ETHICS IN THE INFORMATION AGE

Douglas James Joyce
Program Manager
Remtech Services, Inc.
1606 Glen Bar Drive
Lakewood, Colorado 80215

and

Linda deLeon
Graduate School of Public Affairs
University of Colorado at Denver
1380 Lawrence Street, Suite 500
Denver, Colorado 80204

ABSTRACT

Ethics in the Information Age requires an awareness of abstracted reasoning just as information itself is the integration of abstracted data. Recent works by Gibson and Boisot are employed to introduce the rise of an information society and the abstraction of information upon which we base our knowledge. Several ethical problems of the Information Age are discussed, including personal privacy, the specter of alternate personae in the virtual world of computer networks, the quality of information, even disinformation,
and codes of conduct. The ethical problems inherent in the notion of intellectual property reveal themselves through application of John Locke’s natural law of property right juxtaposed against the dilemmas encountered by fictional characters (in William Gibson’s *Idoru*) living in a virtual world set just a few years from now. An ethical analysis for the Age of Information applies philosophical tenets found in deep ecology, social ecology, communitarianism, and anarchy to the current problems of ethics. In conclusion, the greater degree of abstraction required by ethical behavior in the Information Age requires even greater attention to the philosophers of the past, as well as the philosophies of the present.

**INTRODUCTION**

*In the beginning was the future.*

*In the future lies the past.*

We live in an age of information. The machines that freed most citizens from the demands of agriculture have become so sophisticated and efficient that they require little or no human supervision. Computers have increased our power to collect, store and retrieve information by orders of magnitude. They have augmented our communication capabilities as well: where the telephone permits one-to-one communication, and print, radio and television (the "mass media") make possible one-to-many communication, the Internet and the World Wide Web give us the ability to communicate many-to-many.\(^{(1)}\) Thus, we are free to focus on information, we have the tools to obtain and process massive amounts of information, and we can disseminate information more widely and freely than ever before.

The Information Age permits-- it may in fact require -- changes in the way individuals relate to each other. The possession of information confers power, so widely distributed information means
widely distributed power. The Internet's flat, centerless structure is as yet relatively uncontrolled, and it permits users to remain anonymous or to mask their identities. In changing individuals' relationships, the new world of information also raises ethical issues, for ethics considers how persons should behave towards each other. In this essay, we will focus on some specific problems created by new structures such as the Internet, and then we will offer an analysis that we believe helps frame and explicate them.

In our analysis, we will make use of *Idoru*, a recent novel by science fiction writer William Gibson. Storytelling, now as always, plays an important role in evolving ethics. James P. Carse points out that a culture can be no stronger than its strongest myths, which are not stories that *have* meanings, but stories that *give* meanings. "Whole civilizations rise from stories," he states, "and can rise from nothing else." Gibson is a myth maker whose stories of virtual lives have given rise to a virtual society. The ethical problems posed in his fiction are the very questions we wish to consider here.

As a preliminary, however, we wish to distinguish between the effects of living in an age of *computers* and those that flow from being in an *information* age. Information is a product of data. In order to produce meaningful information from meaningless data, one must perform a process of abstraction somewhat analogous to the process of integration in the Newtonian calculus. Polynomial data are integrated to produce a simpler, yet more powerful function. When we internalize the more powerful function that is information, we refer to that state as knowledge. Max H. Boisot describes it this way:

In effect, knowledge might be represented as a set of probability distributions that we deploy with respect to the phenomena that we encounter: distributions on sets of expectations shaped by repeated
encounters with information. The latter by contrast constitutes an extraction [emphasis is Boisot’s] from data that acts upon our probability distributions and either modifies or reinforces them -- i.e., information makes a difference to the way we think about things or to our disposition to act. Data that do not bring about this modification to the knowledge that we possess carry no information; they are uninformative.\(^\text{5}\)

If information is the product of abstracting meaning from data, the Information Age must then be one in which its inhabitants are facile in working with levels of abstraction that transcend those encountered by inhabitants of previous ages. This facility is a matter of mental capability and training -- it is not a result of technological advancements. The effect of the computer on the Information Age is simply one of support. The facility required for working with higher levels of abstraction could be had without electronic computational devices, but it would occur at a slower pace than we are currently seeing.

**ETHICAL PROBLEMS OF THE INFORMATION AGE**

Several features of the new world of electronic communication present challenging problems with both practical and ethical implications. The following sections discuss five such issues: the way electronic communication permits both anonymity and invasions of privacy, the problems of impersonation by agents and avatars, the unregulated Internet’s potential for disseminating “disinformation,” the impulse to control Internet anarchy with authoritarian codes of conduct, and the difficulties of extending notions of physical property rights to cover intellectual property as well.
Privacy

According to Strait’s “Voyeur Trilogy” research, the most common unethical behavior that public employees admit is using computer databases to access information about friends and acquaintances. Since government is a major collector of data, many kinds of public employees face the temptation to invade the privacy of others. One person interviewed by Strait kept track of a woman with whom her husband was having an affair, another used his employing agency’s database to find out where his exwife was living, and employees in public libraries snooped to learn what their neighbors and clergymen were reading. In most cases, the motivation was merely curiosity, and most of the employees who admitted their peccadilloes were at the same time eager to foster an ethical work environment and even to set standards to which others could aspire.

Anne Wells Branscomb sees the privacy issue in relation to two bodies of law have come down to us over the centuries, both of which have imposed limits on the exchange of information in the marketplace. “One, intellectual property (emphasis is Branscomb’s), offers legal controls over the creative productivity of the human brain, and the other, privacy law (a much more recent legal innovation), maintains boundaries through which curious eyes may not penetrate to invade those areas over which we may maintain exclusive personal control.”

Consider, for example, your own name. Each of us has a name, an identifier, a data element we think of as ours and ours alone. My name is, for all practical purposes, me. I have no way to convey my identity other than through my name. Can my name be sold by anyone other than myself? A name is also merely a string of characters. My name is 19 bytes long, including spaces. Do I have exclusive control over that particular combination of characters from
the English alphabet? Alone, a name and an address carry little or no informational value. Together, they tell us who lives where -- a moderately valuable piece of information. Combine these two elements with nearly any other data element, say, gender or political affiliation or occupation, and information suddenly begins to evolve, information that has market value.

Where we in the twentieth century look up to visionaries, people who can take bits of information out of the current stream and produce a new, salable concept, Gibson writes of what may be called decisionaries, people who can see the portraits we paint in transactional data left behind by our purchases (the traces left by our decisions). These personal portraits are a product of abstracted information that we do not realize we are creating with every electronic move we make -- every credit card purchase, every airline reservation, every telephone call. All these actions leave data traces; each of these transactions represents a decision. And decisions reveal the mind. Find the nodal points that trace the decision -- paint a portrait. As the information storage and retrieval capabilities of electronic media become ever greater, these portraits will become increasingly detailed and well-defined. Peeking at these data-generated portraits will be a far more serious invasion of privacy than can be done now, whether by credit card companies or by employees snooping just for curiosity's sake.

Alternate Personae

Vast as today's governmental and industrial databases may be, they are almost trifling compared to the quantities of information that are becoming possible with the advent of the Internet. With email, millions upon millions of messages are constantly routing their way through the network. On the World Wide Web, myriad documents are available, awaiting the search criteria that will bring them from our fingertips into our consciousness. In order to communicate and discover information more efficiently and effectively, we are turning to software that wades through the ocean of data for us, finds the
information we seek, then represents us to the millions with whom we communicate: we are turning to agents and avatars.

In the most basic sense, agents are programs that perform a specific task, usually related to gathering, filtering, sorting, and presenting information. Of course, this is precisely what many programs already do, so in some ways there is nothing new about agents. But the need for agents is a result of the sheer quantity of data residing as hypertext on the Web. As Patricia Seybold notes, “The Web gives intelligent agents a raison d’être. The Web provides the problem for which intelligent agents can become the solution.”

The vast amount of data made available only since 1993 has heightened awareness of our inability to access that which is valuable to us. But what if we each had a research assistant to do nothing but go out and find the Web documents in which we are interested (and only the documents in which we are interested) based on fuzzy parameters we give before we go home for the day? Furthermore, what if we could look at the documents retrieved, tell the assistant which documents were actually interesting to us, and all further research would be based on a growing awareness of our preferences? This is exactly what intelligent agents are intended to do for us on the Web. Users of Lotus Notes already use simple agents to sort the email for them automatically, but soon we will demand even more of our agents. We will want them to not only find information for us, but to take action on that information as well -- automatically and without a second opinion from ourselves. For instance, you may tell your stock market agent to search for technology stocks that look promising and buy those whose value appears to have bottomed out, using the credit card that the agent always carries.

Software of this type will obviously be very convenient for people who don’t have time to do everything but want to be doing it anyway. The question arises, however, as to who is responsible for the behavior of these agents? Whose fault is it if your agent exceeds the limit on your credit card? Or buys a poor-performing stock? Is
it the fault of the programmer or the user? And what if the agent commits a crime? Could an agent be accused of insider trading? Will agents talk to their peers, that is, the other agents they meet on the Web? And what about sniffers and other sneaky agents, whose mission it is to spy on Internet routers, always watching for passwords and credit cards? Unruly behavior on the part of intelligent agents will undoubtedly spawn armies of counterintelligence agents. We can expect to see police agents, government agents, even corporate agents, each prowling the Web for information leading to the apprehension of whatever criteria they are programmed to detect.

Seeing the potential for abuse among intelligent agents does not require a vivid imagination, and plenty of imagineers are working on it right now. Seybold offers some early visions of what will be required to keep agents from running amok:

Obviously, all agents...will need to be instrumented so we can track their progress, be notified if something goes wrong, and be able to cancel or recall them. We'll also want to be able to watch the behavior of others' agents...as they interact with our systems and applications. And there will be certain kinds of activities and actions we'll want to block entirely. We'll need standards of behavior and expectations, and perhaps some new kind of certification for "polite" agents.(9)

An avatar is a different kind of creature altogether. As Tom R. Halfhill writes, "Think of an avatar as your alter ego in the virtual world of cyberspace."(10) It is a graphical image of a user, yourself or someone else, that stands in place of the human messenger when communicating with another user. Mark Petrakis posted this observation on the Internet: "An avatar stands in for you in a virtual world, similar to the way the little silver tokens mark your
whereabouts on a Monopoly board.”(11) In a sense, the text address of the sender in an email message, even emotions and .sig files, may be thought of as very crude, character-based avatars in that they identify and describe the messenger to the reader.

But avatars are more than that. Avatars are graphical. They are images that may be anything from cartoon-like characters to digital photographs -- they need not look human, and they do not necessarily depict accurately the person with whom you are chatting in some virtual world. Furthermore, an avatar is animated in that the sender can use the computer’s mouse to direct the avatar’s movement within the virtual world. It is not difficult to imagine more fully developed avatars that embody a realtime image of the sender as s/he speaks into a videophone, requiring a much richer virtual world, including sound and vision, than the current text-based chat rooms. Nor is it difficult to imagine the ability to morph one’s avatar with a full set of image controls. Programming and practice will undoubtedly allow one’s avatar to smile, explode, become a crimson crystal rose, and perform all sorts of imaginable act -- natural and unnatural, crude as well as polite.

William Gibson wrote his early novels, in which he first coined the term “cyberspace,” on a typewriter. His role in current technology is that of prophetic visionary. The setting for his most recent novel, *Idoru* (which is simply the Japanese pronunciation of the English word “idol” as in “rock star”, just inside the twenty-first century, is a world in which virtual reality is where one actually conducts one’s life. His characters, typically young, always savvy, work their way through problems encountered in their fantastic abstractions. Everyone is pursuing an information agenda that brings them together in previously impossible situations. In *Idoru*, Gibson gives us this innocent look at a virtual fan club meeting of the fictional rock group Lo/Rez, along with a wry description of the attitude and second-guessing that will surely accompany the use of avatars:
There were seven girls waiting there, all in kimonos, all floating just off the tatami. Except the one sitting by herself, at the head of the imaginary table, was a robot. Not like any real robot, but a slender, chrome-skinned thing like mercury constrained within the form of a girl. The face was smooth, only partially featured, eyeless, with twin straight rows of small holes where a mouth should have been. That would be Hiromi Ogawa, and Chia immediately decided to believe that she was overweight.\(^{(12)}\)

In the virtual world, the allure of anonymity has never been greater, and *impersonation* takes on a whole new meaning. A recent advertisement for a global telecommunications company offers a place where, “There is no race, there are no genders, there is no age, there are no infirmities, there are only minds. Utopia? No. Internet.” But, stripped of all physical qualities, will we encounter truth? Will we be able to separate the quality of the message from the quality of the packet in which it is delivered? And since one can drop these virtual encounters as easily as one began them, is there any reason to tell the truth at all?

**Information Quality: Disinformation**

Truth is relative. Information need not contain truth to realize its own good: information relays meaning whether it correlates with reality or not. Doublespeak such as *disinformation* is nonsensical, even if well understood. The term will be used here, though it is as unnecessary as the term *reverse discrimination*, another well understood phrase, but one that really holds no more meaning than simply the term *discrimination*. Discrimination is discrimination, regardless of its victim. Information is information, even when its content may be invalid.
There are several forms of disinformation, according to Luciano Floridi.\(^{(13)}\) None of them are necessarily created intentionally, though each of them can be. Any of them may be contained within a single piece of information. All of them are easily encountered. A simple lack of objectivity may render data disinformative, as in the case of propaganda. A lack of completeness, intentional or otherwise, gives a false foundation on which the receiver bases conclusions. A lack of pluralism (diverse voices), as in the case of censorship, misleads through a partial account of reality. Information Age systems generate disinformation when (1) there is a dichotomy between the sender, who possesses and provides the information, and the receiver, who lacks it; (2) the sender is able to censor denials and corrections of the disinformation; and (3) the receiver is unable to control the level of objectivity, completeness, and pluralism of the information.\(^{(14)}\)

The anarchic character of the Internet, a feature that pleases many of its users and terrifies others, is at the root of its special propensity to create disinformation. Anyone with access to the Web can set up a homepage, anyone with an email account can participate on mailing lists ("listservs") and newsgroups. In an anarchic setting, the information seeker must truly heed the free market maxim, *caveat emptor*. As in the anarchy of a competitive market, there is no authority to constrain sellers who try to cheat. Other institutional arrangements have characteristic methods of vetting information: hierarchies punish liars, communities shun them, adversarial systems set up arenas for debate. Without these mechanisms, the cheerful anarchy of the Internet can produce false, misleading, and dangerous information. Among recent responses to this threat, there have been rumblings from concerned lawmakers interested in policing potential pornographers. And some enterprising groups are creating a new sort of "Good Housekeeping Seal" signifying a web site on which the information has been checked for accuracy.
The ease with which disinformation can be generated may lead to a form of provincialism unknown prior to the Information Age. Infoglut, the overload of information available to -- no, imposed upon -- the consumer, requires the use of filtering mechanisms in order to make any sense of the information environment. When we employ our favorite filters (such as talk radio shows, cable channels, Web sites, search engines, listservs, the new "push" technology, etc.), such media, according to Floridi, "could give rise to self-disinformation."\(^{(15)}\) Filters are an ethical choice.

**Codes of Conduct**

Social moralists, however, do not necessarily believe that users of information-age tools are capable of making ethical decisions in their choice of filters. This mind set leads to codes of conduct, rules of usage, that apply to information as well as to the computational tools used to process data. In researching this article, two examples of codes of conduct, widely divergent yet representative of the genre as a whole, were found on the Internet by a simple Web search. It is ironic that the Net should contain multiple, even contradictory, codes of Internet conduct within its own data set. That sort of redundancy and pluralism, however, is the very nature of the Information Age.

The first example of a code of conduct for Internet usage appears to have been published by a school called Etobicoke, in Ontario, Canada. It is a rather authoritarian code, beginning with these words: "Students wishing to use school computers and the Internet must observe the terms of the Etobicoke Computer Network Code of Ethics. Violation of any of the terms will result in disciplinary action which will include temporary or permanent suspension of computer privileges or other appropriate measures."\(^{(16)}\) There are a total of fifteen points to be observed by Etobicoke students when accessing the Internet via school computer equipment, but the first three points are sufficient to give the flavor of the code:
1. Use of the Internet without the knowledge and permission of a teacher or other authorized personnel is prohibited.

2. Use of the Internet without a clearly defined educational objective, understood by both student and teacher, is not allowed.

3. Use of the Internet to view, copy, save or distribute unauthorized text files, graphics files, sound files or video files is forbidden.\(^{(17)}\)

There is obviously little opportunity for self-disinformation on the part of students at the Etobicoke School. Curiosity, as applied to the Internet, is severely circumscribed. Where Microsoft says, “Where do you want to go today?,” Etobicoke says to its students, “Don’t go without prior approval.” The school foresaw the *allure of anonymity* when it promulgated rules on the use of electronic mail that prohibit sending messages using an unauthorized user name, as well as messages that are “harassing, obscene [or] threatening,” including “unsolicited junk mail, ‘for-profit’ messages or chain letters.”\(^{(18)}\)

But not all codes of conduct are authoritarian in nature. For grownups, we have the Internet Activities Board, the IAB, a self-appointed vanguard of Internet conduct. It relies on utilitarian logic, so well-understood in Western society, to describe acceptable behavior on the Internet, defining the network as “a national facility whose utility is largely a consequence of its wide availability and accessibility.”\(^{(19)}\) The IAB gives away the identity of its membership when it states that “[t]he Internet exists in the general research milieu.”\(^{(20)}\) And it completes its argument this way:

Because experimentation on the Internet has the potential to affect all of its components and users, researchers have the responsibility to exercise great caution in the conduct of their work. Negligence in the conduct of Internet-wide
experiments is both irresponsible and unacceptable. ...In the final analysis, the health and well-being of the Internet is the responsibility of its users who must, uniformly, guard against abuses which disrupt the system and threaten its long-term viability.\(^{(21)}\)

These two codes of conduct illustrate two common approaches to the problems presented by the anarchy of cyberspace: codes like Etobicoke’s impose a code and enforce sanctions hierarchically, while the IAB code relies upon the internalized sense of responsibility of users.

**Intellectual Property**

Unspoken in these codes of conduct is the notion of property, and the rights conferred to its owners. The Etobicoke School certainly has property rights to the school’s computer equipment, but, less obviously, it exercises property rights to the minds of its students, attempting to filter the information that reaches them. The IAB apparently saw the network itself as the property of the research community, an elitist view that time has proven incorrect. More important to this discussion, however, is the idea of **information as intellectual property**.

Jay Dratler, Jr. defines intellectual property as the right to exclude others from access to or use of protected subject matter.\(^{(22)}\) There are several distinctive aspects of intellectual property that set it apart from other forms of property and, at the same time, make enforcement of intellectual property rights particularly artificial. Intellectual property is intrinsically intangible. “Its essence,” according to Dratler, “lies in concepts, information, symbols, or creative expression, and therefore no physical boundaries can enclose or restrain it.”\(^{(23)}\) In a footnote to this description, Dratler notes that “[a]lthough tangible documents...may symbolize these forms of
property and provide evidence of them, the tangible documents no more constitute the property itself than tangible Letters Patent constitute an invention."(24) More important, however, is the fact that intellectual property is an inexhaustible resource, one that is not devalued through use. Dratler states, "The fact that more than one person can possess or use the same intangible subject matter, without depriving any other possessor of similar use or enjoyment, makes intellectual property an inexhaustible resource or, in economic terms, a ‘free good.’"(25)

Boisot, an economist, agrees with Dratler (a professor of law), stating, "We go on treating economic goods that come out of our heads as if they could be dropped on our feet."(26) But he takes exception to the notion of information as a free economic good, noting that "its utility cannot be accurately measured without compromising its scarcity and hence its value, likewise its scarcity cannot be fully secured...without to some extent limiting its utility."(27)

The history of intellectual property rights in the United States is revealing. Where the imperialist rulers of pre-Industrial Europe (including the Church) regarded the widespread dissemination of information with alarm, the Founding Fathers of the United States held the opposite view.(28) They realized that the building of a common culture and a democratic polity would require rapid dissemination of information to all parts of the country. In order to aid the creation and spread of information, in effect accelerating learning on the part of their constituents, the Founding Fathers saw the granting of intellectual property rights, not as a natural right, but as a statutory, or positive, right. By granting economic value to information, the Founding Fathers sought to give capitalism a lever long enough to move their young nation into the Information Age, and, clearly, it worked.
But what if we were to view information, that is, intellectual property, as a natural right? John Locke stated the problem “Of Property” this way:

‘Tis very clear that God, as King David says (Psalm 115:16), ‘has given the earth to the children of men,’ given it to mankind in common. But this being supposed, it seems to some a very great difficulty how anyone should ever come to have a property in anything.\(^{(29)}\)

Locke’s genius in solving this dilemma rings as true in the Information Age as it did in the seventeenth century. “God ...gave the world to men in common,” Locke wrote circa 1690, “yet every man has a property in his own person. The labour of his body, and the work of his hands, we may say are properly his. Wh atsoever, then, he removes out of the state that nature hath provided and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property.”\(^{(30)}\) Today we admit that the work of a man’s mind is also “properly his.” In fact, we readily ascribe the concept of property rights to none other than John Locke. Did Locke take ownership of the idea of ownership? Probably not; John Locke did not live in the Information Age.

Furthermore, even Locke’s conclusion regarding tangible property did not sanction greed, the hallmark of today’s capitalistic use of intellectual property rights:

...[F]or as a man had a right to all he could employ his labour upon, so he had no temptation to labour for more than he could make use of. This left no room for controversy about the title, nor for encroachment on the right of others; what portion a man carved to himself was easily seen, and it was useless as well as dishonest to carve himself too much, or take more than he needed.\(^{(31)}\)
In applying Locke’s natural law to information as intellectual property, one is engaged in the act of abstraction. Data evolves into information. Information evolves into meanings and values. The right to intellectual property is a value we have accepted in the past, but one that should perhaps be challenged as we construct an ethic for the Information Age. If we begin by thinking of the digital ground, from which information arises, as a component of the God-given Earth presumed by John Locke, our next question, like his, must be “by what right can a private individual ‘own’ information?”

The ethical aspect of the notion of property rights to information is related to the proverbial nexus between knowledge and power. In the past, political dominance and control have been used to maintain elites’ privileged access to information, and their access to information has helped to support and justify their right to power. Can a society remain democratic if access to information is restricted and inequalities of power thus institutionalized?

Thus far, we have concentrated on five special problems that arise due to specific features of the Information Age. Inspected closely, we can see that these problems represent contemporary manifestations of a very old conundrum: how can a political (or administrative, or organizational) system sustain both liberty and order? Privacy, in liberal political thought, is a critically important protection of the individual’s autonomy; the invasions of privacy made possible by modern technology are threats to liberty. The misrepresentation possible with agents and avatars, or through “disinformation,” constitute threats to orderly social transactions. Codes of conduct or rights to intellectual property that restrict access to information are threats to personal liberty in an age where information (knowledge) is power. In the next section, we explore some contemporary theories that try to reconcile the conflict between the desire for liberty and the need for order.
ETHICAL ANALYSIS FOR THE AGE OF INFORMATION

There are several tools of ethical analysis developed in the latter part of 20th Century that are particularly relevant to the ethical questions raised by the Information Age. Where the ethical theories of the tradition in Western philosophy (for example, Aristotle, St. Thomas Aquinas, John Locke) center on the individual and his/her capacity for ethical behavior, contemporary philosophies tend to look at the individual as a component of the social fabric in which s/he lives and makes decisions, ethical or otherwise. In particular, deep ecology, social ecology, and communitarianism offer relevant lenses through which to study ethical awareness. In addition, long-ignored political theories of anarchy can be revisited to illuminate problems of the new technologies of communication.

Deep Ecology

At first glance, the philosophical position called “deep ecology” might not seem to have much to offer in a discussion of ethics in the Information Age. But deep ecology takes a “relational, total-field” perspective of the human position on earth.\textsuperscript{32} It goes beyond ecology’s study of the relationship between organisms and their environment\textsuperscript{33} to look at the interrelatedness of all components within an ecosystem, abiotic as well as biotic. From the deep ecology perspective, no action can be taken by any one component of the ecosystem without affecting each of the other components, even the ecosystem as a whole. Chaos theory, with its \textit{butterfly effect}, and deep ecology owe much to one another in providing the bases for current understandings of the effect an individual has on his or her environment. As des Jardins states: “the metaphysics of deep ecology denies that humans are separate from nature.... We humans are constituted by our relations to other elements in the environment. In an important sense, the environment...determines what human beings are.”\textsuperscript{34} This perspective goes considerably beyond Thomist realism, which says that the environment determines what we \textit{know}, to assert
that humans, and their interactions, are a product of their environment.

Application of the deep ecology perspective to the Information Age allows us to discuss our relationship with data and the information we perceive as analogous to our relationship with the physical environment. Consider data as the abiotic constituents that make up the ground of the Information Age. Other humans and even machines could be said to make up the biotic constituents with which we relate on a higher, informational, level. Any action one takes within this environment, for instance, sending an email message via the Internet, has repercussions throughout the entire network. And, just as occurs in the physical world, availability of abiotic data effects the abstraction of biotic information.

What deep ecology teaches us, then, is that data are the digital ground (to echo Locke’s analysis) to which we apply our mental labor. Access to data should be free and unimpeded. When we mix it with our labor, however, we begin to achieve a property right in our intellectual creations. Harlan Cleveland suggests a scale of increasingly intellectual value.\textsuperscript{35} It starts with \textit{data}, unorganized facts. When organized and interpreted, they become \textit{information}. Information that is systematized and applied becomes usable \textit{knowledge}. And knowledge tempered by values and polished by experience is \textit{wisdom}. Like Locke, we suggest that information can become private property to the extent that it is mixed with our labor. Knowledge, however, should be the common property of everyone, as the norms of scholarship require.\textsuperscript{36} Academic publications, in which systematized knowledge is (often) applied to practical problems, become material that any other writer can use –– with proper citation, of course.

So data \textit{should} be shared, information \textit{may} be shared, knowledge \textit{must} be shared…and wisdom? While most of us would probably
agree that wisdom is too precious to hoard, it may, in some sense, be impossible to share. At the end of Herman Hesse’s *Siddhartha*, there occurs this exchange between Siddhartha and his old friend, Govinda:

Siddhartha said: "[...] But this is one thought that has impressed me, Govinda. Wisdom is not communicable. The wisdom which a wise man tries to communicate always sounds foolish."

"Are you jesting?" asked Govinda.

"No, I am telling you what I have discovered. Knowledge can be communicated, but not wisdom. One can find it, live it, be fortified by it, do wonders through it, but on cannot communicate and teach it."(37)

Social Ecology

Another interesting development in ethical analysis is that of social ecology. According to des Jardins, "social ecologists liken environmental destruction to what they see as general and widespread forms of domination and hierarchy. These include such social practices and structures as racism, sexism, class structures, as well as private ownership, capitalism, bureaucracies, and even the nation-state."(38) It may well be that nowhere on earth is social ecology more evident than it is in regard to information. First, each of the structures named above is based on information regarding qualities of individuals and groups within society. Second, nowhere does one find greater attention paid to protecting the privileges of dominant social groups than in the access to information. Consider the determined efforts we make to restrict access to and use of information: firewalls, private networks, and passwords to name some obvious examples, or copyrights and education, to name some less obvious ones.
Wherever social ecologists use the words nature or environment, simply replace them with the word information, as in this paraphrasing of des Jardins: “Social hierarchies provide both the psychological and material conditions, the motivation and the means, for exploiting and dominating [information].” And while this may sound extremely pessimistic, there is a brighter side to the social ecology perspective, the view of humanity as stewards of natural evolution. Nowhere is evolution more apparent, more rapid, than in our use of information. Again, des Jardins:

Humans cannot help but be shaped and created by their social history. But this can occur in two ways. Humans can go through life being created by and in turn creating their social world without fully recognizing this reality, or they can be fully conscious of and responsible for this history.

Here we see a glimmer of the “benign face of hierarchy,” that optimism springing from a view of humanity as the downstepping of God, as opposed to the cynical view of us as downtrodden pawns in a game of social control. The Information Age and the computing tools that support it offer society an opportunity to deconstruct the classes it has built in an effort to dominate and control. But a far longer lever is required to move the world than is offered by social ecology, and for that we turn to communitarianism and anarchy.

**Communitarianism**

Communitarianism offers possibly the most hopeful perspective on ethics in the Information Age, as it maintains an optimistic outlook in contrast to the gloomy views held by many in the deep ecology and social ecology camps. Markate Daly here illustrates the communitarian argument by contrasting it with the individualistic norm:
The individualistic conception of the self has long been the ideal in our culture, despite the nearly universal experience of living as a member of some kind of community. Communitarians argue that not only is the communitarian conception of the person a more accurate description of human life, but if it were the cultural ideal informing our policies and institutions, community bonds would be strengthened and the character of its members reinforced.\footnote{42}

Because working in the Information Age entails so much contact with persons we might not otherwise ever meet, it would seem a tabula rasa for building communities, be they on-line, at the workplace, surrounding some avocation, or even in the neighborhood. The acceleration of information requires that we be communicating more -- and so we are. And though community and communication share etymological roots, inhabitants of the Information Age tend to feel more alienated and less and less like members of strong communities. Communitarians argue about which came first, individualism or the breakdown of community, “[b]ut all communitarians believe that under the influence of a revitalized community we would be able to live more fulfilling personal lives than is now possible under the dominance of the individualistic ideal. The communitarian program, then, embraces a metaphysics of the person, an ethics, a concept of community, and a political philosophy.”\footnote{43}

In his most recent work, The New Golden Rule: Community and Morality in a Democratic Society, Amitai Etzioni dispels a number of the problems that had long been associated with the communitarian perspective. In discussing the elements of a good society, Etzioni first notes that “community is a set of attributes, not a place,”\footnote{44} which supports the assertion, above, that inhabitants of the Information Age should be building more communities as they construct layers and layers of new attributes to their lives. Within those many attributes, one discovers the tension between order and
autonomy, which Etzioni describes as individualism and the socially embedded self. He notes that “in good measure, communal attachments and individuality go hand-in-hand, enrich one another, and are not antagonistic. The self is enriched and, as we shall see, ennobled by being social; it is the asocial self that is held back by the lack [emphasis is Etzioni’s] of positive multiple attachments.”

Etzioni views the order v. autonomy issue as a continuum, along which a society may choose to position itself, with communitarianism somewhere in the middle of the road. For examples of each, he points to contemporary Chinese society as one of extreme order, and modern American society as one of extreme autonomy. He states emphatically, “The rare relationship we observe at the foundation of the communitarian society is a blending of two basic formations that -- up to a point -- enhance one another (so that in a society that has more of one, the other grows stronger as a direct result), a symbiotic relationship; but if either element intensifies beyond a given level, it begins to diminish the other: the same two formations become antagonistic.” Thus Chinese communitarians would recommend greater autonomy in their society, while American communitarians would advocate more social order within theirs. Etzioni lists several “implications for practice and policy” that are as descriptive of the communitarian society as they are prescriptive [emphases are Etzioni’s]:

First of all, a communitarian society does not build up its coercive measures... unless it faces a clear and present danger. Second, when communitarian societies are moved to act to counter a clear and present danger, they ought to start by trying to cope with the dangers without resorting to autonomy-restricting measures....Third, to the extent that autonomy-curbing measures must be introduced, these ought to be minimally intrusive. Last, communitarian societies work to minimize the autonomy-diminishing, often
unintended, side effects of measures that must be undertaken for the common good.\textsuperscript{(47)}

Because so much autonomy is allowed, even encouraged, within the communitarian society, there must be some mechanism for self-policing on the part of the individual. There is. Etzioni calls it the “moral voice,” which he describes as “a peculiar form of motivation.”\textsuperscript{(48)} In the moral voice we hear echoes of Aristotle and Kant. “The moral voice has two main sources,” Etzioni writes, “which are mutually reinforcing: inner (what the person believes the shared values ought to be, based on education, experience, and internal development) and external (others’ encouragement to adhere to shared values).”\textsuperscript{(49)}

These concepts are all brought together by what Etzioni calls “the New Golden Rule,” a maxim more compelling than Kant’s Categorical Imperative and at the same time more broadly inclusive than the interpersonal “Do unto others as you would have them do unto you,” because it deals with society as a whole while also considering individual interactions. It reads:

Respect and uphold society’s moral order as you would have society respect and uphold your autonomy.\textsuperscript{(50)}

As the Information Age produces more and more potential communities, that is, sets of attributes, we have the opportunity to swing toward more order or greater autonomy. According to Etzioni, the New Golden Rule blends “elements of tradition (order based on virtues) with elements of modernity (well-protected autonomy)”\textsuperscript{(51)} in such a way that communities can develop where previously only informational relationships existed. But what if society were to swing even further toward individual autonomy? Can ethics thrive in the anarchy of the Internet?
Anarchy and the Internet

The scientists and scholars who participated in the development and early growth of the Internet cherished its anarchic structure. Many users today are equally fervent in defending its modern incarnation from the encroachments of law and policy. But the sheer enormity of the information made available by electronic media and the efficiency with which it can be communicated make it a change agent of potentially formidable power. Dewar\textsuperscript{52} compares the development of the Internet to that of the printing press, citing historians who argue that “the Information Age could bring down the nation-state in the same manner that the printing press brought down the medieval church.”\textsuperscript{53}

There is already evidence of the growth of alternative structures of coordination and governance that are developing to fill the role formerly played by hierarchies of organization or government. These flexible, creative, flat structures have a variety of labels (“adhocracies,” “heterarchies,” “self-designing organizations,” “issue networks” and “policy networks,” for example), but all have three features in common -- they are flat, with all participants having roughly equal decision making power; they are loosely structured, with no node identified as central; and they cohere based on the shared interests of the members.

DeLeon\textsuperscript{54} suggests that networks are the most appropriate form of organization or governance in situations where people hold conflicting goals and also face uncertainties concerning how to achieve any of the competing goals. In this chaotic decisional environment, “organized anarchies”\textsuperscript{55} develop. Political theories of anarchy go back to the period of the French Revolution (William Godwin, Max Stirner and Pierre-Joseph Proudhon are exemplars), while modern writers include Michael Taylor\textsuperscript{56} and Robert
Nozick.\(^{(57)}\) Taylor defines an anarchy as a "stateless" polity, in which there is no specialization of political roles (a particular individual can take on the role of "leader," for example, but cannot make a habit of it) and no enforcement of collective decisions. In other words, sovereignty inheres in each individual.

The ethical position of an anarchic system might be epitomized in the phrase "Live and let live."\(^{(58)}\) This view is functional in anarchic networks because it combines both the notion of striving for self-actualization and for maximum development of the individual's special talents with the notion that the freedom to develop as an individual cannot be utterly unbounded. The individual cannot be required to abide by a group decision, nor can s/he require others to obey. Freedom of this sort is justifiable in a situation where goals are unclear or conflicting, for where there is no agreement on what results should be obtained, there can be no accountability for results. And where knowledge about means to achieve goals is minimal, flawed, or inconclusive, an individual or group cannot justifiably be penalized for selecting the wrong means to achieve an objective, since no one else could have known what choice was better.

In anarchic situations, then, stability and social order are problematic. Most anarchist theorists either believe that human nature is sufficiently benign that, absent the distortions created by authoritarian structures, coercion is unnecessary or, like Taylor, that the social pressures present in a strong community are sufficient to prevent and control human misbehavior. Communities are societies in which the relations among members are direct and many-sided (that is, members of the group interact over a wide range of issues, not -- as in issue networks -- around just a few). If those relations must be face-to-face, of course, the size of the anarchic community must be quite small. Electronic communications now render this interaction possible for far larger groups. The interaction is what generates the norms of reciprocity and trust that are the only
condition under which social controls (e.g. peer pressure) can be strong enough to maintain order, absent mechanisms for enforcing it.

The chief implication of this line of reasoning is that anarchic systems must both permit and encourage direct, many-sided relationships among their members. The ethical premise of the age of information, then, is fundamentally and inherently democratic, in the sense of enshrining as one of its core values the right of every member to participate in all social, political and organizational decisions. It is interesting, in this light, that the literature of the policy sciences contains a growing body of scholarly advocates for citizen participation in policy analysis, and the movement in public management commonly termed “reinvention” advocates the empowerment of public employees to participate more fully in agency decisions.

In this section, we have tried to suggest that an ethical position appropriate to the Information Age requires a much more inclusive conception of the world, one in which human interests are conjoined with those of the non-human, the inanimate, even the intangible world. And our stance toward that world is not one of dominance and control but of partnership and stewardship. Finally, the balance between liberty and order is to be rendered according to the New Golden Rule -- respecting the autonomy of “individuals” (construed broadly, as suggested above, to include more than simply individual humans) to the extent that those individuals respect the social order. Put differently, we embrace anarchy to the extent that it is based in a sense of community or common interest.

CONCLUSION

The Information Age, no longer a future possibility but an ever-developing reality, presents complex and difficult ethical challenges.
As the fractal images of chaos theory demonstrate in two dimensions, the whole is contained within every one of its fragments. In the fourth dimension, the dimension of time, every moment contains the past and the future. In the beginning was the future -- in the future lies the past. We have suggested here that the problems posed by the Information Age are related, at a basic level, to problems that have surfaced in different guises, in the past. The implication, then, is that it is prudent to revisit old political and ethical theories, viewing them anew with high-tech eyes.

We need to study the great philosophers of the past, abstracting practical wisdom from their teachings and applying it to the present, continually formulating a new golden rule. And we must try to plan, also, for the future, when we will be challenged to deal with even greater levels of abstraction than we can imagine now. Ironically, it will not be technology that we will use to manage these new ethical issues but age-old habits of mind and heart.

REFERENCES


14. Ibid.

15. Ibid.


17. Ibid.

18. Ibid.


20. Ibid., p. 2.

21. Ibid.


23. Ibid., p. 3.

24. Ibid.

25. Ibid.

26. Ibid., p. 10.

27. Ibid.


48. *Ibid.*, p. 120.


58. deLeon, Linda. “As Plain as 1, 2, 3... and 4: Ethics and Organization Structure.” *Administration & Society* 25 (November 1993): 293-316.