imaginary edifices, for it is these high speed information "pipes" that really set cyberspace apart from physical space—light speed interconnections filled with pulsating information. After all, information and connections are what the Internet is really about.

Perhaps the most important use of the Internet today is also its most commonly used application. I am talking about electronic mail, email, which wins the prize as the **killer application** of the formative years of the Internet. Even after the advent of the World Wide Web and the introduction of **multimedia**, email created the most **traffic** on the Internet. As audio and video technologies become more widely used on the Net, however, the raw number of **bits** being transmitted for email purposes will lose their dominance, but we still may have a few more years before email loses its title as king of the Internet applications.

The first few email messages one sends are usually to friends and family, but before long whole new vistas of like-minded spirits come into sight. Then the real power of email can be appreciated. Two people who have never met in person can, nonetheless, become intimate friends

through electronic mail. In fact, it may be the lack of face-to-face contact that is responsible for some of these new relationships blossoming into intimate friendships. Without having to process all of the data that is involved in judging someone's personal appearance and voice, we make a direct connection with the thoughts in that other person's mind. Think about this for a minute; with email you can establish a direct channel of communication with another person's mind. So many possibilities begin to unfold.

There are some pitfalls with electronic mail. For example, we have all read or seen reports in the popular media about the romances of men or women who get fooled by creative teenagers pretending to be someone older. Cases like those remind me of the famous cartoon from *The New Yorker Magazine* showing two dogs sitting in front of a computer where one dog says, "No one knows you're a dog on the Internet." Pause for a moment, however, and think about what is actually taking place in these cases of fictional email identities. Forget for a moment about the age and gender of the individuals involved and think about the fact that what is happening is a sixty year old man or woman is engaged in a deep and meaningful conversation with a highly imaginative 15 year old boy or girl. There is a lot of intellectual activity taking place here, for email exchanges like these create a temporary shared reality in cyberspace. In the case of online flirting, is that boy or girl lying or just being creative? As long as no one is physically, financially, or emotionally harmed, has any serious damage been done? While I am not promoting this type of behavior, it is nonetheless obvious that minds have been stretched, never again to return to their original dimensions. Emotions have been triggered. Human to human communications have taken place that otherwise never would have transpired. This can't be *all* bad. I believe it is important to keep in mind that there are many sides to these situations, and that not all unexpected results are negative.

The next question is, "How does your electronic letter get delivered to the proper post office after you **click** the **SEND button**?" Obviously, there is a lot of complex equipment involved, the most important being the **router**. Without routers, there is no Internet.

Routers and Packets

Whenever I think about what actually takes place when someone sends an email message to a friend on the Internet, I am amazed that this technology even works once in a while, let alone millions of times a second. My highly technical friends may sneer at the following explanation of the inner-workings of the Internet because they are comfortable talking about **TCP/IP stacks**, and "improving performance by moving **routing functions** down to **layer** 3," and other seemingly arcane topics. But most people simply are not interested in that level of detail.

One way to think of a router is to compare it with a heart. Both hearts and routers "pump" stuff, but the "stuff" routers pump is information, and that information is contained in **packets**. The concept of a packet is actually quite simple.

The best analogy for a packet is that of a letter and an envelope. The letter contains the information, and the envelope, with the letter in it, is analogous to a packet. So a packet may be thought of as an electronic envelope, complete with an address, a return address, and some information inside. The thing about packets that may surprise you, however, is that your email letter to a friend is broken into more than one packet. "Why," you might ask, "do we cut a letter into little pieces, send them one at a time, each in their own 'envelope,' and then force the recipient to tape them back together once they are received?" Good question.

Let us continue with the metaphor of a postal letter to better understand how packets work. Assume for a moment that the governments of the world agreed to a common price for all postage. Assume further that, in their infinite wisdom, they also agreed that for a letter with only one sheet of paper in the envelope they will charge fifty U.S. cents to mail it anywhere in the world, but if you put two sheets of paper in the envelope they will charge you two U.S. dollars. (Don't laugh, governments have passed regulations far more moronic than that.)

Now, how would you send a letter under those conditions if it contained two pages? The most economical way would be to place each page in its own envelope, purchase two fifty-cent stamps, and save a dollar in the process. Economics is also the reason your email message is broken

into smaller sections, or packets. It is just more efficient to send information in smaller, and more uniform-sized, packets.

When you click the SEND button on your email program, the first thing your computer does is to “cut” your message into smaller pieces. It then puts each piece in its own packet, adds the recipient’s address, adds your return address, and adds some information that tells your friend’s computer where to place each piece in relation to the other pieces that are coming in separate packets. These packets are then sent from your computer to the email server in your office. Next, the packets proceed from your ISP router (which we will discuss in a moment) and on through a series of other routers to your friend’s email server. Eventually, they reach your friend’s computer, which then magically stitches all the packets back together into a single message. Why is it done this way? Because it is more efficient. It costs less in terms of router and computer processing time. If you would like more detailed information on this topic, just visit your favorite bookseller and browse through their Internet section, where you will find dozens of texts on the subject.

I should add one additional comment about email, however. As you begin exchanging messages with more and more people, you may notice that sometimes the messages you receive are not formatted very well. You may see paragraphs with strange line spacing, perhaps with just one or two words on a line followed by a long line of text which is in turn followed by blank lines, *etc*. Don’t panic. What has happened is that your email program, technically your email **client**, and the email client of the sender are slightly incompatible. So, your email program makes an educated guess as to how the letter should be reconstructed after it is received. Often they guess incorrectly about page margins, *etc*. Don’t let it put you off, for some of the email you send to others may also have this problem. These incompatibilities can be corrected, of course, but it is easier to live with a little sloppy formatting rather than spend time correcting software bugs, which often are due to the pressures of a marketplace that forces software manufacturers into quality compromises.

Now that you understand the concept of packets, let’s return to routers for just a moment. As you now know, when you click the SEND button on your email application, the first thing that happens, right inside your own computer, is that your message is broken down into small sections, and each section is placed in its own “envelope,” or packet. After

your computer has all of these packets ready, it sends them along to your email server, which, in turn, forwards them to the router that connects your ISP to the Internet. When that router sees the TO address on your first packet it asks the question: “Is the recipient’s email server connected to me?” If the answer is “Yes,” the packets are sent to your friend’s email server. If the answer is “No,” your router asks the question, “Am I connected to the router that the recipient’s email server is connected to?” If the answer is “Yes,” your packets are sent to that router. If the answer is “No,” it asks itself the question, “Which router am I connected to that will get this packet closer to the router connected to the recipient’s email server?” After looking up the address of that next closest router, it sends your packets on their way to that router. The router in your ISP office continues this process until all of your packets are “off its desk.”

All of the routers between your ISP office and your friend’s email server, in turn, ask themselves the same questions until the first of the above questions is answered in the affirmative, and the packets are delivered to your friend’s email server. From there your friend will pick up her or his email and reassemble the packets into the letter you wrote. It is all quite simple, actually. At least it appears simple until one considers the fact that the latest generation of routers can move *millions* of these little packets on to the proper router every second! (Within five years of the time this book is first published people will laugh at how slow today’s routers are.)

One question you may ask is, “How do these routers know what email servers, computers, and other routers are connected to them?” The answer, while seemingly simple, hides one of the most complex, and rapidly changing, parts of the Internet. The key to traffic flow on the Internet is in its **routing tables**. Essentially, a routing table is a map that shows the best route to every destination on the Net.

How is your mental image of the Internet coming along? Do you remember the picture of cyberspace you began by connecting your home to your local electronic post office with a light-filled fiber? To make that picture a little more accurate, place a router in front of every post office in cyberspace. Now envision your computer connected to your ISP router, which is in turn connected to your electronic post office. It is important to add the router to the picture because it is also your gateway to other routers, which, in turn, will take you to Web sites, **chat rooms**, Inhabited

Virtual Worlds, IVW, and all of the other interesting places to be found in cyberspace.

By now you can visualize the computer in your home connected by a light-filled fiber optic cable to your Internet service provider's router. Visualize that router connected to other routers which, in turn, are connected to yet more routers, and on to yet others, until you at last connect to the computer in your friend's house without even a post office between you. In fact, the post offices just seem to hang off these routers. So, when you check your email what you are actually doing is going through your local router, which acts like a traffic cop, and then stopping in at your local post office to check your mail box. As you now see, there really isn't true home delivery of mail on the Internet. You have to "travel" to your local electronic post office to pick it up!

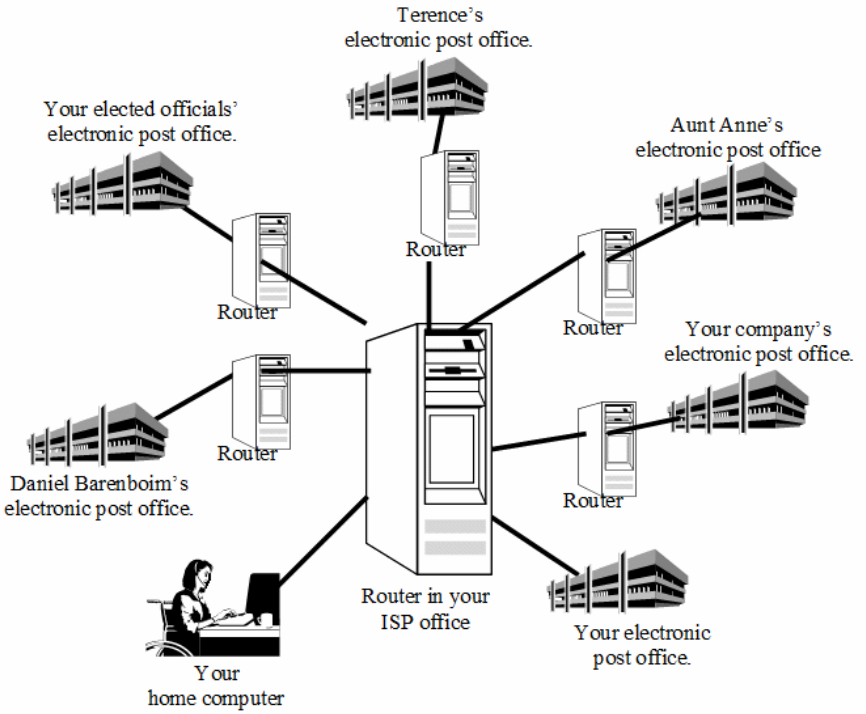

Figure A-3

Now let's try a mental experiment. Imagine the series of routers between you and your friend as each being connected to several other routers that aren't directly in the path to your friend's house. Can you see the web-like structure that is unfolding? If you and a friend are connected to the Internet and want to communicate directly with each other in a chat room, under normal conditions your messages would be passed from Router A to Router B to Router C and on to your friend's computer. Now assume that the connection from Router B to Router C has been broken. What do you think happens? Router B simply sends its packets along a different path to Router C. This new path may be less direct, but a few broken links won't keep your packets from getting through.

It is not only a broken link that causes a router to send some of your packets along a different path. Perhaps the next router along the shortest path is busy, and the packets are stacking up on its "desk." (The technical term for this "desk" is **buffer**, which is the source of the expression, "My buffer just overflowed," that programmers sometimes use when they can't absorb any more information at the moment.) An overly busy router simply tells its neighboring routers that it is running behind. The neighboring routers then take mercy on it and send their packets along an alternate path. In theory, but seldom in actual practice, each of your packets could take a unique path to your friend's house. While you might think that all of this routing and **packetizing** is terribly inefficient, and that it may cause big delays, actually it works extremely well. In fact, it works so well that tens of millions of email messages are sent and delivered every day, and this number continues to rise exponentially!

Here was the real surprise for me when I first learned how routers worked: The largest amount of time consumed in this entire process is usually at the sending and receiving machines. Your computer and your friend's computer are quite often the worst bottlenecks in transmitting information over the Internet, not the routers that connect them. The disassembling and assembling of these messages into and out of packets usually takes the most time in this process. By the way, Web pages are sent in exactly the same manner as email messages, they are broken into packets and sent through routers. One way to speed up your Web browsing experience, therefore, is to get a faster computer, rather than change to a different Internet service provider.

During a conversation I once had with a man who spent his entire career designing routers and other **black boxes** that make up the Internet's infrastructure, I was taken aback when this highly respected scientist answered my question about the workings of a new **multi-gigabit router** by saying, "it's magic." In a sense, this was the only answer possible.

The deeper one digs into the essence of these black boxes and learns the details of moving packets of information from Des Moines to Moscow, the more the process resembles magic. The point at which understanding bleeds into magic is different for each of us. For the Internet novice, just clicking on a hypertext link for the first time and watching a Web page appear on the screen is often a magical experience. For the Internet engineer who spends her days working with complex routing algorithms, the magic may begin to shine through at the chip level; deep within the routers of which she appears to be the master. As Arthur C. Clarke's[1] third law of technology says, "Any sufficiently advanced technology is indistinguishable from magic."

Of course, magic carries different meanings for each of us depending upon our cultural backgrounds. Personally, I don't like television programs that expose famous magical illusions. For me, a little magic makes life more interesting. So, you might wish to be careful about trying to gain too complete an understanding about the technical nature of the Internet if all you want to do is surf the Web and communicate with friends. In the final analysis, all of the *technical* descriptions in the world will not explain the phenomena we call "the Internet." I see nothing wrong with believing that one aspect of the spirit of the Internet is magical.

What is the Internet

Now that you have a basic understanding of routers and packets, it is time to tackle the issue of just what *is* this thing we call the Internet. Given its importance and the amount of media coverage the Internet receives, it is sometimes hard to believe that the Internet is nothing more than a network of networks that are connected by routers and other such

[1] Arthur C. Clarke, one of the most celebrated science fiction authors of our time and the author of more than sixty books, published his first three "laws" of technology in the now out-of-print *Profiles of the Future: an Inquiry into the Limits of the Possible*.

devices. Of course, the phrase “nothing more than” belies the fact that it is also the largest and most complex technological artifact ever created by humankind!

What then, you ask, is a network? In the context of the Internet, the word “network” refers to a chain of interconnected computers. For example, many businesses today connect their computers to a **Local Area Network**, a LAN, to save the expense of buying individual **printers** for every employee. By use of a LAN, several computers can share common services such as file storage and printing services, which often require expensive equipment. All you really need to know about networks for the purposes of this book is that they are somewhat complicated combinations of wire, software, and black boxes that move information, usually in the form of packets, from one computer or **peripheral device** to another.

In addition to Local Area Networks, which are usually confined to a single building or to a small group of geographically close buildings, there are also Metropolitan Area Networks, MANs, which cover relatively small geographical areas. Another common type of network is the Wide Area Network, or WAN, which generally covers a much larger area, such as a state or country.

All of these types of networks, LAN, MAN, and WAN, operate independent of each other. Not all use the same **protocols**, and each has its own administrator and rules of operation. For a computer on one network to exchange information with a computer on a different network, a router must connect the two networks. (Actually, there are other connecting devices such as **gateways** and **bridges** involved in interconnecting networks, but a discussion of these devices is too technical to be included here and would add nothing to the discussion that follows.) Two networks connected to each other are called an “internet.” (Note the lowercase “i.”) While there are many of these smaller internets, often called “In*tra*nets,” the interconnection of all of them into a single, global network is the communications medium we call the Internet.

Why, you may ask, would someone own a network and not connect it to the Internet? There could be many reasons for such a choice, but the most important ones are security and economics. Although it is difficult, and in some cases extremely difficult, for unauthorized persons to gain access to information they aren’t entitled to see on a computer

network, whenever computers are interconnected the possibility of unauthorized access exists. A good computer security expert will tell you that the only way to ensure that your data remains secure is to disconnect the computer from all networks, unplug it, and bury it in the back yard. What they are saying is that given enough time and computing power, any computer network can be **hacked**.[2] That, in addition to the fact that it costs money to connect a LAN to the Internet, is the primary reason some computer networks are not "on the Net."

There you have it, at least at a basic level. Using your telephone line, you connect your home computer to the network that is operated by your Internet Service Provider, your ISP. This ISP network is then connected to other ISP networks and to the networks of information providers through routers. (See Figure A–4 on page 192.)

This globally interconnected network of networks is what we call the Internet. It sounds simple, and from this elementary point of view it is. Only when one begins to dig deeper into the underlying technology do you begin to understand the "unthinkable complexity" of this global communications medium we are building.

Fortunately, in order to use the Internet you don't need to know any more about its inner workings than you do about the ignition system on your automobile. All you really need to know is how to get it started and which roads to take. If you want to, you can leave everything else up to the technicians, scientists, and engineers who are building this infrastructure. The only semi-technical details you may want to check out are the "rules of the road" and who makes these rules.

---

[2] It may come as a surprise to some readers to learn that there are both "good," or ethical, and "bad," or unethical, hackers. Many companies today hire ethical hackers who attempt to circumvent existing security barriers looking for weaknesses that can be shored up before they are discovered by unethical hackers who seek only to cause damage and try to steal valuable information. Before the widespread deployment of the Internet, the word "hacker" generally carried a more positive connotation than it does today. Originally, the term was used to describe a computer professional who was the master of her of his technological artifacts.

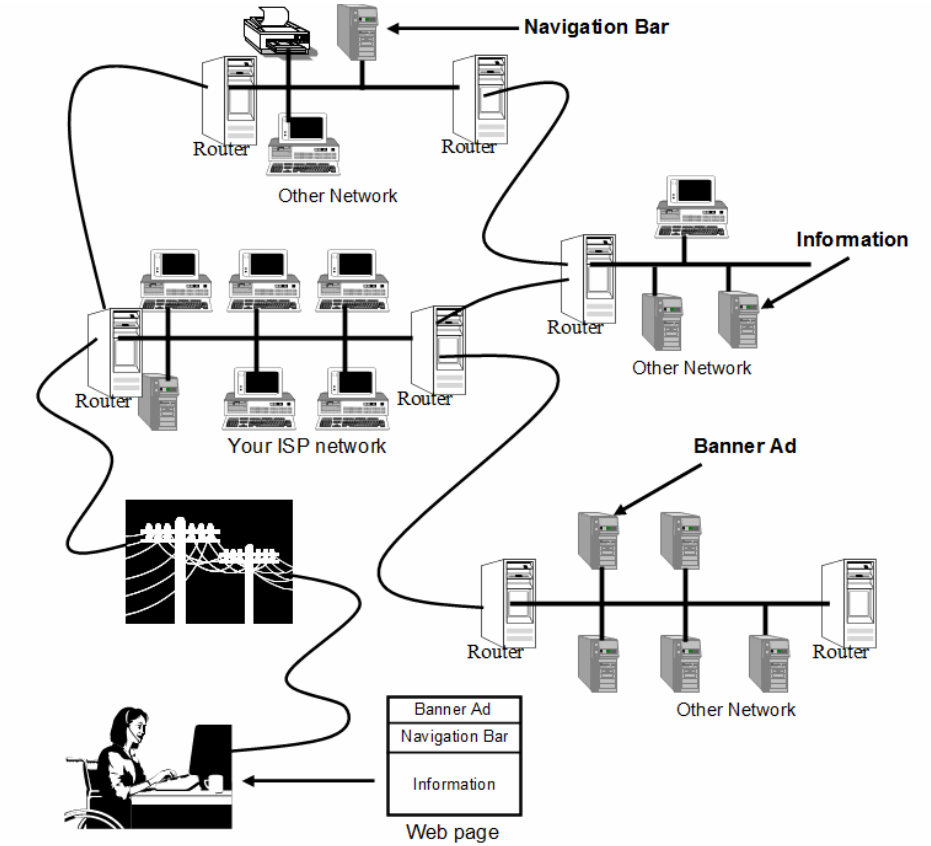

Figure A-4

Conceptualized view of how a web page is sometimes assembled for arrival at your home computer.

Who is in Charge?

"Things fall apart; the centre cannot hold; mere anarchy is loosed upon the world."
Butler Yeats
"The Second Coming" (1922)

There is an often-told story about a group of officials from a communist country who visited the United States several years ago in

search of “the person in charge of the Internet.” Apparently, they wanted to make arrangements to restrict Internet access in their country to only the information they thought would be politically correct from a communistic point of view. According to this urban legend, they gave up their search after six months, returned home, and reported that apparently no one was in charge of the Internet.

While I seriously doubt the veracity of this tale, like many urban legends it contains a kernel of truth. The reality is that no single person or organization is actually “in charge” of the Internet. In fact, the governance of the Net could be called an anarchy. While there isn’t a total absence of governmental regulation, no single nation has absolute control over the Internet. The U.S. government sometimes thinks it runs the show, and often tries to act as if it does, but the technicians and engineers who keep things working generally don’t accept directions from anyone but their peers. Of course, the bureaucrats don’t want to hear this, for it is their belief that anarchy always results in chaos.

Nietzsche once said, “Only a man with chaos in his soul can give birth to a dancing star.” (For the purposes of this chapter, we will assume that Nietzsche was using the word “chaos” in its modern sense to denote disorder. It is possible, however, that he was using the word as it was originally coined, to symbolize the creative force.) Political correctness insists that Nietzsche’s quote be revised by replacing the word “man” with the word “person.” But let’s take it a step further and replace “man” with “network.” The quote then reads, “Only a network with chaos in its soul can give birth to a dancing star.” (Warning: Slippery slope ahead, unless you have already read the main body of this book. If so, you know what is coming!)

Newcomers to the Internet sometimes have the feeling that there is a lot of chaos, or disorder, on the Web, but a soul? Does this dancing star we are creating have a soul? Is it conceivable to think of the Internet as being in part physical and in part spiritual? Perhaps this is not so far-fetched. For example, if we consider the wires, the fiber, the routers, the computers, the software, and all the other physical parts of the Net as representing a nervous system, why not think of the Internet’s soul as being made up of the collective souls, or the collective consciousness, of the people whose minds are interconnected in this global web of thoughts and information? (These ideas are more fully developed in the body of this

book.) Note that the phrase “collective consciousness” is used here to specifically denote a counterpoint to what is called the collective unconscious.

Since Jung first popularized the concept of the collective unconscious, the verity of this idea has been much debated. One reason for the debates, of course, is that it is quite difficult to scientifically prove the existence of a global mind lying just beneath the surface of our waking awareness. Yet even without absolute scientific proof, it appears that many people already hold a belief in the collective unconscious.

What about collective consciousness, though? Why don’t we hear more about that concept? It certainly isn’t anything new. For example, in his book, *The Future of Man*, Teilhard de Chardin said,

> In the passage of time a state of collective human consciousness has been progressively evolved which is inherited by each succeeding generation of conscious individuals, and to which each generation adds something. Sustained, certainly, by the individual, but at the same time embracing and shaping the successive multitude of individuals, a sort of generalised human personality is visibly in the process of formation upon the earth.[3]

From the smallest group of two, husband and wife for example, to the group-think of political parties and religious movements, we see evidence of collective consciousness all around us. An intriguing aspect of most forms of collective consciousness is that although a group may have an overall vision or direction in which it is heading, the people who comprise the group remain individual thinkers in other areas of their lives. It is as if we tap into a group’s collective consciousness when necessary or convenient, but go our own way when it suits us better. Will this change if we fuse millions of small groups of collective consciousness into a single, global collective consciousness? Are we creating an Earthly version of the **Borg**? In the final analysis, what the Internet is really all about is connections. Specifically, it is about connecting machines, which in turn are the physical extensions of the minds of the people who own and control them.

---

[3] Teilhard de Chardin’s *The Future of Man*, (Norman Denny, translator), p. 32 (New York: Harper & Row, 1964).

It seems to me that our ultimate goal should be to provide an Internet connection for every child, woman, and man on this planet. I believe all sentient beings should be afforded the opportunity to interact with each other, instantly, any time, any place. Yet where, or to what, will this lead? What will happen when all of our minds, figuratively speaking, meet at a single point? Can we then simply tap some cosmic tuning fork against the side of our computers and watch as all of humankind snaps into a Tesla-like resonance, sending harmonic waves out into the universe, announcing our evolutionary leap to a higher state of consciousness?[4] Or, as some predict, will we only have built some monstrous new form of television? The choice is actually up to us. Frankly, either outcome seems preferable to what we have been doing on this planet for the past few thousand years.

If you accept the premise of a collective consciousness evolving on, or in, the Internet, as discussed in the main body of this book, it then becomes imperative to ask the question with which we began this section, "Who is in charge?" If you are a control freak you are not going to like the answer, for the Net is very close to a worldwide "free for all." Sure, it can get a little rough, and there is a lot of misleading and outright incorrect information on the Internet. So what? Aren't things the same everywhere? Just think of the Internet as a global town square where the free and unfettered exchange of ideas is allowed to take place without any significant governmental interference, at least at this point in time.[5]

I have been involved in many late night discussions about the role governments should or should not play in regulating the Net, and my

---

[4] Nicola Tesla was an electrical genius without whose work our world would be very different today. At beginning of the 20th century, Tesla was perhaps the world's best known scientist. He was one of the first researchers to discover / investigate X-rays, the vacuum tube amplifier, radio, fluorescent bulbs, neon lights, the speedometer, the automobile ignition system, and the basics behind radar, the electron microscope, and the microwave oven. Tesla obtained patents for many other devices as well, including many of the fundamental patents for alternating current motors. Without Tesla's determined stand against the unscrupulous behavior of the powerful Thomas Edison, we might well be living in a dimly lighted world of DC power. His pioneering work on the mysteries of resonance has never been equaled, and much of it has been lost.

position hasn't changed: the less government interference the better. Most government initiatives to censor and control the Internet are couched in terms leading one to believe that the proponents of stricter control are only trying to protect our children. Do the proponents of Internet regulation really think that people do not see through their transparent attempts to control any thinking that is not in line with their own? As Alvin Toffler said in *Power Shift*, "And as knowledge is redistributed, so, too, is the power based on it."[6]

What is wrong with requiring parents to take back some of the child-raising responsibilities they have already given away to government? The spirit of the Internet community is one of personal responsibility. Given the chance to cooperate in a global dialogue, free from all but the most basic controls, **netizens** have, overall, acted very responsibly. This spirit of mutual responsibility and cooperation may best be seen in the way decisions are made about core Internet technology. Here is how it works.

Requests for Comment—RFC

Rather than ask the governments of the world to hold meetings and agree to a new protocol for moving packets from router to router, for example, the Internet community uses RFC, Requests For Comment. In the case of an addition to or modification of a protocol, an RFC is initiated by the person or persons who want to propose the change. It is then made available on the Internet and a period for comments takes place during which the proposed RFC is widely debated by anyone and everyone who wishes to join in the discussion. These discussions are often conducted through a series of email exchanges. After the period for debate has ended, a vote to accept or reject the proposed protocol is taken among the members of the Internet Engineering Task Force (which is described in the next section). If the vote is to implement the new protocol, then the technicians make the necessary changes to their hardware and software. This process began in April of 1969 when Steve Crocker, an engineer at UCLA asked the small group of other pioneers who were building the

[5] See "Help Save Free Speech" on page 119 for a discussion of current, and very serious, government attempts to eliminate free speech on the Internet.

[6] Alvin Toffler's *Power Shift*, p. 8 (Bantam Books, 1990).

ARPANET, forerunner of today's Internet, to comment on some unresolved issues dealing with routing software. At the time, there were only a few dozen people involved in what we now call the Internet. Yet, today the process retains its original air of friendly cooperation.

To give you an idea of just how informal the RFC process is, here are a few paragraphs from RFC–3 which set out the initial guidelines for Requests For Comment:

> The Network Working Group [NWG] seems to consist of Steve Carr of Utah, Jeff Rulifson and Bill Duvall at SRI, and Steve Crocker and Gerard Deloche at UCLA. Membership is not closed.
>
> . . .
>
> The content of a NWG note may be any thought, suggestion, *etc*. related to the **HOST** software or other aspect of the network. Notes are encouraged to be timely rather than polished. Philosophical positions without examples or other specifics, specific suggestions or implementation techniques without introductory or background explication, and explicit questions without any attempted answers are all acceptable. The minimum length for a NWG note is one sentence.
>
> These standards (or lack of them) are stated explicitly for two reasons. First, there is a tendency to view a written statement as *ipso facto* authoritative, and we hope to promote the exchange and discussion of considerably less than authoritative ideas. Second, there is a natural hesitancy to publish something unpolished, and we hope to ease this inhibition.[7]

So how does the RFC process work today? In much the same way, actually. Anyone, including you, can initiate an RFC. The process is quite simple and is explained in detail on numerous Web sites. If you are interested in this process, even from an historical perspective, I encourage you to browse the RFC files.[8] While the majority of the Requests For Comment have to do with technical protocols, you will also find other topics relating to computer communications as well as a scattering of humor.

---

[7] Network Working Group, *RFC-3*, found at ftp://ftp.isi.edu/in-notes/rfc3.txt.

The Internet Engineering Task Force

Another interesting aspect of the control of the Internet is the Internet Engineering Task Force, the IETF. The IETF is a somewhat loosely organized group of people who make technical contributions to the Net. They meet three times a year at different locations throughout the world to identify pressing technical issues and present recommended solutions to fix problems and improve the technology.

When I first learned that there was such a group, I wondered how a person goes about becoming a member of this task force. If no one is in charge of the Internet, then who appoints the members of the IETF? When I discovered the answer, I had trouble believing it at first. Are you ready for this? To participate in the work of the Internet Engineering Task Force all that is required is to show up at their next meeting! Now if that doesn't demonstrate that the spirit of anarchy is alive and well in the Internet community, I don't know what does. Of course, just as in other technical organizations, one must establish one's credentials before others will pay much attention to what you are saying. Most often this is accomplished by volunteering to work on one of the IETF ad hoc committees that spring up to deal with specific Requests For Comment.[9]

This process works so well that the governments of the world are actively concerned about it.[10] After all, how are they going to tax Internet transactions when the technical community can always find ways around it? How are they going to impose their religious and moral beliefs on the world community? How are they going to prevent people from gaining

---

[8] There are many places on the Internet to find listings of RFC. One good place to begin your search is on the *RFC Editor's Home Page*, which may be found at www.rfc-editor.org/.

[9] This is an admittedly simplified overview if the IETF. Detailed information about this organization is available at their official Web site, which may be found at www.ietf.org.

[10] The reason most businesses are happy with this process is that, in general, the members of the IETF work for corporations, which are willing and able to pay the travel expenses of their representatives to the task force. Viewed from this perspective, of course, one could also argue that business enterprises are ultimately in control of the Internet.

direct, unfettered, access to information? And, of course, how are they going to *control* people who have direct access to any information they want? These are all very real, and very serious, issues facing the Internet community and the world at large today. How these questions are answered during the next ten years may well seal the fate of human communications for generations to come.

So, there you have it. For now, no one is in charge of the Internet, and everyone is in charge of the Internet. It is an anarchy that is working beautifully. Yet, there are a lot of powerful people who are very threatened by all of this. So, if you want to ensure the continuation of an Internet where information remains readily available, you may want to become more involved in the ongoing debates about its regulation.[11]

Connecting

"Connectivity is the precondition for love."
Terence McKenna

It is a common misconception that the Internet is isolating people by "forcing" them to spend too much time alone, sitting in front of their computers. While time spent using the Internet may be time that our *bodies* are sitting in front of our computer screens, it is not time spent *alone*. You see, an Internet experience is a true out-of-body experience, for what it means to be "on the Internet" is that one's *mind* is in cyberspace, and you are never alone in cyberspace.

We all have different approaches to using the Internet. While my personal computer is primarily used as a writing instrument, I also leave it connected to the Net as I work. When an email message arrives I hear a soothing chime, which usually prompts me to go check my email. My email application automatically filters out the majority of junk email I receive, so my messages are primarily from friends and business associates. I treat the arrival of these messages as if they were being delivered in person by someone walking into my office. If I want to, I can

[11] An excellent place to begin your involvement with free speech issues on the Internet is at the Web site of the Electronic Frontier Foundation, which may be found at www.eff.org/.

put a “Do Not Disturb” sign out by simply disconnecting from the Internet or by shutting down my email program. Since I work alone, however, it is nice to have a few interruptions from time to time. It gives me a delightful feeling of being connected when an email message arrives, because I know that the person who sent it is probably still online and has just thought of me. If I want to, I can send him or her an immediate reply or begin a private **chat** with them. Even though no one is physically in the room with me as I work, I no longer *feel* alone when that little email chime alerts me to an incoming message.

Chat Rooms and Instant Messaging

If you are looking for a way to spend a *lot* of time on the Internet, then you may want to check out some of the thousands of chat rooms that have proliferated since Internet Relay Chat (IRC) was first developed by Jarkko Oikarinen in 1988. Originally intended to improve communications among contributors to his electronic bulletin board, the public release of Oikarinen’s new program spawned a huge following of IRC devotees. It was during the U. S. attack on Iraq during the Gulf War, however, that IRC came into its own with on-the-scene reports being fed over the Internet in **real-time**. Even professional news organizations were scooped by IRC transmissions over the Internet. Practically every major world event that has occurred since then has also been reported over IRC as it was taking place.

One of the early drawbacks to using IRC was that the software was very command-line intensive. In other words, one had to learn many textual commands to effectively carry on an IRC discussion. However, the basic commands are quite easy to learn. As a result of the amount of typing required to carry on a conversation, the IRC community was among the first to come up with many of the now common shorthand notations for frequently used phrases. Some of these cryptic acronyms have found there way into everyday email usage, for example:

IMHO—in my humble opinion

TTYL—talk to you later

LOL—laughing out loud

NP—no problem

J/K—just kidding

BRB—be right back

TTFN—ta ta for now

ROTFL—rolling on the floor laughing

It was also on the IRC channels that the use of **emoticons** first began. You have the pioneers of online chat to thank for the hundreds of versions of smiley faces that often show up in your email … (Hint: tilt your head to the left if you are having trouble seeing them.)

Classic smiley face :-)

Frown :-(

Wink ;-)

Crying :'-(

Shocked or amazed :-o

Kiss :-*

Today, there are literally thousands of "channels" operating on IRC networks, which, in turn make up a part of the larger Internet. As you may recall, the Internet is a network of networks. Some of those networks are devoted solely to IRC. One way to visualize a channel is to think of it as one of the old party lines that telephone companies once used. Channels are used to segregate conversations into specific topics. A typical search for operating channels on one of the IRC networks will bring up thousands of listings. The better networks allow one to search for channels by topic, number of users, *etc*. A recent search of one such network revealed over 22,000 channels operating, however, over half of them were private—that is one had to be invited to participate in the conversation. Private IRC channels may be established by persons who want the convenience of real-time communications without the expense of a long distance telephone call. By giving up the convienience of voice communications for typed communications, IRC users are able to use the Internet for many of their day-to-day conversations.

Since its early days, online chat has become an important feature of the Internet. Many Web sites now offer chat rooms that do not require

users to install special purpose software. Through the magic of **Java™ technology** and other new software techniques, chat is now much easier to use. Something parents of online children should be aware of is that the overwhelming majority of young people online are regular participants in online chat sessions. Don Tapscott estimates that 85–90% of what he terms the "N-generation," or Net-generation, view online chat as an important part of their daily lives.[12] As one 17-year-old woman from Australia says, "To me the Net is a completely different multicultural world where almost everybody gets along." A 15-year-old woman from Florida says, "When a user joins a chat session, they are not judged based on their looks or skin color, but on their personality. The Internet provides an alternative, a place not of racial issues or prejudice."[13] These are insightful observations, and they are coming from the hearts and minds of the people who will soon be taking over the reins of power from current generations.

If you intend to spend time in some of the Internet's chat rooms, you would be well-served to learn some of the acronyms (like those shown above) used in IRC conversations, for they have carried over to many of the Web-based chat rooms. When one considers the fact that at any given moment there are quite literally tens of thousands of people all around the globe who are engaged in regular conversations over the Internet, it is difficult to see what the popular media is talking about when they claim the Net is isolating people. The next time you can't sleep, log on to the Internet, look up a chat room topic that interests you, and meet some new friends online. No one ever sleeps in cyberspace, and it is always filled with interesting people.

There are also many opportunities for one to have a chat with world leaders and celebrities. President Clinton and other public figures have been known to participate in scheduled chat sessions on many occasions. Some leaders have actually used this technology to hold meetings between themselves. For example, on January 17, 1996, the Malaysian Prime Minister, the President of the Philippines, and the head of the PLO met for ten minutes in cyberspace!

---

[12] Don Tapscott's *Growing Up Digital*, p. 56 (McGraw-Hill, 1998.

[13] *Ibid*., pp. 69–70).

Another popular feature of the Internet that many people now use is “instant messaging.” At its most basic level, instant messaging is just another form of chat program. Depending upon how you configure an instant messaging program, however, you can let other users of the software know when you are online. For example, you can set your profile to notify only certain friends that you are currently logged onto the Net, you can let anyone who knows your User ID know you are online, or you can just lurk behind the scenes without telling anyone you are there. Upon seeing that a friend is on the Net, if you want to, you can set up a private chat room with them. Some instant messaging software also provides the ability to store the text generated during a chat session as well as to send voice messages over the Internet.

Electronic Mailing Lists and Newsgroups

Another way **virtual communities** come into being on the Internet is through the use of electronic mailing lists. In essence, a mailing list is a service where like-minded people can exchange thoughts and information with others who share the same interest. For example, there are mailing lists that cover dieting, children, seniors, medical research, environmental health, pets, and thousands of other topics. The number of electronic mailing lists already exceeds 300,000 and is growing daily.

Like IRC, electronic mailing lists were in use long before the World Wide Web was deployed on the Net. There are many forms these mailing lists can take. Some are unmoderated, which means that when anyone on the list posts a message it is immediately sent to everyone on the list. In contrast, a moderated list is governed by someone who screens all postings and only passes along the ones that are pertinent to the ongoing discussion. There are also lists that provide a digested version, which means that at certain times during the day all postings are gathered and sent in a single email message to those on the list that have requested this method of delivery. The digested list option is extremely useful whenever there is a lot of activity, for it keeps incoming email to a minimum. When you join a mailing list there is usually no obligation to send messages to the group yourself. If you want to just read what others have to say about the subject of the list, you can simply be a **lurker**.

The concept of a lurker originated with the **newsgroups**. Like the first stirrings of life on this planet, the genesis of newsgroups is open to debate. Suffice it to say that a great number of people and organizations were involved in the evolution of this form of online communication. Basically, a newsgroup is a public bulletin board dedicated to specific topics, such as activism, books, music, celebrities, censorship, *etc*. It is difficult to determine the total number of newsgroups available on the Internet, for it is up to the individual Internet Service Providers to determine which groups they will provide access to. The last time I checked, the ISP that I am now using provides access to over 40,000 different newsgroups.

Newsgroups and electronic mailing lists each have their own advantages and disadvantages. For example, sometime around 1990 I subscribed to an extremely active mailing list. It was one of the first lists I subscribed to. Little did I realize that this was an unmoderated list with a lot of activity. It was common to find over 100 email messages from other list members waiting for me every time I logged onto the Net. Needless to say, I quickly removed my name from that list. I simply couldn't keep up with all the email. A different newsgroup dedicated to the same topic, however, provided similar information without the massive amount of incoming email pouring into my mailbox. Another advantage of newsgroups is that one can search for keywords in the subject lines of the messages. If you are looking for a specific topic this makes the work of sorting through a massive amount of information much easier.

You will most likely find a place for both newsgroups and mailing lists as you sift through the endless sands of information available on the Internet. I use a mixture of both. There are some mailing lists I belong to that provide concise, to-the-point discussions of topics in which I am interested, and there are newsgroups I visit that have thousands of postings each week for me to sort through. The only way for you to discover the right balance between these two services is to do some experimentation. Subscribe to several lists, browse some newsgroups, and then join the communities to which you are most strongly attracted.

About the Author

In recent years, Lorenzo Hagerty has spent his time writing, podcasting, blogging, producing a lecture series, speaking at events, and being a grandfather. His professional career is as diverse as they come: attorney, consultant to Fortune 500 companies, electrical engineer, hot air balloon pilot, Internet/Java promoter, motivational speaker, movie stuntman, multimedia software developer, Naval officer, and technical writer. Hagerty was president of Success, Inc., which provided sales training and network marketing courses to other companies, and he founded Dynasty Computer Corporation, which sold home computers even before IBM did. He is an active member of the international corporation DigitalSpace, Inc., which designs virtual worlds for industrial engineering, education, and the public good.

Hagerty is perhaps best known as the congenial host of the Psychedelic Salon, a regular podcast series showcasing interviews, lectures, and assorted additional audio sources that feature some of the brightest, most creative individuals from the community of folks interested in psychoactives. He is the organizer of the Palenque Norte theme camp at Burning Man, dedicated to translocating the vibe from the Entheobotany seminars at the Chan Kah hotel in Mexico onto the dusty realm of Black Rock City.

[SOURCE: The Character Vaults at www.Erowid.org]

Other eBooks by Lorenzo Hagerty:

The Genesis Generation (a novel)

The Art of Becoming an Entrepreneur

For more information about Lorenzo go to www.LorenzoHagerty.com

Footnotes

(Numbering repeats with each chapter)