The Poetics of the Future

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Information highways, digital libraries and virtual communities – these are the metaphors that shape public dialogue about social justice in an information society, shaping intellectual property law and information policy for a digital age. Alternatively, the shape of the future is often described as being essentially technological, as in these words of Manuel Castells – “Because information is an integral part of all human activity, all processes of our individual and collective existence are directly shaped (although certainly not determined by) the new technological medium.” But it is intellectual property regimes, the rules within which we create and use information, that define the boundary between public goods and private property, culture and the economy. The future not determined by technical forces, but by political decisions that shape the way information will be created and used. When should ideas be described as human thoughts, when as economic commodities? When should the exchange of ideas be described as culture, when as a marketplace? These questions are at stake in our popular metaphors about information society.

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Information highways, digital libraries and virtual communities – these are the metaphors that shape public dialogue about social justice in an information society, shaping intellectual property law and information policy for a digital age. Alternatively, the shape of the future is often described as being essentially technological, as in these words of Manuel Castells – “Because information is an integral part of all human activity, all processes of our individual and collective existence are directly shaped (although certainly not determined by) the new technological medium.”[1] But it is intellectual property regimes, the rules within which we create and use information, that define the boundary between public goods and private property, culture and the economy. The future not determined by technical forces, but by political decisions that shape the way information will be created and used. When should ideas be described as human thoughts, when as economic commodities? When should the exchange of ideas be described as culture, when as a marketplace? These questions are at stake in our popular metaphors about information society.

Although intellectual property law seems to be a technical matter for lawyers, their discussions of intellectual property concern us all, because it is the context within which the principles of justice governing an information society are formulated. Intellectual property law narrowly understood consists of rules about when and how expressions of ideas should be treated as private property. These boundaries between the public and private use and ownership of ideas will become problematic in an information society if, as we are frequently told, intellectual property is the new form of capital driving a global knowledge economy. If so, all of the traditional questions about economic and social justice in an industrial society will now apply to information and knowledge in an information society. How should property and wealth – information and knowledge -- be distributed? Are there limits to the social power that ownership of wealth – information or intellectual capital -- brings? How should we balance the public interest in access to ideas, for education and political participation, with the economic progress that may derive from treating ideas as private property?

Thus it is important that we talk about intellectual property as citizens, not treating the subject as a technical question best left to lawyers or computer scientists. But public discourse about intellectual property is not intellectually vibrant. We describe the coming of an information society with a poetics of the future that uses metaphors taken from the past. Highways and libraries are useful metaphors, but are taken from an industrial society, and related to networked information only in their functions of transportation and information management. The term community originally referred to social relationships in feudal villages, and if anything, modern life in an urban industrial society is marked by the absence of community. I do not mean to imply that there is anything wrong with the use of metaphor in general – indeed, poetic thinking is among our most important resources – but the subject may deserve better poets and poetry. Thus my project today is to test these three metaphors, to see how well they function as heuristics for thinking about economic and social justice in an information society.

But let me digress for a moment to note that the cultural study of information technology contains many other illustrations of the way that technology design tacitly legislates the shape of everyday life. Computers are abstract machines; thus software might well be described as the culture of the machine. Thus Bruno Latour, in describing hardware as “society made durable,” and Steve Woolgar, in describing computer design as “programming the user,” alert us to the way that technology has a political dimension, legislating behavior.[2] Most of my work has concerned these subjects, one way or another. My first research on computers concerned the metaphors that regulated the human-computer interface – the keyboard.

· Why do we “give commands” to computers? Commanding is a social relationship, resonant of a master slave relationship, but today generally confined to the military or the human-dog relationship. It probably reflects the military birth of computer technology, but is it the right metaphor to describe our relationship to the Web, or visualization? One feminist poet told me had a woman designed the computer the command key would have been named a ‘relate’ key;

· The keyboard presents us with a dramaturgy -- the control, break and escape keys – (“if you lose control, hit the break key, and if it doesn’t obey, try to escape”). These images suggest violence to some, and an exciting kind of game to others;

· Why are we called “users”? The term “user” used to describe drug dependency, a note that may usefully remind us that tools are not simply neutral artifacts, but configure the user;

· and, the one uniformly popular metaphor, “the cursor,” which doesn’t mean what you think it

does.

These subjects do not concern intellectual property per se, but reinforce the thought that the design and use of computers is not simply a technical question, but tacitly reflects (and conceals) cultural and political decisions. Thus in my conclusion I will ask where might we look for a new poetry for designing information technology and regulating the information society.

On to our subject, then, what do the information highway, virtual community and digital library metaphors teach us about justice in the information society, and what to they fail to teach us?

I. The Information Highway.

The information highway is a very powerful and useful metaphor, for it reminds us that computer networks are a means of transportation, one that instantly carries a new kind of economic commodity – called information – around the world. As social theory reminds us, transportation technology has always controlled the scope of control of organizations, from the state, to markets, to corporations, thus it is a vital subject for information theory.

First of all, the term information highway has useful resonance to other public policies in American history. The Interstate highway system was a public works program to build an infrastructure to carry interstate commerce, promoting national wealth. By extension, the relationship between government and private industry is tacitly defined by the information highway metaphor: the government builds the infrastructure to promote industry, believing that market growth benefits everyone.

The idea of an information highway was popularized by the Clinton Administration as part of the National Information Infrastructure (NII); it replaced the Bush Administration’s National Research and Education Network (NREN) policy. NREN, as an education and research initiative, was located in the Department of Education, but the NII, as a policy to build and regulate a transportation system, was located in the Department of Commerce, which has the Constitutional responsibility for regulating interstate commerce.

If we accept the definition of the problem as it is framed by the information highway metaphor, then we understand information to be intellectual property, an economic commodity made to be exchanged in markets; and so it seems to be. But one major problem is that unlike printed information, digital information is a signal, not a thing, thus it is easy to copy and distribute, and difficult to protect. The first efforts to regulate information technology were royal licenses to use printing presses, but it was found to be easier to regulate printing itself, the making and distribution of copying. Thus the major policy problem of the NII has been to extend intellectual property law to protect digital signals. This it has been doing in two ways.

First, the Commerce Department issued a White Paper on Copyright, which proposed legislation including:

1. moral education for schoolchildren -- “Just say no to copying”— to instill a reverence for property in the earliest stages of education, as a fundamental part of literacy;

2. extensions to the definition of copying, so useful in regulating print, to include the transmission of signals -- the “transmission right,” which defined transmission of a signal as a form of copying subject to regulation;

3. the protection of encryption technologies that would make signals behave more like things (prohibiting technologies to break encryption).

And secondly, work was begun on revising the Uniform Commercial Code (UCC) -- a national model for state commercial codes. Section 2B would allow digital works to be regulated by contract law. While copyright law protects the expression of ideas as private property, it also treats ideas as a public good through the First Sale Doctrine (which allows libraries to circulate books and journals) and Fair Use (which allows for limited copying for educational purposes as long as markets are not harmed). The contract regime in the proposed revision to UCC 2B contains a very different model. Information itself is never sold, rather its use is licensed (or rented), and the license defines the terms and conditions of use. The contract need not contain special consideration for education, although that could be negotiated for a price.

These strategies were intended to provide a legal infrastructure for the development of a digital economy, within a classic liberal market strategy. The government’s responsibility is to define and enforce the rules of the game, providing incentives for innovation and investment, thereby promoting social wealth. The principle of social justice was universal service, modeled upon telecommunications policy and rural electrification before that. The government was to ensure that everyone had access to the network, with special subsidies for schools and libraries, but the use of information property on the network was a private matter between buyer and seller.

As we shall see, other metaphors raise fundamental questions about this scenario, but even within its frame very important questions of justice arise, including these three of particular interest:

1. Although universal access may guarantee equal access, information itself is to be distributed by fee for service, ultimately on the basis of wealth, creating a new kind of inequality, and perhaps this will be particularly pernicious in an information society. The public library was the political response to this problem in an industrial society, but current policy thinking is largely silent about libraries, and suspicious of Fair Use (as a subsidy paid for by publishers, not the public) and the First Sale Doctrine (for sale of information is to be replaced by rent of information).

2. The use of networked information is, by definition, always under surveillance, indeed information about consumer behavior is the first new kind of information commodity in the digital marketplace. Is there a need for a new right to privacy?

3. Do we really know what information is? Manuel Castells has said this: “Information is the raw material, these are technologies to act on information, not just information to act on technology, as was the case in previous technological revolutions.” There are several interesting consequences of this change. First, if Castells is right, the value of information may be in its use, not in its content per se. Secondly, the fluid nature of information in cyberspace is its essence, in other words, and if so, intellectual property protections (such as encryption) may well create a comparative economic disadvantage by making information flows impossible. And thirdly, information is not one thing

– how do we describe and discriminate between the use and value of different kinds of digital media in different contexts? No one intellectual property policy can possibly be flexible enough to regulate all “information.”

In summary, the information highway metaphor is very useful in identifying transportation of economic goods as a key framework for information policy, but taken alone, is focused on market mechanisms. As a theory of the market, it offers universal service as a theory of justice, but does not clarify the classic questions of economic inequality. And, I focusing on the market alone, it does not address issues of public good; as Newton Minow asked, what is the Internet equivalent of the part of the telecommunications spectrum reserved for public interest broadcasting?

II. Virtual Communities.

The second dominant metaphor for guiding the discussion of the future design of an information society is the idea of virtual community. This concept frames our interpretation around digital networks as a mode of communication, and upon the new kinds of social relations and civic life that may now be possible in Cyberspace. It is striking that the word community is used in relation to computer mediated communications, given that urban life in a technological society is often criticized precisely for the absence of community, but it is a useful metaphor precisely because it defines the need for community as a social goal.

The evidence about the existence or non-existence of virtual communities is still very incomplete, and very dependent upon what one thinks a community might be. Still, two very interesting findings are emerging. The first is that distinctive new kinds of social groups are emerging, and that they are strongest when network communications are complemented by face to face meetings, but possible even without them. The second is a debate about whether or not social science concepts and methodologies must be changed if we are to detect and analyze these new social formations. Karen Cerulo, for example, argues that sociology must modify its assumption that a social relation only exists when face to face meetings occur.[3] Sherry Turkle argues that the concept of identity must now be thought of as contextual.[4] And Belgian banker Bernard Leitauer argues that money is no longer regulable by national fiscal policies, money is now a global fluid or currency, and we must study the new kinds of gift exchange and barter evolving in cyberspace to discover the beginning of entirely new modes of economic behavior organized without money.[5]

But the most important feature of the community metaphor is that is tacitly a theory of economic justice. Pre-capitalist communities were pre-market institutions, based upon barter and gift exchange (among other things), and by extension, so too are virtual communities. In classic social theory, a gift is something given to establish or renew a social relationship; even today, a sense of community is marked by gift giving, within the family, among friends, and as a form of social capital in civil society. Thus the Web might well be described as a gift exchange economy, one within which seven million authors (counted by the Internet Archive in 1997) are giving away intellectual property for the sake of developing a sense of community. Nor does the concept of the gift exclude self-interest, for in giving away intellectual property, one expects to receive information of equal or greater value in exchange, or perhaps social status in the community.

The great virtues of the virtual community metaphor – whether or not virtual communities actually exist – are these:

· it reminds us that ideas are not commodities, although they may usefully be treated as commodities in some contexts, they are the medium of social and cultural life;

· and, it reminds us that the market is not the only important social institution, we must also think about the role of information technology in the family, in education, in civil society, and in political life.

· Moreover, there is a specific finding about virtual community that may challenge the traditional foundation of intellectual property – the idea of the author. The idea of property tends to be founded on natural right theory (although I have been stressing the utility of the idea of intellectual property, a weaker but possible alternative philosophical foundation). Natural right theory begins with the idea of an author, who in creating an original expression of an idea creates value and thereby a property right, ownership of which may then be transferred.

But the idea of virtual community makes the most sense in the case of science, an institution in which ideas are freely shared in a gift economy, and even among corporate researchers. Thus it is startling to discover that the idea of the author is evolving into the idea of a community of practice in cyberspace, as described in the research of Wallace Powell and Mario Biagioli.[6] Powell describes a biotechnology paper that was published with 133 authors, from a number of corporations and countries. The idea of communities of practice, originating with Jean Lave and Etienne Wenger, has become the most important analytic tool in analyzing knowledge management in the corporation, replacing the idea of the individual genius or author.[7] If the idea of the author changes, everything else about intellectual property must change, and perhaps it is not surprising that an idea made for 17th Century property theory will not fit.

But there are also problems with the virtual community metaphor, interesting problems.

· What do we mean by community? The rhetorical force of the word community is important in the political arena because it raises questions about public goods, like education, but as social scientists we must learn how to describe and analyze these new social phenomena, not romanticize them.

· The problem with the gift economy of ideas is a lack of structure and quality; the great virtue of the information highway idea is that it stresses standards and creates incentives for quality.

Thus in summary, the idea of virtual community is important because it stresses the importance of information as a public good, and points our attention to new kinds of social organizations made possible in cyberspace. But it does not adequately understand the symbiosis between the market and communities, by ignoring the subsidies from government and the economy which make it possible. Thus John Seeley Brown and Paul Duguid have written, in “The Social Life of Documents,” that the origin of scientific journals was in the exchange of letters among scientists, and that the formation of markets for journals made possible the global scientific community that exists today.[8] Can this symbiosis be recreated?[9]

III. The Digital Library.

The digital library metaphor – as distinct from the many kinds of online information that are called digital libraries[10] – reminds us that the library might serve as a model for an institution which can mediate between two truths defined by the information highway and virtual community metaphors. One truth is that information has economic value and must be treated as property, and the other truth that information is only valuable when it is learned and used by human communities. The information highway metaphor often goes too far, as in some UCC 2B discussions in which all information use in every social context will require a payment; the virtual community metaphor often goes too far, as in the claim that “information wants to be free.” The digital library metaphor is helpful because in industrial society the library has been a boundary management institution between markets and communities: it buys information in the marketplace; it subsidizes free use of information by communities.

As a theory of justice, the digital library metaphor represents a claim that intellectual property must sometimes be a public good, particularly for educational purposes, and more generally as a means of providing for equality of opportunity in a society in which access to information (and education) is increasingly important. In this context it might be mentioned that the other institution which developed to represent the public good in an industrial age was the land grant university.

This said, it is not entirely clear that libraries will continue to be able to perform their boundary maintenance function in an information age (nor for that matter, may the land grant university). Thus there are some important questions that deserve investigation:

· Who pays? More and more information is being produced, far beyond the financial capacity of a library to collect, and we live in a time in which market mechanisms are preferred to public institutions.

· Is information manageable? Libraries not only collect and preserve information, they organize it, and make it searchable. But the variety and volume of information goes far beyond the ability of current technology to control; a recent article in Science magazine pointed out that no two commercial search engines present the same findings when given the same instructions, and even if they did, many commercial sites now are run by algorithms that construct special sites on the fly to artificially match a search request.

Thus the value of the digital library metaphor is that market economies and gift exchange economies are symbiotic, not opposites, but we must have pragmatic laws and institutions that manage the boundary between private and public property. Granted, this may be difficult when regulating the flow of information on a global information network, in which no one nation has sufficient jurisdiction to enforce its laws. But it is also useful to remember that the Fair Use doctrine emerged from a long period of negotiation, not from a winner take all political struggle.

IV. Conclusion.

I have looked at the popular language with which we discuss information management – information highways, virtual communities and digital libraries – in an odd way, as metaphors within which an indirect dialogue about questions of economic and social justice is occurring. I have not said that information highways, virtual communities and digital libraries do not exist, and I have not said that they are bad metaphors. What I do intend to say is that discussions of economic and social justice should not be indirect, they should be discussed directly, or with language that deepens our understanding of the problems.

As some of you may have discerned, I have been deeply influenced by Wittgenstein, who in the Philosophical Investigations showed us how to think about the way metaphorical thinking helps us make sense, and sometimes makes nonsense. The problem, as Wittgenstein worked it through, is whether a metaphor or image has traveled too far from its original ground, and created a gap between the way we think about things, and what we actually do. Thus one way to solve the problem I have posed is research – we simply do not know enough about the reality behind words like “the digital economy,” “the digital library,” and “the information society” – we treat slogans as if they are real things, and as researchers we need to find out what is really happening in cyberspace. I have tried to define some of the questions I think need to be answered, but invite you to read the recent NRC volume describing a research agenda for the social sciences, and to add your own questions to my list.

But as you surely do not suspect, I have also been deeply influenced by Vico’s book, The New Science. In the 17th Century, Vico argued that history is made by “barbarian poets,” people who create new languages that have the poetic power to define new cultures and new institutions; but inevitably one generation’s poetry turns to the next generation’s cliché, and words begin to hide partisan interests, and we need to find new barbarian poets. Poetry comes from the street, and the second research task I propose that we jointly undertake is to listen to the language of cyberspace for new poetry, new images that will take us farther than the noble but tired language of industrial society we now use. Footnotes:

[1] Manuel Castells, The Rise of the Network Society, p. 61. See also Manuel Castells, The Power of Identity, pp. 5-67 (1997).

[2] Geoff Cooper and Steve Woolgar, Software is Society made Malleable: The Importance of Conceptions of Audience in Software and Research Practice, Brunel University, Uxbridge Middlesex, United Kingdom: The Program on Information and Communication Technologies, Policy Research Paper No. 25, 1993, at 2. Steve Woolgar, Configuring the User: the Case of Usability Trials, in A SOCIOLOGY OF MONSTERS: ESSAYS ON POWER, TECHNOLOGY AND DOMINATION 59 (1991). See also Bruno Latour, Technology is Society Made Durable, in A SOCIOLOGY OF MONSTERS: ESSAYS ON POWER, TECHNOLOGY AND DOMINATION 103-31 (1991).

[3] Karen A. Cerulo, Reframing Sociological Concepts for a Brave New (Virtual?) World, 67:1 SOCIOLOGICAL INQUIRY 48, 55 (1997).

[4] See SHERRY TURKLE, THE SECOND SELF 24 (1984); Sherry Turkle, Artificial Intelligence and Psychoanalysis: A New Alliance, 117:1 DAEDALUS 241, 245 (1988); SHERRY TURKLE, LIFE ON THE SCREEN: IDENTITY IN THE AGE OF THE INTERNET 177-209 (1995).

[5] Bernard Lietaer, The Social Impact of Electronic Money: A Challenge to the European Union? A REPORT TO THE EUROPEAN COMMISSION’S FORWARD STUDIES UNIT (1998) (on file with author).

[6] Walter W. Powell, Learning from Collaboration: Knowledge and Networks in the Biotechnology and Pharmaceutical Industries, 40:3 CALIFORNIA MANAGEMENT REVIEW 228, 228-240 (1998); see also Mario Biagioli, The Instability of Authorship: Credit and Responsibility in Contemporary Biomedicine, 12 FASEB JOURNAL 3, 3-4 (1998).

[7] JEAN LAVE & E. WENGER, SITUATED LEARNING: LEGITIMATE PERIPHERAL PARTICIPATION 94-99 (1991). See also Bernardo A. Huberman & Tad Hogg, Communities of Practice: Performance and Evolution, 1:1 COMPUTATIONAL AND MATHEMATICAL ORGANIZATION THEORY 73, 73-74 (1995).

[8] John Seeley Brown and Paul Duguid, “The Social Life of Documents,” Release 1.0: Esther Dyson’s Monthly Report (New York: Edventure Holdings Incl., October 11, 1995).

[9] Peter Lyman, “Digital Documents and the Future of the Academic Community,” Technology and Scholarly Communication (Berkeley: The University of California Press, forthcoming 1999).

[10] See Christine L. Borgman, Social Aspects of Digital Libraries, Final Report to the National Science Foundation, November 1996. http://www.gslis.ucla.edu/DL/UCLA_DL_Report.html. And, Peter Lyman, “Designing Libraries to Be Learning Communities,” Proceedings of the 1998 UKOLN Conference(London: Library Association Publishing, forthcoming).