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PRESIDENT CLINTON'S NATIONAL INFORMATION INFRASTRUCTURE INITIATIVE: COMMUNITY REGAINED?

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INTRODUCTION

President Clinton's National Information Infrastructure ("NII") Initiative[1] has focused public attention on the relationship between information technology and community. Infrastructure includes more than channels and broadband switches; it includes institutions and social systems on which the growth of communities and states depends.

This article explores the relationship between information technology and community in the National Information Infrastructure. It uses the word "community" to refer to four different types of human association. The first type of community is comprehensive, resembling traditional municipalities or neighborhoods,[2] marriages and extended families, and work groups. The second type is a social community, such as athletic teams and most Special Interest Groups ("SIGs") on electronic information services. The third type is a market, which is a limited kind of economic community. The fourth type is the most limited: a dispute resolution channel that functions as an adjunct to some other association, usually a commercial association. Law's relationship to community depends on which of these types of community is considered.

Communities exist when their participants are interdependent, when the communities address important participant needs, when par-

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1. The National Information Infrastructure refers to the telephone, cable television, television and radio broadcast, Internet, and other computer networks that carry analog and digital communications from one part of the country to another. The NII Initiative focuses public and governmental attention on the new issues presented by the convergence of historically separate technologies, especially the convergence of digital computer communications technologies and analog telephone and broadcast technologies.

2. Political communities fall into the first category when they are stable and cohesive; into the fourth category, when they are shifting coalitions of convenience.

ticipants have a psychological or ideological commitment, and when the attachment of participants is not completely transitory.[3] For example, tourists do not have very strong attachments to the communities through which they pass even though while they are there, the communities may meet many of their physical and social needs. The reason is that their attachment is entirely transitory.[4] Conversely, some residents in physical communities may have low affiliation with the surrounding community even though they permanently reside there, because the surrounding communities address only a small proportion of their needs. This is likely to be true for residents without children in "bedroom communities."[5] One of the determinants of the transitory nature of attachment is the magnitude of the transaction costs of withdrawing. Thus, prisons are communities because of high transaction costs of withdrawing.[6] Exercise gyms usually are not communities because the transaction costs of withdrawing are low.

Information technology is producing alienation from old communities at the same time that it is creating new electronic communities. Both the alienation and the new communities will transform the relationship between law and technology. The alienation will press more small consumer, employment, and government benefits disputes into the formal legal system as the capacity of nonlegal institutions to resolve such disputes informally diminishes.[7] The new communities will look to law to define the boundaries between the new communities and old ones, to design and maintain governance mechanisms, and to design and staff new adjudicatory mechanisms for resolving new kinds of disputes that arise out of membership in the new communities. Everyone will look to law and information technology to design new dispute resolution mechanisms—a specialized form of new community—for handling disputes.

3. An economist might think in terms of a community's ability to respond to participants' utility functions or preference curves.

4. *See* ROBERT C. ELLICKSON, ORDER WITHOUT LAW 5 (1991) (discussing the everyday appearance of "order" in a nonhierarchical, nonlegal environment). Professor Ellickson recognizes that there are important preconditions for informal community governance. Most important among these are the likelihood of continuing relationships among the people making, enforcing, and violating the rules and the existence of multidimensional relationships in the community.

5. A bedroom community is one in which people own homes and live but do not work.

6. Transaction costs include more than pecuniary expense. One may get shot in attempting to withdraw from a prison. If one withdraws from a church, the emotional, ideological, and social costs may be high. Whenever commitment is high, the transaction costs of withdrawal are high.

7. Informal dispute resolution capacity usually diminishes as centralization and automation occur, as explained in part I *infra*.

The new communities being created are mostly vertical, and the ones being destroyed are mostly horizontal. Vertical in this sense means that the common experiences or interests tying the community together are specialized, much as work and professional relationships tie co-workers and professional persons together in communities. Horizontal means that the common experiences and interests are multidimensional, much as geographic proximity, community schools, and local work opportunities tie neighbors together. The shift from horizontal to vertical communities is a phenomenon of twentieth century technology, first automobile transportation, and more recently communications and information technology. Much of the alienation results from the replacement of horizontal communities by vertical communities. That is one of the costs of information technology. Much new community can arise from new information infrastructures; that is the promise of information technology.

I. ALIENATION FROM OLD COMMUNITIES

Alienation occurs as organizations producing goods and services become more automated and more centralized. As they become more centralized and more automated they become more rigid. When customers and employees have problems that have not been anticipated by the designers of the central computer systems, organizations are unable to respond because lower level customer-contact personnel and lower level managers lack the authority or ability to deviate from rules programmed into the computer systems. All consumers have experienced this phenomenon. Banks become more fully automated and cannot handle transactions in the traditional ways customers expect. Authority migrates from the teller who has known the customer for years to an electronic device or a faceless bureaucrat who answers the bank-by-phone number.

New computer and communications technologies make it possible, and indeed offer economic incentives, to centralize customer support and dispatch functions through toll free eight hundred numbers. Eight hundred number commerce will be automated further by means of computerized customer contact modules resembling bank-by-phone. Centralization weakens the human link between production and consumption and also weakens the link between local control and persons performing local functions. Counter personnel, customer support personnel, delivery dispatchers, and delivery personnel all be-

come anonymous. Anonymity destroys accountability. Both customers and employees feel dehumanized.

The point is not that this kind of automation and centralization is bad. On the contrary, it has important advantages. Otherwise firms would not automate and centralize customer contact and dispatching. Centralized computer reservation systems work better than the pre-SABRE[8] systems when airlines, like railroads, had to work through blocks of seats assigned to particular stations and to coordinate each individual reservation request by telephone with other stations. Eight hundred number contact with manufacturers of consumer goods offers advantages to consumers, who get better information more quickly about products and parts than they could working through a chain of retail and distributor intermediaries. If things are going well, these centralized, automated customer support functions produce efficiencies and improved customer service.

But things do not always go well. Assistance in using products is required. Wrong products are shipped. Billing errors occur. Scheduled service calls are missed. Then lack of familiarity breeds contempt. There is a qualitative difference between being able to find a human being who is the boss, or the owner, or is otherwise indisputably responsible, and the anonymous customer representative on an eight hundred number disclaiming personal accountability.

As consumer frustration builds, consumers demand forums through the legal system in which to register their grievances. All they want is for some human intelligence to pay attention to their problem. Many consumer transactions are too small to justify lawsuits, but when something major happens, it is much easier to decide to sue a large impersonal enterprise that seems to be only a collection of toll free telephone numbers than to sue the corner grocery, where you have known the proprietor for five years.

Consumers are not the only parties who go to court because automated centralized organizations are unresponsive. Centralization and automation also have an impact on the employees of the organization itself. It seems to employees and to first level supervisors that no one can give a straight answer to a question about a promotional possibility or a leave request. Frustrated employees go to court to protest dismissals and work assignments, and to get more time off.

8. American Airlines SABRE was the first large scale computerized reservations sytem, developed in the late 1960s in cooperation with MIT and IBM.

Also, centralization and automation are not the only culprits. Alienation produces not only class action consumer lawsuits, but also an elaboration of government regulation. Deregulation may have been the watch word since the mid-1970s, but democratic political systems have a way of vacillating between opposing governmental approaches. Laissez faire is followed by more intervention which is followed by laissez faire, and so on. Alienation also breeds in the interstices of an increasingly complex web of regulation aimed at controlling the power of organizations on which citizens are dependent. For example, growing overlap in detailed employment regulation, as evidenced by the Americans with Disabilities Act, the Family Leave Act, the Employee Retirement Income Security Act of 1974 ("ERISA"), anti-discrimination statutes, and contract law, produces conflicting rights and duties in subtle ways.

Under these pressures, all of the efforts towards tort reform and alternative dispute resolution will bear little fruit in reducing the incidence of litigation. Litigation will increase because it is perceived as the last resort for getting human beings to pay human attention to problems that ordinary citizens care about.

A vicious cycle thereby is set in motion. Greater demands on courts to handle large scale litigation effectively and more regulation increase alienation. The vicious cycle can be broken only if legal and technological developments make institutions more responsive rather than less responsive. The alternative dispute resolution movement needs to influence the automation movement. Designing and implementing the new dispute resolution programs will fall to lawyers.

II. LAW'S RESPONSE

What can lawyers and the law do about this alienation? Two things. First, they can make sure that four basic needs of new electronic communities are addressed appropriately. Second, they can attempt to use information technology to facilitate dispute resolution for nonelectronic communities. The next two parts of this article address each major task.

A. Governance of New Communities

Information technology affects patterns of human and enterprise interaction. As information technology improves, the transaction costs of certains types of interaction decline, and the use of the new technologies for that kind of interaction increases proportionately.

Communities involve regular interaction among their members on matters of importance. When new patterns of social or economic interaction emerge, new communities are formed. Already the emergence of new electronic communities in Internet newsgroups and on public electronic bulletin boards has attracted comment.[9] Questions remain of course about how influential the new electronic communities will be; they may not cover enough dimensions of the human experience, attachments may be transitory, and their participants may not be very interdependent.

Electronic communities as they exist today may seem to have only transitory attachment and meet only modest human needs. Nevertheless, one should be cautious about rejecting the possibility of important influences from this type of community. For example, athletic teams would seem to satisfy a relatively low proportion of the totality of human needs, but many sports fans and amateur league players find them to be very important communities.[10] Moreover, there is long-standing precedent for strong communities in the electronic arena. Most active amateur radio operators consider their acquaintances formed by radio communication to represent a community that is important to them. It is also conceivable that some markets will become almost completely electronic. For example, all of the exchanges pertinent to trading in information can be electronic now, as they are through WESTLAW, LEXIS, CompuServe, or Dialog. Acceptances of contract terms can be electronic as they are in those four services. Payment arrangements can be made electronically as they are in the Government Printing Office Federal Bulletin Board system. Final delivery of the promised information product can be made electronically as it is in all of these services. Markets are electronic communities, and some satisfy important needs of participants, who have more than transitory attachment.

Successful community requires governance—successful dispute resolution. This section considers four types of disputes likely to demand lawyers' attention in the new communities resulting from the information technology revolution: disputes involving access, authorship, authentication, and autonomy.

9. Peter H. Lewis, *Strangers, Not Their Computers, Build a Network in Time of Grief*, N.Y. TIMES, Mar. 8, 1994, at A1 (describing economic and personal support by members of computer forum for family of former member of forum killed in robbery).

10. One also might expect that player and fan attachment to athletic teams would be transitory because transaction costs of withdrawal are low (for fans at least).

Access refers to how law defines entitlements to use information technology supplied by somebody else. It is the rethinking of common carrier obligations, compulsory licensing, and the antitrust essential facilities doctrine.

Authorship is an alliterative shorthand for intellectual property. It refers to law's responsibility to protect against free riding so that innovation will occur in art and industry and accrue to the benefit of the broader society.

Authentication refers to law's responsibility to provide methods for arranging commercial transactions. It encompasses issues traditionally dealt with by statutes of frauds, rules for contract formation, and communications security. It has implications for the spread of Electronic Data Interchange ("EDI").

Autonomy refers to the possibility that electronic communities may have their own legal systems, more or less independent of national systems of law, and from each other.

These issues relate to the problem of alienation in two ways. First, if the issues are properly addressed, the new electronic communities will give rise to less alienation than is developing in the old communities. Second, to the extent that the people and institutions involved in alienation are members of the new electronic communities, effective resolution of the issues will reduce the alienation involving the old community institutions as the shift to new communites occurs.

B. Access

Electronic communities will confront controversies over access. Electronic and information networks forming the infrastructure of communities allow some people to connect and not others. Some people denied connections seek to protest the denial.[11] Such access discrimination and the resulting protests have been regular features of transportation, communication, and social networks since the earliest recorded history. Trade networks exhibited exclusivity.[12] The emergence of the railroad system produced controversies about access to

11. Professor Martin H. Malin appropriately notes that it may be important to distinguish between excluding outsiders seeking to join and suspending or expelling current members. Labor law draws those distinctions with respect to membership in labor unions. Letter from Martin H. Malin, Professor of Law, Chicago-Kent College of Law, to Henry H. Perritt, Jr., Professor of Law, Villanova Law School (May 12, 1994) (on file with author).

12. Under the English trade and navigation laws, which are generally credited as being a major cause of the American revolution, American merchants and planners wishing to ship directly to European markets were denied the opportunity to do so. European purchasers simi-

that transportation network almost immediately. It is inconceivable that electronic networks will not also disappoint aspirations for access. The potential for competition with favored members of the network communities may motivate some denials. An unwillingness by the applicants to pay the price for access may cause other denials. Finally, a perception that applicants do not "fit" the definition of that community or that they will not play by the community's rules may motivate denials.

Basic rules for access can be agreed upon by present members of a network community, but it is difficult to prevent disputes over the application of the rules from spilling beyond community boundaries. Someone denied access is also denied access to the community where the rules are made. Such an outsider can hardly be said to have consented to the application of community rules. Accordingly, the general law is almost certain to be drawn into disputes over community access.

Common carrier obligations of telephone and cable television companies may seem to bear little relationship to human access to new electronic communities; yet, how the law responds to access disputes is a central question of legislating for the NII.[13] As the boundary between communications and information services evaporates,[14] so does the intellectual boundary between law and social and market forces. How new boundaries should be drawn between law and market forces is the central policy question.

While continuation or extension of traditional common carrier concepts is problematic due to delays and other costs of detailed administrative regulation, most NII legislative drafters suggest some kind of interconnection and universal service requirements. Both of these suggestions involve community access, although formal proposals for access duties have imposed them only on service providers with monopoly power in particular markets.[15] The law must be creative in

larly were denied access to the Trans Atlantic trade network. *See* JOHN E. CROWLEY, THE PRIVILEGES OF INDEPENDENCE: NEOMERCANTILISM AND THE AMERICAN REVOLUTION (1993).

13. The NII, as the term is used here, includes all electronic communities.

14. *See* Arkansas AFL-CIO v. FCC, 11 F.3d 1430 (8th Cir. 1993) (en banc) (explaining the historical refusal to impose common carrier obligations on broadcasters and the use of FCC's "fairness doctrine" as the rough substitute, and evaluating the possibility that continuation of the fairness doctrine might offend First Amendment now that the availability of many more channels has relieved the "scarce spectrum" justification for forcing access).

15. The FCC's current approach is to require former Bell operating companies to unbundle service components through "Open Network Architecture" and "Comparably Efficient Interconnection" so that competing carriers can interconnect and offer only those components of service they wish. *See* California v. FCC, 4 F.3d 1505 (9th Cir. 1993) (rejecting challenges to

defining new rules that focus on real needs without needlessly burdening new technologies with bureaucratic weight. One possible approach is to define interoperability obligations in fairly general terms, providing for adjudicatory application mechanisms only on a case by case basis after disputes arise. Thus, there would not be a regulatory authority to apply the general interoperability rules to particular cases. That pre-dispute rule-making system would likely deteriorate into a pre-approval requirement for new services and community arrangements. Rather, disputes over access would be resolved either through the regular courts or in specialized administrative or arbitral tribunals.[16]

Access is an issue for content (information services) as well as for conduit (communications services).[17] As major electronic directories, gateways, and menuing systems are offered, it will be natural for new entrants and existing providers with small market share to insist upon access to those systems. The same controversies can be expected as those surrounding community and public access rights on cable television systems.[18] And, in some circumstances, it may be appropriate to grant access rights to content itself. This access right is a central principle of public information law. Governments at all levels have an increasingly important stock of information content in electronic form. While it is tempting to establish exclusive arrangements for that information in order to subsidize public contract activity or to reduce

implementation of ONA); *Notice of Inquiry on a Successor Alternative Form of Regulation for U.S. West Communications, Inc.*, Washington Utilities & Transportation Commission, Doc. UT-931349 (Dec. 3, 1993).

16. One possibility is to have present electronic community members resolve access disputes by voting on the issue, much as occurs with respect to proposals for new newsgroups in the usenet system.

17. Conduit refers to relatively pure communications services, as distinct from value-added services, or information services. *See* California v. FCC, 905 F.2d 1217, 1224 (9th Cir. 1990) (explaining FCC's Computer I decision treating communications and data processing activities of telephone companies differently); Computer and Communications Indus. Ass'n v. FCC, 693 F.2d 198, 203 (D.C. Cir. 1982) (same), *cert. denied*, 461 U.S. 938 (1983).

18. *See* Chesapeake and Potomac Tel. Co. of Va. v. United States, 830 F. Supp. 909, 926-27 (E.D. Va. 1993) (statutory prohibition in 47 U.S.C. § 533(b) on video programming by local exchange carriers violated First Amendment, in part because it restricts competition and fails to promote diversity of ownership of communications outlets); Daniels Cablevision, Inc. v. United States, 835 F. Supp. 1, 6-9 (D.D.C. 1993) (requirement that local cable carriers reserve portion of channel capacity for unaffiliated commercial programming and public and educational use, 47 U.S.C. §§ 531(b), 532(b)(1), did not violate First Amendment, but statute requiring direct broadcast satellite enterprise to allocate percentage of capacity to noncommercial programming did violate First Amendment); Turner Broadcasting, Inc. v. FCC, 819 F. Supp. 32, 40-42 (D.D.C. 1993) (forcing cable carriers to handle others signals, even though they do not agree with viewpoints expressed, does not violate First Amendment because it is economic regulation aimed at promoting particular industry structure), *vacated*, 114 S. Ct. 2445 (1994) (factual issues regarding jeopardy to local broadcasters and efficiency of less restrictive means required trial).

budget pressures on agencies controlling the information, there is growing recognition that the central principles of public information should be (1) open access under the Freedom of Information Act and similar laws, and (2) an avoidance of exclusive arrangements.[19]

Nevertheless, there may be a tension between real community and access rights under law. Most human communities enjoy that status in part because of a power to exclude. Exclusion reinforces homogeneity, and homogeneity strengthens community attachment. This surely is true of churches, fraternities, and military organizations.[20] Information technology increases choice by reducing monopoly power. If a consumer is denied access to one communication or information service, it is relatively easy for him to connect to another. Traditionally, common carriage has been imposed only on those with monopoly power. Similarly, the antitrust essential facilities doctrine imposes access obligations only on those with monopoly power. If new information technology reduces market power, arguably it should reduce the need for legally granted access rights, except for the enforcement of contracts.

Most analysis of common carrier obligations and of the essential facilities doctrine in antitrust law treats networks as markets, or even

19. Henry H. Perritt, Jr., Commercialization of Government Information in the United States of America, Address at a Conference on Commercialization of Public Information in the European Community, University of Tilburg, The Netherlands (September 16, 1993); 1 C.F.R. § 305.88-10 (1993) Federal Agency Use of Computers in Acquiring and Releasing Information (recommendations by Administrative Conference of the United States ("ACUS")); Henry H. Perritt, Jr., *Electronic Acquisition and Release of Federal Agency Information: An Analysis of ACUS Recommendations*, 41 ADMIN. L. REV. 253 (1989) (explanation of Recommendation 88-10 by its principal author); Henry H. Perritt, Jr., *Federal Electronic Information Policy*, 63 TEMP. L. REV. 201 (1990) (elaboration of Freedom of Information Act concepts developed in Recommendation 88-10); 54 Fed. Reg. 214 (Jan. 4, 1989) (proposed version of Circular A-130 emphasizing deference to private sector information resellers); 54 Fed. Reg. 25,554 (1989) (OMB's June 15, 1989 response to comments on its January 4, 1989 notice, expressing greater willingness for government to add value to electronic information); BENTON FOUNDATION & BAUMAN FAMILY FOUNDATION, ELECTRONIC PUBLIC INFORMATION AND THE PUBLIC'S RIGHT TO KNOW 39-46 (Henry H. Perritt, Jr., ed. 1990) (matrix showing areas of agreement and disagreement on electronic dissemination policy); ABA Recommendation No. 102, adopted by the American Bar Association House of Delegates, August 1990 (guidelines for applying Freedom of Information Act to electronic formats); ABA Recommendation No. 109C, adopted by the American Bar Association House of Delegates, August 1991 (guidelines for federal and state agency dissemination of public information in electronic form). The author was the principal drafter of the ACUS and ABA Recommendations.

20. There are, however, some communities in which the power to exclude plays a smaller role, or no role, such as families or public schools. Moreover, in some kinds of traditional communities, legal limits on dissolving the community relationship may be important reinforcements of community because such limits raise the transaction costs of withdrawal, and thus reduce tendencies toward transitory attachments. This is the case with marriages, where the law erects obstacles to dissolving the community ties (although the obstacles may be modest when no-fault divorce is allowed).

more narrowly, as ways of reaching markets. Under this conception, it is entirely appropriate to reduce or eliminate access duties when a multiplicity of alternatives exists. No one thinks of imposing access duties on K-Mart in the form of an obligation to give shelf space to a particular vendor. Many alternatives to K-Mart exist for reaching consumer markets, and such a duty is thought to be unnecessary, although K-mart has a duty under the antitrust laws not to occlude alternative channels through a group boycott.[21]

When one changes the metaphor, however, and thinks of electronic networks as communities rather than markets, the arguments for and against legally imposed access obligations change. Then, First Amendment privileges may militate in favor of legally imposed access obligations[22] rather than against them.[23] Even more generally, thinking of certain computer networks as communities implicates the analysis of "public forums" provided by state actors and policies against housing and school discrimination, at least when the discrimination is aimed at suspect classes.[24]

For now, it is most appropriate gradually to work out access obligations under a common law tradition based on a general statutory principle. Statutory access rights should be articulated in general terms, beginning from the principle of interoperability and interconnection. Application of the general duty should occur after actual disputes have arisen; in other words, dispute resolution should occur through adjudication rather than rule-making. The substantive factors used to decide the disputes should be the traditional indicia of common carrier status, commitments made to handle anything, and an absence of alternatives. Thus, one has a combination of implied contract and antitrust principles.

Having access depend on the type of community involved should not lead to perverse results. One of the reactions when this article was presented as the Green Lecture was that having access obligations

21. Balaklaw v. Lovell, 14 F.3d 793 (2nd Cir. 1994) (rejecting group boycott claim by anesthesiologist excluded from group practice contract).

22. See Angela J. Campbell, *Political Campaigning in the Information Age: A Proposal for Protecting Political Candidates' Use of On-Line Computer Services*, 38 VILL. L. REV. 517 (1993) (arguing that on-line services should be prohibited from discriminating against political candidates who need to reach their audiences).

23. *See* cases, *supra* note 18.

24. There is, of course, a distinction between constitutional prohibitions on government discrimination against suspect classes and statutory prohibitions against private discrimination. Nevertheless, there is substantial congruence between the classes protected statutorily against private discrimination and the classes protected constitutionally against governmental discrimination.

depend on competitive alternatives might subject social organizations, but not market communities, to access obligations. This is an appropriate point. To avoid the problem, however, legal intervention, in the form of access duties, should depend on the essentiality of the needs served by the particular community. This obviously is related to the essential facilities doctrine in antitrust law. It is not unrelated to the idea in tort law that some interests are recognized by law, and others are not. For example, in an earlier era, religious needs might have been thought of as legally cognizable, and a situation in which one was denied access to a religious organization to serve those needs might have been a matter for concern by the law.[25]

C. *Authorship*

Communities need wealth if they are to flourish. Much of the wealth in electronic communities is information content and the tools through which people and computers add value to information, and through which they exchange information in market transactions.

But information technology is wealth-eroding as well as wealth-creating. Computers and digital communications technologies make it easy for a competitor to get a free ride on someone else's intellectual capital. Preventing or controlling such free rides has been the job of intellectual property law since the earliest days of the printing press and the beginnings of the industrial revolution. It is not altogether clear how well patent and copyright law, designed for earlier technologies, will work to prevent free rides in the new electronic communities. One possibility is that they will work just fine. There may be some cheating at the margins, just as there always has been, but copyright and patent may provide sufficient disincentives to discourage wholesale piracy and thus preserve incentives to create and invest.

Another possibility is that patent and copyright will be unnecessary in the new communities. Free riding comes about because the information naturally is a public good, and tightly-knit communities are capable of dealing with the public goods problem. Small communities can establish "commons" and maintain them, with social forces

25. *But cf.* Board of Directors of Rotary Int'l v. Rotary Club of Duarte, 481 U.S. 537 (1987) (application of state sex discrimination law to private club did not violate First Amendment right of expressing association).

substituting for law in facilitating economic appropriability of the gain resulting from individual efforts.[26]

A third possibility is the one advocated by Ted Nelson, the inventor of the Xanadu concept. He says such communications do not need intellectual property law, because the value is not going to be in the content; the value is going to be in the network—in the tools used to get content.[27] At least in part, he is correct. We like WESTLAW and LEXIS and their emerging competitors because we like the search engines and the subinfrastructure that allow us to get the content from one place when we want it and only when we want it. So there is a role for system designers who increase the attractiveness of process and decrease the relative attractiveness of any particular chunks of content. As that shift in relative attractiveness takes place, intellectual property will be safe, because process is easier to protect through technology and through patent law than content is to protect through copyright law.

Fourth, there is a role for other kinds of entrepreneurial protections. Everyone is familiar with planned obsolescence. Planned obsolescence has a role to play in the information marketplace. One way to deter pirates is to plan an update on a product timed so that a pirate is able to resell only obsolete material because the original author has released a new version. If one looks at what people are actually doing in the information services industry, one sees a lot of that.

The fifth possibility is the one favored by some publishers contemplating the risks of electronic publishing in wide area networks like the Internet. They favor technological protection for intellectual property, based on varying levels of encryption.[28] Much like desktop computer software copy protection, technology would deny access to someone who has not paid for the product.[29] Such technologically enforced linkage between use and payment avoids the free ride

26. Natalie S. Glance & Bernardo A. Huberman, *The Dynamics of Social Dilemmas*, 270 SCI. AM. 76 (1994) (social cooperation, including contribution of public goods, is more likely in small groups with lengthy interaction).

27. Nelson indicated this belief at a 1993 presentation at Harvard.

28. The author was present at a hearing in November 1993, when representatives of traditional publishers testified for a subcommittee of the President's National Information Infrastructure Task Force that encryption is an attractive way to protect intellectual property in the NII.

29. *See generally* Request for Comments on Intellectual Property Issues Involved in the National Information Infrastructure Initiative, 58 Fed. Reg. 53,917 (Oct. 19, 1993) (announcing public hearing on, among other things, technical means for preventing unauthorized reproduction or other unauthorized uses of copyrighted works in the NII, similar to that mandated under Audio Home Recording Act of 1992; standards and requirements for exchange of information and interoperability computer software; standards for encoding of works).

problem by making the digital intellectual property appropriable.[30] It thus transforms the information from a public good into a private one.[31]

Technological protection, however, may fragment communities unnaturally.[32] Because the politics and economics of standard setting make it extremely difficult for standards to be developed and adhered to across pluralistic communities,[33] there is a tendency for encryption to stimulate the development of proprietary archipelagoes. On the one hand, this may strengthen the character of these islands as communities, but on the other, it may frustrate realization of a true national information infrastructure.

Experience may teach that high levels of encryption are not necessary, or that they get in the way of adequate market development because consumers do not like them. It also may be that technological protections other than encryption are worthy of attention. For example, "enforcement servers" in broad communities like the Internet may be able to detect violations of traditional intellectual property rules and license agreements cheaply and with a low probability of evasion by pirates.[34] Such electronic intellectual property enforcement could be modeled on music industry institutions that enforce phonograph recording copyrights in bars and other places of public entertainment.[35]

30. Appropriability refers to removing something from the public domain and making it private property. Appropriability is frequently a technological problem. The fruits of one's labor are appropriable only if one can exclude others from using the fruits unless they pay or meet other conditions imposed by the originator.

31. *See* William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989) (noting public good character of information; cost of initial creation is high, while cost of reproduction is low). The classic public good is a lighthouse. No one can be excluded from consuming its output, and thus it is not appropriable. Incentives for producing public goods depend on some means for making the good appropriable so that that producer can charge a price adequate to cover the costs of producing the good. Appropriability depends on some means of excluding users of the good (both ultimate consumers and potential competitors) until they pay for it.

32. Moreover, technological protection does not eliminate the need for legal regulation. Unauthorized decryption must be controlled. *See* 18 U.S.C. §§ 2511-2512 (1988); 47 U.S.C. § 605 (1988) (prohibiting possession and use of satellite decryption devices).

33. *See* Henry H. Perritt, Jr., *Format and Content Standards for the Electronic Exchange of Legal Information*, 33 JURIMETRICS J. 265 (1993).

34. Such approaches detect free riding by mass users more easily than isolated free riding by individual consumers, but mass piracy threatens incentives to produce more than individual piracy.

35. *See* Lodge Hall Music, Inc. v. Waco Wrangler Club, Inc., 831 F.2d 77 (5th Cir. 1987) (reversing summary judgment for plaintiffs because of questions about when the American Society of Composers, Authors and Publishers ("ASCAP") investigators visited bar allegedly playing copyrighted music without license); Somerset Songs Publishing, Inc. v. Wykes, 1993 WL 437705, No. CIV.A.92-6907 (E.D. Pa. Oct. 29, 1993) (granting summary judgment to plaintiff and en-

There is a tension between authorship and access.[36] The tension is most obvious when one considers the possibility of compulsory licenses for patents and copyrights, a resolution of the tension that has not been adopted in the United States either in intellectual property law or antitrust law.[37] Compulsory licenses are, however, imposed in cable television regulation. Broadcasters have a copyright in their programs, but they must, under certain circumstances, allow cable services to rebroadcast them.[38] Also, in the European Union's proposed database directive, copyright-like protection is afforded database content which is unprotectible in the United States under the doctrine of *Feist v. Rural Telephone Company*,[39] but compulsory licenses are also mandated.[40]

The same tension between encouraging authorship and mandating access exists in other elements of information value besides content. In many of those other elements, however, one thinks not of *intellectual* property, but of basic property rights. For example, an important early legal change facilitating development of the cable industry was to obligate telephone and electric power companies to grant

joining defendant bar owner's performance of copyrighted songs apparently detected by ASCAP; also awarding damages).

36. Professor Rudy Peritz has observed more generally that antitrust law (which assures access to markets) conflicts with property notions, and that the evolution of antitrust policy is a continuing struggle to reconcile this conflict. Rudolph J. Peritz, *A Counter-History of Antitrust Law*, 1990 DUKE L.J. 263 (1990).

37. *See generally* Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176 (1980) (grant of patent implicitly authorizes certain anticompetitive conduct including refusal to license competitors and patent enforcement litigation against them); Columbia Pictures Indus., Inc. v. Professional Real Estate Investors, Inc., 944 F.2d 1525 (9th Cir. 1991) (refusal to license, in context of pending antitrust litigation, did not constitute separate antitrust violation), *aff'd*, 113 S. Ct. 1920 (1993).

38. National Ass'n of Broadcasters v. Copyright Royalty Tribunal, 772 F.2d 922, 926-27 (D.C. Cir. 1985) (reviewing award of royalties under compulsory licence for cable broadcasts), *cert. denied*, 475 U.S. 1035 (1985). The compulsory license mechanism was extensively reworked in the 1992 amendments to the Cable Act. Turner Broadcasting Sys., Inc. v. FCC, 819 F. Supp. 32, 37 & 37 n.6 (D.D.C. 1993) (explaining pre- and post-1992 compulsory license provisions). *See also* Broadcast Music, Inc. v. Columbia Broadcasting Sys., Inc. 441 U.S. 1, 15 (1979) (reviewing statutory compulsory license for sound recordings).

39. Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340 (1991) (reversing court of appeals; no copyright in white pages telephone book because no copyright for "sweat of the brow," absent some original selection or arrangement). Subsequently, Rural Telephone was held liable under the antitrust laws for refusing to license its information to Feist, but this was reversed on appeal. Rural Tel. Serv. Co. v. Feist Publications, Inc., 957 F.2d 765 (10th Cir.), *cert. denied*, 113 S. Ct. 490 (1992).

40. Jonathan Band & Laura F.H. McDonald, *The Proposed EC Database Directive: The 'Reversal' of* Feist v. Rural Telephone, 9 COMPUTER L. 19 (1992); J.H. Reichman, *Electronic Information Tools—The Outer Edge of World Intellectual Property Law*, 17 U. DAYTON L. REV. 797 (1992).

easements on their poles to cable television providers.[41] This is a type of compulsory license and reflects the same tension with property rights as exists in the physical distribution capital. Similarly, imposing access duties on providers of gateways and menu systems dilutes their power as property owners to design and control their systems as they would like. It is this tension that has produced much of the recent First Amendment litigation over new bundles of information products in the NII.[42]

The best approach for the future is to use a combination of the techniques suggested as competing alternatives. Intellectual property, especially copyright and trade secret, will provide disincentives for gross piracy. Improving technological monitoring and detection techniques will help detect infringements. Entrepreneurial creativity can use planned obsolescence and packaging to enhance the utility of process and diminish the utility of fragments of raw content.

D. Authentication

Authentication is a problem in any market or community that does not rely on face to face exchanges between people who know each other.[43] Present-day commerce relies on a body of contract rules that emphasize written agreements and signatures. Already, information technology is transforming markets in ways that do not tolerate the cost and inflexibility of paper commercial documents. Electronic Data Interchange ("EDI") is spreading rapidly in industry and government. One of the questions that regularly confronts traders considering EDI is how to deal with signature and writing requirements, typically embodied in statutes of frauds, and also reflected in the rules of evidence that constrain how one can prove one's case in a commercial dispute. While the signature issue is a "red herring,"[44] the tech-

41. 47 U.S.C. § 541(a)(2); TCI of N.D., Inc. v. Schriock Holding Co., 11 F.3d 812 (8th Cir. 1993) (no right of access for cable company because no easement dedicated to public).

42. *See* cases, *supra* note 18. *See also* Bell Atlantic Tel. Cos. v. FCC, 24 F.3d 1441 (D.C. Cir. 1994) (Communications Act did not authorize compelling physical access to competitive communications providers, in part because of possible unconstitutional taking).

43. Authentication is a response to the possibility of repudiation, as when the apparent sender denies that she sent the legally significant message. Repudiation, in turn, is a cluster of underlying risks: risks of miscommunication through transmission or reception error or misinterpretation, risk of forgery as when the true sender is not the purported sender, and risk of alteration, as when the receiver offers proof that does not correspond to the actual message.

44. Henry H. Perritt, Jr., *The Electronic Agency and the Traditional Paradigms of Administrative Law*, 44 ADMIN. L. REV. 79, 94-95 (1992). The signature issue is a red herring largely because "signature" is defined broadly enough to encompass most ways in which an electronic message might be validated (any mark made with the intention that it be a signature), and because the risks which signatures aim at reducing can be minimized by designing electronic sys-

niques for assuring authentication of electronic commercial documents are in their infancy. Most current users of EDI avoid the problem by negotiating trading partner agreements which allocate the risk of loss and establish the ground rules for subsequent electronic interaction between those trading partners, and then placing the agreements in paper documents. But this is not a good way of handling more pluralistic electronic markets. In those richer markets,[45] strangers need to be able to deal with each other electronically without negotiating paper trading partner agreements.[46] Because they are strangers, they have less reason to trust potential trading partners, and thus have particular need of authenticating messages from others. A clear example is an electronic market for information. Most of those concerned with a stable market for intellectual property contemplate some kind of automated authentication technique for granting intellectual property permission[47] and for detecting infringement.[48]

Electronic authentication requires adaptation of traditional evidence doctrines to new circumstances. For example, the ease of altering digitized images makes photographic and video evidence less trustworthy. But chain-of-custody requirements for other forms of more or less fungible and easily altered evidence like urine and blood samples can be adapted to photographic and video evidence.[49] Moreover, information technology permits the routine collection of new types of secondary evidence that greatly ease authentication. Third party "electronic notaries" can maintain logs and transcripts that later can prove the interactions between trading partners.

Authentication implicates concern with computer crimes. Well-informed lawyers should move the debate over computer crimes from

tems to keep secure copies of legally significant communications, to detect forgeries, and to limit access to the power to "sign" electronic messages that result in legal obligations.

45. EDI involves the making or elaboration of contracts that are executory on both sides. The promise of shipment is exchanged for a promise of payment. Proposals for electronic information markets aspire to more. Contracts made in these systems would be executory only on one side. A promise to pay would be exchanged for the actual delivery of the desired information.

46. In informal electronic communities a conversational context may improve authentication. Just as face-to-face interactions reduce the risk of impersonation, so can conversational modes of electronic exchange reduce the risk of forgery.

47. Permissions with respect to intellectual property such as copyrighted text files, can range from permission to inspect and read, through inspection to download for limited purposes, to permissions to make unlimited copies in other commercial works.

48. *See* JOSEPH L. EBERSOLE, INFORMATION INDUSTRY ASSOCIATION, PROTECTING INTELLECTUAL PROPERTY RIGHTS ON THE INFORMATION HIGHWAY 99 (1994).

49. *See, e.g.*, United States v. Kelly, 14 F.3d 1169 (7th Cir. 1994) (reviewing requirements for chain of custody and determining that chain of custody for seized narcotics was sufficient authentication).

an undue concern about the universe of theoretically possible abuses of computer technology to an appreciation of risk-based precautions in the use of computer technology to increase detection of criminal or fraudulent activity. Just as with authorship, some aspects of information technology increase legal risk, but other implementations of the same technologies reduce it.

Present legal doctrine adequately addresses the authentication needs of electronic markets and communities, but only if the doctrine is appropriately understood and applied. Agency law is as important as contract and evidence law. The principal—the one who programs or authorizes the programming of an electronic contracting system—is responsible for the deals made by its computer agent. Statutes of frauds must not be rigidly interpreted to exclude electronic writings and signatures. Trading partners must be allowed to prove the content of their deals by appropriate application of evidentiary authentication concepts, intelligent elaborations of the business records exception to the hearsay rule, and modern conceptions of the best evidence rule.

At the same time, sloppily designed or administered electronic contracting systems are unworthy of credence, and the law should not enforce bargains made through such agents. The baton passes at some point from lawyers to system designers to ensure the integrity of transactional communications and archives.

E. Autonomy

Many communities enjoy powers of self-government.[50] Self-government—legal autonomy—may be appropriate for some new electronic communities, although it is extremely unlikely that self governance will result just because some of the communications occur through new electronic channels. On the other hand, when all of the functions of a particular market or of other commercial communities are contained within electronic communications systems, the dispute resolution techniques for that community should fit the technological context.[51] It is interesting to consider whether the activities of such

50. It is not a new idea that people who make up a community can get together and contract among themselves to make rules that apply to themselves. That is what corporations do and that is what private associations like churches, fraternities, and other nonprofit organizations do. That is the way employment relationships and employee benefit plans work, both with or without unions. Such private associations also have the legal power to design and use specialized adjudicatory institutions. That is called arbitration.

51. Those who do not understand new communities cannot do a good job of governing them, hampering their vitality and growth.

communities should be regulated under customary national law or whether they need separate legal regimes.[52] Ocean-based commerce looked like a separate community in the 18th century, and maritime law was the result. The industrial revolution and the factory system revolutionized labor markets, and modern labor law was the result.[53] Both admiralty and certain forms of collective bargaining are relatively autonomous from the surrounding and underlying legal systems.

Self-governance has several possible goals: (1) immunity from application of normal legal standards; (2) immunity from enforcement power of normal legal institutions; (3) comity, which is a soft form of immunity; or (4) development of the specialized community's own set of standards for conduct—a specialized body of custom and practice—which is applied (a) through "real" contract and tort law, or (b) through specialized community institutions.

Analysis of autonomy benefits from analogies to international law concepts. After all, making an electronic community legally autonomous is similar in many ways to establishing a new sovereign state. Immunity from application of normal legal standards implicates "jurisdiction to prescribe."[54] Immunity from enforcement power implicates "jurisdiction to adjudicate"[55] and "jurisdiction to enforce."[56]

No clear source of immunity exists under present legal doctrine, although there is historical precedent for some sort of common law immunity. The common law has worked out a kind of prescription

52. David R. Johnson, counsel to Wilmer, Cutler and Pickering, and president of Counsel Connect, has been particularly energetic and thoughtful in encouraging attention to this possibility.

53. The law merchant, conceptually separate from maritime law, is another good example. This specialized body of custom arose to meet the needs of merchants whose activities were inherently transnational and unsuited for resolution by local courts. It was applied by market tribunals rather than by regular courts. *See* LEON E. TRAKMAN, THE LAW MERCHANT: THE EVOLUTION OF COMMERCIAL LAW, 8-9 (1983) (summarizing the law merchant); Mark Garavaglia, *In Search of the Proper Law in Transnational Commercial Disputes*, 12 N.Y.L. SCH. J. INT'L & COMP. L. 29 (1991) (summarizing role of traditional law merchant in shaping modern transnational law; arguing that national courts, like modern international arbitral tribunals, should expand reliance on business customs and trade usages when adjudicating transnational commercial disputes).

54. *See* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW § 401(a) (1987) (categories of jurisdiction); *Id.* §§ 402-403 (bases of and limitations on jurisdiction to prescribe); *Id.* § 461 (immunity of foreign state from jurisdiction to prescribe).

55. *See* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW § 401(b) (1987) (categories of jurisdiction); *Id.* § 421 (jurisdiction to adjudicate); *Id.* § 451 (immunity of foreign state from jurisdiction to adjudicate).

56. *See* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW § 401(c) (1987) (categories of jurisdiction); *Id.* § 431 (jurisdiction to enforce); *Id.* § 522 (jurisdiction over foreign ships on high seas).

and adjudication immunity for religious orders,[57] labor relations in large enterprises where collective bargaining operates,[58] and certain internal matters of corporate governance.[59] If experience teaches that problems arise from applying conventional legal rules or using conventional adjudicative processes for electronic communities, the same kind of adaptation may occur. Indeed, private contract can achieve some immunity from outside influences by waiving application of external law and recourse to external legal institutions. (Of course only privies to the contract can waive.)

If autonomy aspirations are more limited, as under the fourth goal, when only specialized rules and adjudicatory mechanisms are sought within a larger legal system, much can be done through conventional contract principles to set standards for conduct. Bank clearing house systems, trading partner agreements for EDI, WESTLAW licensing agreements, and collective bargaining agreements are good examples of contractual arrangements that establish internal governance mechanisms for the parties to the contract. Moreover, contract can provide for specialized community adjudicatory mechanisms through arbitration clauses. In this manner an electronic community might establish on-line community "courts."[60]

Pursuit of the fourth goal is a likely prerequisite to stronger forms of autonomy in any event. Only those communities that have worked out reasonably complete systems of internal governance will have a credible claim to be left alone by the conventional law. To be com-

57. *See* Minker v. United Methodist Church, 894 F.2d 1354, 1356-58 (D.C. Cir. 1990) (affirming dismissal of age discrimination and contract claims based on church bylaws; First Amendment prohibits intrusion into selection for pastors; reversing dismissal of contract claim); Robert J. Bohner, Jr., Note, *Religious Property Disputes and Intrinsically Religious Evidence: Towards a Narrow Application of the Neutral Principles Approach*, 35 VILL. L. REV. 949 (1990) (reviewing various approaches by state and federal courts to disputes over church property); Dowd v. Soc'y of St. Columbans, 861 F.2d 761, 763 (1st Cir. 1988) (deferring to internal conciliation procedures in claim by priest against religious order).

58. The Supreme Court has treated collective bargaining agreements as a kind of "constitution" for the workplace. *See* United Steelworkers v. American Mfg. Co., 363 U.S. 564 (1960); United Steelworkers v. Warrior & Gulf Navigation Co., 363 U.S. 574 (1960); United Steelworkers v. Enterprise Wheel & Car Corp., 363 U.S. 593 (1960).

59. Coveney v. President & Trustees of Holy Cross College, 445 N.E.2d 136, 138-39 (Mass. 1983) (college entitled to deference in decision to dismiss student); Medical Ctr. Hosp. v. Terzis, 367 S.E.2d 728 (Va. 1988) (hospital bylaws precluded judicial review claim by physician against hospital). *But see* Atlanta Nat'l League Baseball Club, Inc. v. Kuhn, 432 F. Supp. 1213, 1226 (N.D. Ga. 1977) (baseball commissioner's deprivation of a draft choice ultra vires and therefore void).

60. It might be a useful exercise to write a model code, the core of an essentially contractual relationship, which eventually could be proposed for enactment by the Congress or the United Nations.

plete, electronic community governance must at least address questions of access, authorship, and authentication.

Once a substantively complete system of internal governance is developed, the points of tangency between the internal and external systems can be brought into sharper focus. There are at least two basic points of tangency. First, what happens when one of the contracting parties goes "outside" because she thinks external institutions, procedures or substantive law will give her a better result on an access, authorship, or authentication issue? This raises essentially the same autonomy question as when an employee covered by a collective bargaining agreement with a just-cause-for-termination provision and an arbitration provision sues directly in court for wrongful termination.[61] Second, one must also think about the mechanism for resolving disputes between the electronic community and outsiders. What happens when an outsider wants access but is denied? What happens when an outsider infringes intellectual property generated within the electronic community? What happens when an outsider masquerades as a member and gets involved in an authentication controversy? These possibilities require electronic communities to address questions of jurisdiction to prescribe, jurisdiction to adjudicate, and jurisdiction to enforce that have long challenged international lawyers.

The intellectual framework offered by international law may be appropriate for another reason. Realization of autonomy may result from the transnational character of electronic networks as much as from the explicit aspirations of network participants. One of the problems with today's Internet is that enforcement of national and local law is impracticable in some circumstances. One reason admiralty law arose is that many of the transactions in maritime commerce threatened to escape law altogether. New transnational doctrines and institutional arrangements arose to prevent anarchy. The same practical necessity may lead to electronic community law.

F. Electronic Dispute Resolution for Old Communities

No matter how quickly new electronic communities spread, some important institutions will remain outside them. The problem of alienation with respect to those institutions will remain unless information technology can facilitate dispute resolution with respect to the

61. *See* 1 HENRY H. PERRITT, JR., EMPLOYEE DISMISSAL LAW & PRACTICE §§ 2.43, 4.59, (3rd ed. 1992); *Id.* § 8.9 (limiting relief to internal remedies).

old communities. There are two ways in which this might occur. First, information technology can support new dispute resolution procedures and forums. Second, the legal profession's role can be changed to make it more responsive to the needs of potential clients who experience the alienation.

Information technology can aid both rule-making and adjudication, the twin pillars of dispute resolution.[62] Relatively formal rule-making and adjudicatory procedure[63] can be more efficient and more accessible when electronic bulletin boards and electronic mail ("EMail") are used to give notice and to receive comments, evidence, and argument.[64] But electronic communication technologies also can give rise to new informal modes of dispute resolution that address minor commercial disputes more effectively than conventional methods. In particular, the asynchronous character of EMail makes it easier to register complaints and get answers than simultaneous telephone communication.[65] Also, there can be a greater chance of reaching a person with the power to resolve a dispute because EMail systems permit messages to be routed more precisely, especially if human mediators are involved in routing the messages.[66] Finally, every good mediator knows that reducing emotion can aid dispute resolution communication. EMail can be a less emotional form of communication than simultaneous voice telephone communication.

62. *See* Henry H. Perritt, Jr., *Dispute Resolution in Electronic Network Communities*, 38 VILL. L. REV. 349, 388-94 (1993) ("Modes of Dispute Resolution," explaining how more rulemaking can narrow the scope of ajudication, and how a broader scope for adjudication can eliminate the need for rule-making).

63. In virtually all United States district courts one can access the docket for a civil case remotely through a PC and electronic bulletin board technology.

64. *See* Perritt, *supra* note 44, at 84-85 (explaining how electronic rule-making and adjudication would work under the federal Administrative Procedure Act).

65. Sending EMail is more efficient and less frustrating for someone with a complaint than calling on the telephone and being put on hold. It is roughly equivalent to being routed to a voice mailbox and leaving a voice mail message. On the other hand, it may be less efficient and more frustrating if it takes an exchange of several EMail messages to clear up a misunderstanding that could have been cleared up almost immediately in a simultaneous telephone conversation.

In general, it is important to probe why EMail and other information technology techniques have greater capacity than telephone communciation to improve dispute resolution. After all, telephone communication has been around for one hundred years. Part of the answer is that telephone technology—until the advent of voice mail—required simultaneous availability. Another part of the answer is that telephone technology does not create a written record, a level of formality insisted upon by almost all dispute resolution systems. Thus, dispute resolution procedure should be more willing to rely on EMail than it is on telephonic communication.

66. EMail does not eliminate the possibility of a wild goose chase to find the appropriate person to receive a complaint. But it has the potential for hiding the search for the appropriate person from the consumer, because an EMail message can be forwarded several times without the originator having to be involved.

David R. Johnson[67] regularly has encouraged giving attention to the possibility of conversational modes of performing legal services and interacting with government officials. Interactive computerized communication techniques like EMail and conferencing[68] facilitate such conversational modes among relatively large groups of people distributed over very large geographic areas. Also, asynchronous communication through these techniques makes it easier for members of groups to interact. If such conversational modes were to become common, dispute resolution might become more accessible, reducing the alienation tendency of information technology.

Serious evaluation of the potential for conversational modes of dispute resolution requires attention to major impediments to conversation as a mode of government.[69] Conversation is antagonistic to hierarchical control. Large organizations must exercise control in order to function. Organizations usually delegate dispute resolution authority to lower levels in the organization only when forced to do so by technology.[70] When technology permits withholding authority, organizations tend to withhold it.[71] The clash between conversational modes of dispute resolution and centralization of authority has caused rejection of the doctrine of estoppel in two organizational contexts: government benefits and employee benefit plan administration.[72] In both contexts, it would seem efficient to allow a citizen or benefit plan participant to make contact with a low level representative of a government agency or of the benefit plan administrator and to make in-

67. Mr. Johnson is counsel to Wilmer, Cutler and Pickering in Washington, D.C., and president of Counsel Connect.

68. Electronic conferencing is much better than telephone conferencing because its asynchronous character permits contributions from a number of people to be batched together and read all at one time by another participant.

69. *See, e.g.*, Perritt, *supra* note 44, at 101-03 (role of formality in dispute resolution).

70. *See generally* ALFRED DUPONT CHANDLER, THE VISIBLE HAND: THE MANAGERIAL REVOLUTION IN AMERICAN BUSINESS (1977) (explaining the development of large scale organizations in the railroad and telegraph industries to control the exercise of delegated authority, and noting that a prime determinant of the locus of authority was the feasibility of exercising authority centrally).

71. Such withholding of authority from lower level personnel was one of the main sources of alienation considered earlier in this article. Much attention has been paid in recent years to reversing the migration of authority upward in hierarchical organizations. To the extent that diffusion of authority is desired, information technology greatly facilitates this. It makes it easier for lower level personnel to communicate with higher level personnel, although one needs to scrutinize exactly how EMail makes this easier than telephones. It is theoretically possible for anyone in General Motors to telephone the Chief Executive Officer, but not many people do it.

72. In employment law more generally, there is great emphasis on drafting disclaimers that reduce the apparent authority of lower level supervisors to set or vary terms of employment. Disclaimers, like rejection of the estoppel doctrine, aim at reducing the power of lower level personnel to make commitments on behalf of a large enterprise.

quiries and obtain assurances about benefit qualifications and other rules. In other words, conversational modes of dealing with actual or potential disputes are attractive. The law provides a framework for such conversational modes of governance; it makes such assurances binding on the entity represented by the lower level employee through promissory estoppel. As long as the person making the inquiry can show detrimental reliance on a statement made by the person responding in circumstances making the reliance reasonable, the law enforces the statement.[73]

But this estoppel doctrine has been entirely rejected in the federal government context in the Supreme Court's opinion in *Office of Personnel Management v. Richmond*,[74] and mostly rejected in the employee benefit plan administration context.[75] The reason is the same in both contexts. Reliance on conversational interaction through the law of estoppel erodes the integrity of higher level formal systems—the appropriations process in the case of the government,[76] and the requirement that benefit plans be administered according to the terms of written plan documents in the case of employee benefits.[77]

Rejection of estoppel is motivated in some respects by the same things that motivate the Statute of Frauds, a fear that factfinders will be misled by unreliable evidence of what actually happened in a conversation. But that is not the entire concern. The Supreme Court's rationale in *Richmond* did not depend on the assumption that the lower level governmental employee did not actually make a commitment; the Court's point was that even if the commitment actually was made, it should not be allowed to vary congressional determinations made through the appropriations and other legislative processes.[78]

73. PERRITT, *supra* note 61, § 4.39 (explaining elements of promissory estoppel).

74. *See* Office of Personnel Management v. Richmond, 496 U.S. 414, 434 (1990) (reversing court of appeals; estoppel not available to require payment of appropriated funds).

75. *See* HENRY H. PERRITT, JR., EMPLOYEE BENEFITS CLAIMS LAW AND PRACTICE §§ 3.10, 3.14, 3.25 (1990).

76. *Richmond*, 496 U.S. at 428 (estoppel would subvert appropriations clause of Constitution).

77. Miller v. Coastal Corp., 978 F.2d 622, 624 (10th Cir. 1992) (rejecting promissory estoppel claim for pension benefit accruals based on oral and written statement contradicting terms of plan). *But see* HENRY H. PERRITT, JR., EMPLOYEE BENEFITS CLAIMS LAW AND PRACTICE §§ 3.14, 3.25 (1990 & Supp. 1994) (collecting cases and explaining circumstances in which estoppel is appropriate).

78. As my colleague, James Edward Maule, said in commenting on an earlier draft of this article, "If [electronic conversation] works like I.R.S. telephone advice, forget it. (1) The telephone advice often is wrong; (2) taxpayers cannot rely on it; (3) courts will not estop the I.R.S. based on the advice; and (4) the I.R.S. denies what the employee said."

Under this view of the necessity of formal process, electronic conversations are likely to have legal effect only when the participants are principals in relatively small enterprises, or if techniques are developed to use the asychrony of electronic community to permit reflection and ratification of answers. Under this view, electronic conversation may be an important adjunct of the practice of law, as discussed in the next section, but it is unlikely to mitigate the tendency toward alienation of citizens from large institutions because it lacks the power to change dispute resolution.

But this is not the only view. Electronic conversation may actually decrease alienation by increasing the amount of conversation. As Ethan Katsh said:

> Law is, and always has been, embodied in some medium of communication .... The shift from print to electronic information technologies provides the law with a new environment, one that is less fixed, less structured, less stable and, consequently, more versatile and volatile. Law is a process that is oriented around working with information. As new modes of working with information emerge, the law cannot be expected to function or to be viewed in the same manner as it was in eras in which print was the primary communications medium. . . .[79]

Alternative forms of dispute resolution have received much scholarly and practical attention in the last decade. Most lawyers now appreciate the utility of softer, informal techniques for dispute resolution instead of, or alongside, more formal "harder" techniques. Thus, the Federal Rules of Civil Procedure, the epitome of formal dispute resolution in federal court, now require the parties to civil lawsuits and the judges hearing the lawsuits to consider "settlement and the use of special procedures to assist in resolving the dispute."[80]

Both mediation and arbitration—the most basic forms of alternative dispute resolution ("ADR")—are intended to be applied on an ad hoc basis to the specifics of actual disputes. Arbitration procedures in most instances are defined by the parties to the dispute. Mediation is almost entirely defined through the instincts of a good mediator and

The last of these problems would be mitigated by the use of EMail because it creates a record of what is said. The first three problems would remain, or at least they would not be changed merely by changing the technology.

79. Ethan Katsh, *Law in a Digital World: Computer Networks and Cyberspace*, 38 VILL. L. REV. 403, 406 (1993) (part of symposium, "The Congress, the Courts and Computer Based Communications Networks: Answering Questions About Access and Content Control").

80. FED. R. CIV. P. 16(c)(9). The Advisory Committee notes on paragraph nine specifically mention exploration of the possible use of mini-trials, summary jury trials, mediation, neutral evaluation, and nonbinding arbitration that can lead to consentual resolution of the dispute without a full trial on the merits. FED. R. CIV. P. 16 advisory commitee's note.

the agreement of the parties to a particular dispute. Information technology enormously increases the range of choice for participants in ADR. It frees them from the limitations of both time and space. Conversations and "hearings" can be held without everyone being present at the same place. Because information technology increases the range of possibilities for ADR, it should increase the range of disputes in which ADR can be effective. Thus, it is premature to conclude that electronic conversation cannot transform dispute resolution. Law has only just begun to think about the potential for a combination of information technology and ADR.

G. The Legal Profession as Both an Old and a New Community

Information technology can do more than change dispute resolution; it also can change the role of lawyers more generally. As information technology puts stress on old communities and encourages new ones, so also will it change legal communities. The delivery of legal services, is after all, being automated. Law is an information processing business. Law firms, courts, legislatures, law schools, and practicing lawyers all function by processing information. Information is their raw material, and different information is their output. They do not fabricate physical materials or transport physical goods; they transform and transport information. When the technology for handling information changes, law, legal institutions, and legal procedures necessarily change. Professor Ethan Katsh is one of a handful of scholars who has recognized the relationship between information technology and legal process.[81]

The possible impact of information technology on the practice of law is reflected in the fascination with artificial intelligence as a way of transforming legal institutions. But despite nearly a decade of on-again, off-again enthusiasm for artificial intelligence ("AI") and rule-based substantive legal systems in law firms, there has been almost no use by law firms of such technologies to gather information, to diagnose problems, and to deliver services. The AI-and-Law Movement's[82] recognition of the impact of technology was correct, but the Movement's prescription for technology's influence has not borne fruit. So far, rule-based systems are too rigid to perform law's real

81. *See* M. ETHAN KATSH, THE ELECTRONIC MEDIA AND THE TRANSFORMATION OF AMERICAN LAW (1989).

82. *See* HENRY H. PERRITT, JR., HOW TO PRACTICE LAW WITH COMPUTERS ch. 9 (2d ed. 1992) (artificial intelligence and legal reasoning).

functions[83] and their development requires a kind of investment for which there is no apparent return. Rule-based systems deployed in law firms increase lawyer productivity, but they require significant investments of lawyer time for their development. Neither the productivity gains nor the investment is attractive in hourly-billing practice cultures. The mechanism for earning a return on this investment is sufficiently obscure to discourage anyone from investing the intellectual capital.

Moreover, automating consumer and small business legal services embodies significant economies of scale. Because law firms traditionally have been much smaller than other types of enterprises and because most firms serve only local markets, the scale of the firms does not match the economies of scale of the technology.

Because of questionable return for investment and because of a mismatch between minimum optimal scale for the technology and the size of law firms, rule-based expert system technology has not been widely adopted by law firms, but instead has been deployed through consumer products.

Deployment of rule-based technology in client-oriented software suggests refocusing the profession's attention. The revolution in information technology makes it easier to access decision-making institutions directly and remotely, which raises questions about the continued need for existing intermediaries in the legal system. Lawyers are intermediaries. Cheaper and more pervasive technological links between a citizen and courts, agencies, and legislatures present challenges for the traditional role of lawyers as gatekeepers for these institutions.

Rule-based legal expert systems *have* been commercially successful, but mostly when they have been packaged in consumer products and sold directly to clients. Tax preparation software is probably the biggest success story in this vein,[84] but more and more will prepara-

83. This is an instance of a more general problem with AI: its inability to deal with natural language problems like interpretation and context.

84. Professor Maule, *supra* note 78, challenges the reasoning. He says that much tax preparation software is wrong on a number of things, cannot handle many client problems, and requires user resolution of legal issues as a part of entering data. More fundamentally, he observes that tax preparation software is diverting business from preparers other than lawyers and has had little effect on tax law practice. My response is to wonder whether tax preparation once was the province of the legal profession. If it was, the loss of this business reinforces the main point developed in the text. If it was not, and if the utility of the software is marred by legal flaws, then the argument developed in the text still works because if lawyers "prescribe" the tax preparation software, everyone would be better off. Lawyers would have more business, and clients would have more legally sound tax returns.

tion and small business form software is showing up on the shelves of computer stores, bookstores, and office supply stores. Such client-oriented software is responsive to the unavoidable reality of the economics of legal service delivery. Lawyers want to earn nice incomes, and must earn them to repay student loans. Potential clients are unwilling or unable to pay legal bills in the thousands of dollars except for once-in-a-lifetime catastrophes like divorces, criminal prosecutions, or bankruptcies. Business takes advantage of every opportunity to do without lawyers. It is difficult to bring the income needs of lawyers into equilibrium with price resistance of clients as long as legal services remain so labor intensive. Rule-based client software is one apparent way to reduce the labor intensity. More effective use of integrated telecommunications, database, and computer systems is another.

One unhappy possibility is that more and more legal services will migrate away from traditional law practices to enterprises that sell automated legal software products directly to clients. A happier possibility is that lawyers will become the designers and prescribers of client-oriented legal systems. This possibility is best described by drawing an analogy between lawyers and physicians and between information technology and pharmaceuticals. Drugs, like client-oriented computer software, can be used directly by patients (clients) rather than being administered by physicians (lawyers). Historically, the growing availability of pharmaceuticals in health care could have diverted an increasing fraction of patient care away from physicians to commercial suppliers of over the counter pharmaceutical products. Such a diversion would be analogous to the diversion of client support from lawyers to rule-based computer software.

But that did not happen. Some of the most efficacious drugs are available only on a prescription basis, and this keeps physicians busy as intermediaries between pharmaceutical enterprises and patients.

It is conceivable that substantive legal systems could evolve in an analogous way. When an individual or small business person has a legal problem, she could go for an initial—and often final—consultation with a lawyer.[85] The lawyer would hear the client in the usual way and then would prescribe a particular software package for the particular problem. Of course, as in medicine, there would be legal problems that require a sustained course of treatment, but these

85. The consultation might be preceded by automated fact gathering as described later in this section.

would be the exception rather than the rule. Also, as the litigation process becomes more highly automated, especially through video trials, the lawyer could prescribe video depositions to be administered by subcontractors much as physicians now prescribe x-rays, radiation treatments, or chemotherapy to be administered by radiation technicians or a nurse.

There is another way in which information technology can be used to enhance the delivery of legal services directly to clients. This does not involve shrink-wrapped "prescription" legal software, but involves use of automated communication and information systems by law firms. An important cost to clients of obtaining legal services is the trip to the lawyer's office or telephone tag trying to make telephone contact.[86] Computerized voice response systems, representing an integration of database, voice mail, and bank-by-phone technology applications, can facilitate the initial contact between the client and the lawyer. On initial telephone contact, a client could be offered a menu with a choice of typical legal problems: simple wills, uncontested divorces, or demand letters in consumer disputes. Then, based on the client's selection, the automated system would prompt the client to enter spoken responses to a series of fact gathering questions. The system would allow the client to make responses orally, which would be transcribed into a rule-based expert system template, or packaged digitally for replay to an attorney, who then could give further direction to support staff through voice annotations. Additionally, as more and more clients have answering machines and voice mail, the legal profession could take full advantage of enhanced technology on the client's end to present follow up questions.

Of course such technology would not obviate the need for face to face contact. One of the most important things a client gets from direct contact with a good lawyer is sympathy. One of the most important things a good lawyer gets from direct contact with a client is a holistic judgment about credibility and reliability. The technology would reduce the labor intensity of routine fact gathering and permit lawyer time to be more sharply focused on matters requiring lawyer attention, but it would not eliminate all human contact.

86. *See* Wayne Moore, *Improving the Delivery of Legal Services for the Elderly: A Comprehensive Approach*, 41 EMORY L.J. 805, 828-35 (1992) (explaining successful hotline system for advising the elderly about their rights to benefits and about other common legal problems; advocating greater use of hotline concept).

III. TECHNOLOGY DEVELOPMENT NEEDS

Electronic community cannot advance as far or as fast as suggested in this article unless different modes of electronic interaction become more fully integrated. In particular, it is necessary for voice input to become more tightly integrated with asynchronous communication systems. This can occur by facilitating conversion of voice input into textual messages, using EMail and bulletin boards as the basic system architecture. It also could occur by the integration of analog or digital voice messaging with EMail and bulletin board systems. Thus, there would be no difference between a voice mail system and an EMail system.

Tighter integration between text and voice would improve the accessability of electronic legal communities to lawyers and citizens who do not have immediate access to keyboards and monitors. Thus, potential participants who cannot type well or who simply are not near a computer workstation can participate simply by using an ordinary telephone. There is no reason for the voice mail revolution to occur completely independently of the desktop computer and computer network revolutions. All are a part of an appropriately conceived national information infrastructure.

Today's Internet is an example of what tomorrow's NII should be in at least one major respect. The Internet is an open architecture. What makes it special and distinguishes it from scores of proprietary networks is its ability to allow completely dissimilar computing systems to exchange information with each other. Preserving this basic open architecture and interoperability, while also addressing access, authorship, authentication, and autonomy, is a major challenge for the NII.

Indeed, there is conceptual tension between community and universal compatibility. Communities are defined in large part by distinctions between them and other communities and the larger universe of which they are a part. The natural way to achieve such distinction in electronic networks is through some measure of technological isolation, ranging from encryption schemes shared by the members of a particular community to value enhancements such as specialized interfaces for certain communities such as Counsel Connect or CompuServe. Specialized applications co-exist with basic universal interoperability in today's Internet, and it is important that such coexistence continue in the NII.

NII-wide standardization of all information technology features is neither feasible nor desirable. What is important is to ensure that interconnection (today's telnet), EMail exchange, and file transfer (today's ftp)[87] across the boundaries of electronic communities and other subnetworks continue to be readily available for all of the basic types of information formats in the NII.

CONCLUSION

There always has been a close relationship between technology and law. Technology produces new conflicts that law must figure out how to resolve.[88] Technology also changes the way law is practiced. Information technology is continuing the tradition. It is eroding old community ties and strengthening new ones. As citizens do not get what they expect from the old communities, they will look to the legal system to remedy their disappointments. As the new communities are established, their members will look to the legal system to arrange mechanisms to assure access, to protect tangible and intangible property against free riding and piracy, and to authenticate economically valuable electronic transactions. In responding to these demands from old and new communities, the legal profession itself will be responding to changes wrought by information technology, struggling to bring the cost of legal services into balance with what potential clients are willing to pay. Much lawyer creativity will be required to make appropriate use of rule-based client support systems and client-lawyer communication systems.

The three difficult questions are:

1. Will the electronic communities be real communities?

2. Will the electronic communities be different from "communities" resulting from telephone communication, which has been universally available for almost a hundred years?

3. Will conversational modes become a more powerful form of legal communication?

87. File transfer protocol ("ftp") is a basic Internet protocol that permits files to be transferred between dissimilar computer systems across the Internet. Telnet is a basic Internet protocol that permits the users of one computer system to log in remotely to another computer system across the Internet, even though the two computer systems are dissimilar.

88. This article does not exhaust the universe of issues. Other issues include how to teach people the language and techniques they need to deal with the new technologies; how to assure universal service (i.e., how to prevent wealth transfers resulting from the use of new technologies); and how to avoid increasing already-existing alienation.

All three of these questions are in some sense empirical. The first also is conceptual because it requires agreeing on the definition of community. Both the empirical and conceptual dimensions of all three questions are worth further inquiry. In pursuing those inquiries and in working out the legal issues raised in this article, lawyers and law students will play their traditional roles as bridgebuilders, uniting technology and law.