

9. Policies for Freedom

As computers become the printing presses of the twenty-first century, ink marks on paper will continue to be read, and broadcasts to be watched, but other new major media will evolve from what are now but the toys of computer hackers.¹ Videodisks, integrated memories, and data bases will serve functions that books and libraries now serve, while information retrieval systems will serve for what magazines and newspapers do now. Networks of satellites, optical fibers, and radio waves will serve the functions of the present-day postal system. Speech will not be free if these are not also free.

The danger is not of an electronic nightmare, but of human error. It is not computers but policy that threatens freedom. The censorship that followed the printing press was not entailed in Gutenberg's process; it was a reaction to it. The regulation of electronic communication is likewise not entailed in its technology but is a reaction to it. Computers, telephones, radio, and satellites are technologies of freedom, as much as was the printing press.

Trends in Communications Technology

The technologies used for self-expression, human intercourse, and recording of knowledge are in unprecedented flux. A panoply of electronic devices puts at everyone's hand capacities far beyond anything that the printing press could offer. Machines that think, that bring great libraries into anybody's study, that allow discourse among persons a half-world apart, are expanders of human culture. They allow people to do anything that could be done with the communications tools of the past, and many more things too.

The first trend to note is that the networks that serve the public are becoming digital and broadband. Today, the only broadband signal received by the ordinary household is its television picture. It

is sometimes questioned whether there are any other uses for which an end-to-end broadband digital network available to every household and workplace will be demanded. Such a network would allow two-way transmission of high-definition pictures and text in whole volumes at a time, along with voice, videotex, and other low-speed services, but why should that be wanted? There are, indeed, good reasons. High-definition pictures are not just fun. As manual mail service gets less reliable and more expensive, the sending of magazines, catalogues, videotapes, and videodisks electronically rather than physically will become an attractive option. Nor is text delivered in whole volumes at a time just a luxury. Text a page or so at a time, even if it comes faster than one can read, is satisfactory for electronic mail or for retrieving pages one knows one wants, but it does not do for browsing. To use a terminal the way one uses a bookshelf or filing cabinet, one must be able to thumb randomly through thousands of pages. And when computers talk to computers, even though the size of the files they flip back and forth may be modest, a second is too long for them to wait; their bursty traffic requires large bandwidth for short periods. Millions of offices and homes may have computers and want bandwidth enough for them. So if people at home or work want high-definition moving pictures, if they desire two-way video for teleconferencing or teleshopping, if they wish to browse in libraries rather than just reading predefined pages, and if they compute, then the demand for end-to-end broadband networks will exist.

To serve the public, there will be networks on networks on networks. Separate nations will have separate networks, as they do now, but these will interconnect. Within nations, the satellite carriers, microwave carriers, and local carriers may be—and in the United States almost certainly will be—in the hands of separate organizations, but again they will interconnect. So even the basic physical network will be a network of networks. And on top of these physical networks will be a pyramid of service networks. Through them will be published or delivered to the public a variety of things: movies, money, education, news, meetings, scientific data, manuscripts, petitions, and editorials.

Another trend to note is toward increasing sophistication of the equipment on the user's own premises. Since the output and input of networks may be either printed on paper, shown on a screen, or declaimed in sound, the equipment needed on the customers' premises will be costly. Although the costs of computer logic, memory, and

long-distance communication are falling, the uses that people want to make of them are expanding even faster. A \$4000 microcomputer can today do things that would have required a million-dollar computer a few years ago, when few would have predicted that millions of ordinary people would spend \$4000 for that home gadget. In the future, many millions of households will similarly desire large-size high-definition screens, cameras to originate video, and large memory devices to retain libraries of information for work and pleasure.

American industry is speculating that the percentage of disposable income spent on information activities will grow. Companies are positioning themselves to be in that industry. Banks like American Express and manufacturers like Westinghouse are investing in cablecasting; companies like Boeing are selling time-sharing services; and storekeepers like Sears Roebuck are experimenting with videodisk catalogues. Investors see the biggest dollar growth not in transmission or its hardware but in software and the equipment located on the customer's premises. This conclusion is what led AT&T to accept divestiture of its local phone companies in exchange for the freedom to sell information services and equipment to final customers. The science fiction version of the information work station of 2001 with beeps and sirens, flashing lights and video screens, may be fantasy, but the point is right: that is where expense will lie.

Paradoxically, big customers and decentralization will both gain from the development of more elaborate terminal equipment. However splendid may be the homeowner's equipment, it will be only a humble version of what will exist in plants and offices. Companies with information service and carrier billings in the millions will invest in their own networks, leased circuits, compression devices, and other marvelous gadgets designed to help them operate efficiently or cut costs. Depending on the structure of the vendors' and carriers' tariffs, different alternatives will pay off. One trade-off will be between buying communications capacity so as to improve management control and buying local processing power so as to cut communication costs. Trends between such centralizing and decentralizing alternatives may zigzag as technological and tariff changes affect relative prices, but the costs of computing equipment used to store data locally, to compress it, and to process it will probably fall farther and faster than the costs of transmission.

This trend favors decentralization. More and more will be done at the distributed nodes of networks to economize on transmission. That dispersion will be pushed farthest by big users, for they have

the resources and technical capability to do so. When in large enterprises the competence and autonomy of scattered nodes are thus strengthened and their subservience to a center is thus lessened, the result, paradoxically, may be decentralization.

Another obvious trend is that with the new technologies, the world is shrinking. To talk or send messages across the world is coming to cost little more than communicating in one's own region. The charge for a call from New York to Los Angeles is now little more than for a call from New York to Albany. Both involve identical costs for the local loops and switches, for setting up the call, and for billing. The variable cost of extra microwave links is a minor item. With satellites, distance becomes almost totally unimportant. Patterns of human interaction will, as a result, change. There will be less cost constraint to do business, consult, debate, and socialize within one's own region only. There will be more freedom to do so with anyone anywhere with whom one finds affinity.

This development, along with the development of multiple technologies of communication and of cheap microprocessors, will foster a trend toward pluralistic and competitive communication systems. With hundred-channel cable systems, videocassettes, videodisks, ISDNs, and network links to thousands of on-line information services, there should be a diversity of voices far beyond anything known today. Telephone monopolies are being broken up. Before computers, phone administrations forbade connecting any "foreign attachment" to their network; today in the United States, Japan, Great Britain, and elsewhere, customers are being allowed to buy terminals at will and to attach them. Before microwave and satellite transmission, phone administrations had a monopoly in stringing wires from city to city, but these new nonwire transmission media are often managed by different enterprises. In the United States such competition already prevails in long-distance service, and local exchange service will not long remain completely monopolistic. Digital termination service, cellular radio, and cables carrying voice and data will all compete with the local phone company.

There is no reason to assume that the communications network of the future will be a single large organization with a central brain. It may be so, but it need not be. Having a hierarchical structure governed by a central brain is only one way to organize complex systems. A human being is organized that way; so is a nation-state. But the capitalist economy is not, nor is the complex system of scientific knowledge, nor is the ecological system of the biosphere. For an un-

centralized system to function, there must be some established ways of interconnecting the parts other than by command; the interconnections may be managed by conventions, habits, or Darwinian processes. Capitalist property rights are enforced by laws; language is enforced by custom; creatures in the biosphere do not survive if they cannot metabolize other species.

An uncentralized set of communications systems can function as a single system only if traffic on each network can move through interfaces onto the other networks. The critical requirements are three: the right to interconnect, conformity to technical standards that make interfacing possible, and a directory system.

The variety and autonomy of networks for special groups and services may grow rather than decline, though most of them will interconnect with each other. Some of these networks will and others will not have their own central brains. The different kinds of communication—video, voice, and text; informational and emotive; public and personal—are likely to require differently designed networks, even if interconnected.

Digital technology promotes the trend toward distributed processing throughout the system and against a central brain. It is easier to convert one system of 0,1 pulses into another such system than it is to interface the analog memoryless communications systems of the past. A directory search in the absence of a single universal list is more likely to succeed if it uses intelligent digital devices that scan associative data structures at nanosecond speeds and that communicate with all nodes at the speed of light than if it is bound by the slower circuit switching of the past.

Perhaps the most remarkable trend to note is one whereby the artificial intelligence of computers will increasingly create and read many of the messages on the networks of the future. These computer-composed messages sent from computer to computer may mostly never be seen by a person at all. In an electronic funds transfer, only a few bits are needed to say debit an account by \$27.50. Most of the traffic involves checking and rechecking to see whether the signature is authentic, whether money is available, and what balance is left.

The future of communications will be radically different from its past because of such artificial intelligence. If media become "demasified" to serve individual wants, it will not be by throwing upon lazy readers the arduous task of searching vast information bases, but by programming computers heuristically to give particular readers more

of what they chose last time. Computer-aided instructional programs similarly assess students' past performance before providing the instruction they need. The lines between publication and conversation vanish in this sort of system. Socrates' concern that writing would warp the flow of intelligence can at last be set to rest. Writing can become dialogue.

Such are some technical features of the communications system that is emerging. Technology will not be to blame if Americans fail to encompass this system within the political tradition of free speech. On the contrary, electronic technology is conducive to freedom. The degree of diversity and plenitude of access that mature electronic technology allows far exceeds what is enjoyed today. Computerized information networks of the twenty-first century need not be any less free for all to use without let or hindrance than was the printing press. Only political errors might make them so.

Communications Policy

In most countries the constitution sets the framework for communications policy.² America's basic communications policies are found in three clauses. Article 1, Section 8, gives Congress the power to establish post offices and post roads. The next clause gives Congress the power "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." And the very first amendment prohibits Congress from passing any law abridging freedom of speech or of the press. This package of provisions provided publishers with the support they needed but barred the government from interfering with their free expression.

In the comparatively simple American society of the eighteenth century, when the media depended largely on the slowly changing technology of the printing press and when government consisted of the relatively spare mechanisms of the courts, Congress, and a tiny executive branch, communications policy issues were few. They arose most often from the ability of the government to use its fiscal powers both for and against the press. The American people did not oppose the government's use of its fiscal powers to support the press. The authorities did so through the postal system, official advertising, and sinecure appointments. The idea that government should stand at arm's length from the press developed later; the earliest federal

policy was to foster the media. The other possibility that government might employ its coercive powers against the press was prohibited by the First Amendment.

As Congress, the executive branch, and the courts dealt with innovations in communications technologies and, during the two centuries following adoption of the First Amendment, sought to formulate policies appropriate to them, the Amendment's original principles were severely compromised. The three main decades of such change occurred at intervals a half-century apart. In the 1870s Congress and the courts extensively restructured postal policies, imposing censorious restrictions. Also in that decade, and shortly before it, the system of common carrier regulation of telegraphy evolved. Fifty years later, in the 1920s, radio broadcasting began. For that medium Congress required that broadcasters be chosen and licensed by the state. Then half a century later, in the 1970s, computer networks, satellites, and cable systems came into extensive use. Some of the regulatory responses to them seem quite unconstitutional.

Both the 1870s and the 1920s were decades of ambivalence about civil liberties. In the 1870s a rising reform movement about both morals and economics challenged the prevailing philosophy of laissez faire. Movements for temperance, prudery, voter registration, and labor protection clashed with ideas of minimal governance. Reformers pressed for acceptance of the regulation of mail as an instrument of censorship. The 1920s saw the Palmer raids, on the one hand, and the Brandeis-Holmes dissents and decisions, on the other.³ The sensitivity of the Supreme Court to the First Amendment, starting in the 1920s and particularly after World War II, led it to blow the whistle and stem the trend toward postal censorship.

It was in the 1920s, however, that communications policy in the United States most seriously lost its way. Without adequate thought, a structure was introduced for radio which had neither the libertarian features of the common carrier system nor those of the free market. The assumption of the new system was that spectrum was extremely limited and had to be allotted to chosen users. In Europe the chosen user was generally the government itself; in America it was private licensees. Since only a few would be privileged to broadcast, government felt it must influence the character of what they broadcast. The broadcasting organizations, unlike common carriers, selected and produced programs, but unlike print publishers, who also select what appears, there was no free entry for challengers. So gov-

ernment stepped in to regulate the radio forum and shape the broadcasters' choices.

By this process of evolution there came to be three main communications structures in the United States: the print model, free of regulation in general; the common carrier model, with government assuring nondiscriminatory access for all; and the broadcasting model, with government-licensed private owners as the publishers. The choice between them is likely to be a key policy issue in the coming decades. A convergence of modes is upsetting what was for a while a neatly trifurcated system. Each of the three models was used in its particular industries and for different types of communications. As long as this was the case, the practices in some industries might be less true to the First Amendment than the practices in others, but it did not much affect those media that remained in the domain of the First Amendment. What happened in one industry did not matter greatly for what happened in another.

If this situation were a stable one, there would not be much cause for worry, for if the nation retained a free printed press through which all viewpoints could be expressed, it would not lose its freedom even if broadcasting were totally government controlled. Having print as an island of freedom might be assurance enough against total conformity to authority. But the situation is not stable.

Very rapidly all the media are becoming electronic. Previously the print media were affected, but not themselves transformed, by the electronic media. The electronic media grew and enlarged their field of action but left the older media fundamentally what they had been before. This is no longer the case. With electronic publishing, the practices of the electronic media become practices of the print media too. No longer can one view electronic communications as a circumscribed special case whose monopolistic and regulated elements do not matter very much, because the larger realm of freedom of expression still encompasses all of print. Telecommunications policy is becoming communications policy as all communications come to use electronic forms of transmission.

Soon the courts will have to decide, for vast areas that have so far been quite free of regulation, which of the three traditions of communications practice they will apply. The facts that will face the courts will be a universally interconnected electronic communication system based on a variety of linkable electronic carriers, using radio, cable, microwave, optical fiber, and satellites, and delivering to every home and office a vast variety of different kinds of mail, print,

sound, and video, through an electronic network of networks. The question is whether that system will be governed as are the regulated electronic media now, or whether there is some way of retaining the free press tradition of the First Amendment in that brave new world.

Resource Constraints

Historically, some media operate by different rules under the First Amendment from those applied to publications in print because of the existence of scarcities in the resources used in producing them. Abundance and scarcity of resources are the two ends of a continuum. At one end, communication is entirely unconstrained by resources; in the middle are situations in which there is constraint, but everyone can nonetheless have some ration of the means to communicate; and at the other end the constraints are such that only a privileged few can own those means.

Conversation illustrates the optimal situation in which communication is totally without resource constraints; the only limit is one's desire. There is also sidewalk enough in most places that anyone can picket a building without excluding others from passing by, though not when hundreds want to protest in the same place at once. In practice there is no resource bar to forming a congregation to worship together, as witnessed by storefront churches and congregations that meet in members' homes. Similarly anyone can send a petition or write a letter of protest. The property required to carry out these acts is trivial.

Even in such domains, where normally anyone can communicate at will without noticeably reducing the opportunities for others, there are exceptional situations in which one person's wants do constrain others. Conversation may be abundant, but conversation with a particular partner is an imposition on that person. Assemblage as a congregation can be almost costless, if in a member's home, but building a large church on a desirable lot is not. In each of these situations the cliché formula is that people have the right to do as they wish, so long as they do not interfere with the rights of others. But communication in such situations involves so few resource constraints that no special institutions are set up to deal with them.

The situation is more complex when the resources for communication, while not unlimited, are available enough that by reasonable

sacrifice and effort a person can get hold of some. In this situation allocation by the institutions of property and the market becomes a useful norm. An example is the printed magazine. Even the poor, by scrimping and cooperating, can produce periodicals, and some of them do. There are church bulletins for modest congregations, labor and protest papers, adolescent club and school papers. There are thousands of little magazines with stories and poems by unknown amateurs. To convert a publication into a success requires talent, capital, and energy; if the talent and energy are there, the capital may even be borrowed.

In such situations of moderate scarcity, however, not all people can have whatever means of communication they want. The means are rationed. The system of rationing may or may not be equitable or just.⁴ There are an infinity of ways to partition a scarce resource. The method may be strictly egalitarian, as that which requires all legal candidates to be offered the same amount of air time under the same terms during an election campaign. The method may be meritocratic, as that which gives free education to those who score high in exams. The method may recognize privilege, as that which allows a descendant to inherit a communications medium or a seat in the House of Lords. The method may recognize cultural values, as that which occurs when a foundation makes grants to museums or symphonies. The method may reward skill and motivation, as that which allows communications institutions to earn profits that depend on their efficiency.

Each of these criteria for allocation has its value, and actual public policy represents different mixes of them. Equality may have both rhetorical appeal and a great deal of merit. Yet few people would opt for totally equal access to scarce means of communication, quite independent of considerations of talent, motivation, or social value in their use.

Property rights in the means of communication are a major method of allocation, but different property schemes produce different allocations. In some property schemes, if people who have radio frequencies do not use them, their right lapses and the frequencies revert to the allocating agency. This is like the small print which reads, "This ticket is nontransferable." In a market scheme, however, the owners may, within the limits of the law, pass on their resource to someone else as a gift or as part of a deal. A market scheme is predicated on a lack of faith in administered wisdom; it treats

whatever allocations exist as a starting point only. It assumes that the distributed wisdom among the property holders is greater than that of a central planner.

The law creating a market defines the mix of deals that may be made and specifies some as illegal. A person moving may sell a house, but perhaps under zoning laws it may not be turned into a tavern. A shipowner with a radio license may sell a ship, including the radio facilities, but may not turn the ship's frequency to broadcasting. A cablecaster may sell a system to someone else but, under American rules, may not sell it to the owner of a television station in the same town.

Property is, in summary, simply a recognized partition of a resource that is somewhat scarce. A market is a device for distributing the use of that property. It measures the value people attach to different uses; it allows for shifts in the uses; and it depoliticizes decisions by decentralizing them. But a market is not a single device; it is a class of devices, and public policy defines the market structure.

Where some resource is either very scarce or not easily divisible, ordinary markets function badly. Spectrum, given the way it is now administered, is scarce enough that every small group cannot have its own television station. A telephone system is indivisible in that what is needed is a universal system. In such cases of monopoly or partial monopoly of the means of communication there are problems for free societies. It was for such situations that the common carrier approach was developed in the nineteenth and early twentieth centuries. Common carriers are obligated to offer their resources to all of the public equally. In the American constitutional system this is an exceptional fallback solution. The basic American tradition of the First Amendment is either the free-for-all of free speech or the competitive market of the early press.

Since scarcity and indivisibility of resources compel a departure from the print model, it is important to estimate what major scarcities and indivisibilities will appear in the evolving electronic media. Despite the profusion of means of communication that are coming out of the technology of the late twentieth century, a number of truly scarce or indivisible elements will remain in the communications system. Despite the cliché of broadcast regulation that frequencies are exceptionally scarce, spectrum is not one of them. If spectrum were allotted by sale in a market, the prices would not be prohibitive, for there are now numerous alternatives, such as data compression or transmission by coaxial cables or optical fibers, which

would become economic in the presence of relatively low costs for air rights. Spectrum is only of medium scarcity.

The orbit for satellites is today what spectrum was in 1927, something that at first glance seems inherently and physically scarce. If the technology of orbit usage remained that of the 1970s, orbital slots in the Western hemisphere would have run out by about the time this book got published, and in many other places shortly thereafter. However, techniques for orbit and spectrum saving are multiplying. The real problem is spectrum, not real estate on the orbit. There is abundant space for the satellites themselves. The difficulty is to find frequencies for communicating to and from the satellites without causing radio interference. Polarization, spot beams, time-division multiplexing, on-board switching, and direct satellite-to-satellite microwave or laser links are among the techniques that help. These require agreement to use technically efficient methods, which may not be the cheapest ones. The orbit problem turns out to be a special case of the familiar spectrum problem. To keep prices down requires agreement on and compliance with efficient standards and protocols. But at a price, as much of the resource as is wanted is likely to be available.

Though neither spectrum nor orbital slots are too scarce to be handled by normal market mechanisms, there are other more severe elements of monopoly in the system. One is the need that basic communications networks be universal in reach. If anyone is to be able to send a message or talk to anyone else, there must be universal connectivity, directory information, agreed standards, and a legal right to interconnect.

Another element of communications systems that makes for central control is the need to traverse or utilize the public's property. The social costs of not granting the right of eminent domain for transmission routes are very high. Also streets have to be dug to lay cables. These requirements affect many people who are not direct participants in the arrangements.

Finally, there are areas of natural monopoly where the larger the firm, the more efficient its operation, so in the end the smaller competitors are driven out of business. This has been the case for American newspapers. They depend heavily on advertising by merchants. Where there is more than one paper in a town, merchants find it more efficient to advertise in the larger one, and the smaller ones wilt.⁵ The situation was similar when there was more than one phone company in a city; customers joined the larger system because

there were more people whom they could then call. Customers would also pick the larger cable system if more than one served a neighborhood. The larger system that shared the fixed plant costs among more subscribers could charge less, and with more revenue it could offer more or better programs.

In communications, economies of scale are found especially in wire or cable transmission plant. The large investment in conduits reaching everywhere dominates the equation. There is no such strong economy of scale either in over-the-air transmission or ordinarily in programming or enhanced services. Where economies of scale and therefore natural monopolies do exist, some form of common carriage access is appropriate. It exists in phone service. Common carriage in some form may well come for cable as well.

Although there are elements of natural monopoly in both newspaper and electronic carrier markets, common carrier procedures have been applied in one and not the other. A newspaper may be the only one in its town, yet still it enjoys all the privileges of the ordinarily competitive printed media. Under the First Amendment, as interpreted in the Tornillo case, it cannot be forced to yield access to anyone.⁶ The issue of whether, as a monopoly, it should be so compelled is not a trivial one. Barron's argument in Tornillo was not dismissible lightly, but the Court did reject it and continued to give newspaper owners full autonomy of editorial decision.

The fact that the newspapers have maintained such freedom from a requirement that normally goes with monopoly distinguishes them from cablecasters, who are ordinarily required by their franchises to provide some access. Historical complexities, not simple logic, account for this paradox. In both cases, but especially for newspapers, the scope of the monopoly is incomplete. At least as important is the fact that newspapers, reared in the tradition of a free press, have behaved so as to discourage the issue from arising. Newspapers, as they moved into the status of monopolies, had the wisdom to defuse hostility by acting in many respects like a common carrier. Aware of their vulnerability, they voluntarily created something of an access system for themselves. Unlike their nineteenth century ancestors, they see themselves as providing a forum for the whole community. They not only run columnists of opposite tendency and open their local news pages willingly to community groups, but also encourage letters to the editor. Most important of all, they accept advertising for pay from anyone. Only rarely does a newspaper refuse an ad on grounds of disagreement. If newspapers were as opinionated as they

used to be in the days when they were competitive, public opinion would have long since acted against their unregulated monopoly.

Furthermore, newspapers are far from having a complete monopoly. Newspaper publishers, like cablecasters, argue that they are not a monopoly in an appropriately defined market. Even if there is only one newspaper in a town, there are many ways in which opinions get distributed in print. A handbill or periodical of opinion competes with a newspaper in the marketplace of ideas. News magazines and suburban papers also compete.

The Tornillo decision is not likely to be reconsidered. Newspapers are facing growing competition. Electronic information services and specialized national newspapers will erode still further their local monopoly. If such monopolies have not constrained open discussion in print up to now, they are even less likely to do so in the future.

Cablecasters claim that their situation is no different from that of the press, so they deserve exactly the same treatment. They argue that they too will maintain an open forum. Perhaps fifteen years hence one will be able to say that the cable industry saw the writing on the wall and behaved in a statesmanlike manner. Maybe it too will have voluntarily made channels available to all, even leasing channels to competitors. Maybe by then the newly emerging technology of a broadband ISDN on the telephone network will also have made it no longer sensible to talk of cable monopoly. But there is reason to doubt such expectations. The technical solution may come slowly, and the forecast of statesmanship is hardly supported by present behavior. Newspapermen come from a tradition of political combativeness and First Amendment principle; cablecasters come from the tradition of show business. Newspapers are an unregulated industry proud of their independence from the state; cable is a regulated franchised business. To look to the cable industry for such sensitivity to First Amendment considerations as to prevent the access issue from becoming intense is probably unrealistic.

There are economic reasons why radical surgery to separate carrier from content in cablecasting would not work in America. There is not now, nor will there be in the near future, the volume of carrier business needed for private cable businesses to expand in this way.⁷ But given the temptation for a cable monopoly to stifle uses that do not interest it, and given the self-serving positions against requirements for channel leasing that the industry has taken, there is good reason for city governments, when franchising a cable monopoly, to

require that at least leased access on a nondiscriminatory basis be provided. There are ways in which this can be done without destroying the economics of the systems. Nor does a leasing requirement in a franchise deny cablecasters their First Amendment rights.

Cable monopolies, owing to the physical problems of traversing the city's terrain, exist by grace of government franchise. Local newspapers are natural economic monopolies. This is a difference of a kind the courts have recognized.⁸ The distinction can be stated in terms of resource constraint. Local newspaper monopolies arise from choices that consumers and suppliers make in the market, not from the existence of constraints that are so severe as to prevent the effective making of such market choices. Nonetheless, until the electronic media shake the present newspaper structure and bring readers into easy contact with competing news sources, local press monopolies will remain common. The paradox will continue of a monopolized print medium enjoying the freedom of the print tradition, while common carrier and regulated practices continue for electronic media, some of which operate under severe resource constraints and should therefore be obliged to provide access, and others of which do not.

The precise structure of common carrier regulation as embodied in the FCC's common carrier rules and the 1934 Communications Act is quite properly being questioned as burdensome. But the core of the common carrier concept, namely that a vendor with monopoly advantage in the market must provide access to customers without discrimination, remains often applicable to basic electronic carriers, as it was in the past to the mails.

The Policy Debate about Monopoly

Fear of monopoly has been at the core of most current communications policy debates and of most proposals to depart from the First Amendment tradition. "Monopoly" was the word used in 1927 by those attacking AT&T's attempt to set up a broadcasting common carrier. It is the word now being used by postal and telecommunications administrations in defense of their exclusive right to carry messages among the public. It is the word used to justify special restraints on AT&T.

Monopoly implies a single entity, but what is generally discussed is rather a matter of degree. A company of sufficient size to affect the

market in which it operates is said in popular discourse to have some monopoly power. The television networks are frequently called monopolies, though there are three of them. The word "oligopoly" exists, but not in lay discussions. Furthermore, it describes only one of the ways in which partial monopoly power may exist. The very small publisher of a neighborhood shopping throwaway is most often a monopolist in the neighborhood but is in fierce competition for advertising with the city daily newspaper and thus has very little market power.

Market power is not identical with social or political power over communications, though they are closely related. The monopoly situations that are of concern for liberty are those where some resource needed to communicate is scarce enough that whoever owns it has considerable power over others who seek to use it. The economist's analysis focuses rather on power over other suppliers who compete in the market. A political analysis focuses instead on who gets to use the airwaves of a station that is licensed or who can send messages when a carrier controls the practical means for delivering them.

In rhetoric, the United States government favors diversity of voices and seeks to break up communications monopolies. The reality, however, is more ambiguous. Few monopolies exist from economic factors alone, and fewer still survive by private coercion alone. Mafiosos are not that strong. The force that preserves most monopoly privilege is the law. Some monopolies rest on patents, others on copyright, still others on franchises or licenses, some on property rights in unique locations, and many on regulatory policies that protect vested interests against assault. Most monopolies exist by grace of the police and the courts. From a social point of view some are desirable, others undesirable; but most would vanish in the absence of enforcement.

Antitrust policy, and thus most current debate over communications policy, has focused on the market-produced monopolies, for the monopolies that the government establishes by patents, copyrights, franchises, and laws are exceptions to the antitrust laws and so are perfectly legal. The government does not challenge them. When American government does grant a monopoly, its attitude is sometimes ambivalent. Monopoly grants are often designed to give a privilege and at the same time to limit it. Both copyrights and patents, for example, are for finite terms, require disclosure, and may not be used to keep a product off the market. They are monopolies intended in the end to promote rather than restrict access.

While the intent of regulation is often to provide some modest protection for the weak, the ultimate outcome is often more protection for the strong. American broadcasting regulation follows a policy of localism, that is, protecting local stations so a few superstations do not dominate the national air. This policy protects an oligopoly of broadcasters in every city. It gives them advantages not only in their own community but also against still bigger would-be national monopolists. Often regulation is thus used to give smaller companies some monopoly protection against larger ones. For decades neither AT&T nor Western Union were allowed to go into international telegraphy; it was reserved for four international record carriers which, it was believed, would be crushed if the domestic communication giants were allowed into the intercontinental business. For satellites too the policy of "open skies," by excluding AT&T, assured business in the formative years to a group of oligopolists.

The legal crutch that preserves weak companies is exculpated in the name of competition. If the crutch were removed, it is said, one more company would disappear, leaving fewer and larger contenders in control of the field. Thus in a normal communications environment there are little monopolies and big ones; each argues for the essentiality of its privilege, and each enjoys at most only a bit of monopoly.

Regulation, whatever its motives, tends to create these islands of segregated activity. Some firms are protected from others. Also, it is easier to control an activity when it is not mixed in with ones that are unregulated. A mix of competition and monopoly creates the possibility of cross-subsidization. Profits from a sheltered activity may be used to cut prices in competitive fields. The primary goal of antitrust policy in telecommunications has been to ensure that no one entity is simultaneously in both the naturally monopolistic portions of the phone business and in competitive markets.

At the same time, the goal of deregulation has been to free companies from the bonds of regulatory convenience and allow them to experiment in the market with the efficiencies of new technologies and joint products. In the United States this unleashing has been enjoyed by AT&T, but only AT&T without local operating companies. It has not been done for the postal service, nor is it likely to be done for such a tax-supported enterprise, though the same result may be achieved through private express carriers.

The postal system has an office in every neighborhood and deliv-

ery to every door. Historically, this made it seem a natural organization for also handling small parcels, which it now handles everywhere. It also appeared a natural organization for delivering telegrams. In countries where they are still delivered, this is done through the post office or else at enormous loss. Post offices also serve as convenient government field offices. In many countries a poor person's bank, plus the sale of money orders and sometimes insurance, is handled through the post office. The advantage of sharing joint costs among many functions of a distribution plant was perceived even at the birth of postal service, when monarchs got cheap mail service for themselves by allowing the recipients of their postal patent to carry the public's letters for a fee. Daily, to-the-door delivery could conceivably be made less of a fiscal burden if milk, eggs, newspapers, and mail were all handled together. It would be good economic policy for a postal service to get into other businesses in competition with haulers, telecommunications companies, banks, and dairies. Similarly telephone companies, which have a virtually universal billing system and a network for moving funds, may become billing services and, following that, credit organizations and financial intermediaries, or what are ordinarily called banks. By the same token banks may become communications carriers. Certainly computer and aerospace companies may find that they have the skills and facilities to offer transmission services. IBM, Comsat, and Aetna Life Insurance formed Satellite Business Systems to link computers and other business facilities.

Present American deregulatory policy encourages such competition. Any company can get into the game, except ones with a substantial monopoly position that could be used for anticompetitive practices. The popular cry now is to let the market determine which alternative vendors with their different joint costs, organization, and skills can efficiently provide each service. Increasingly, the government is allowing AT&T, Western Union, the international record carriers, the specialized common carriers, and the satellite companies onto each other's turf, and also for that matter banks, computer companies, railroads, and any company at all.

At least as important as ideology in causing communications deregulation has been technological change. The use of coaxial cable and of ever higher frequencies has eroded spectrum shortage. The introduction of microwave transmission in the 1930s eliminated the problem of right of way. Microwave frequencies, though not unlimited, were abundant enough to allow a substantial number of com-

peting carriers. Satellite communication has reinforced this trend, for nothing prevents there being several competing satellite transmission organizations.

Deregulation, however, is a pragmatic policy. The argument made against regulations has been that they are inefficient and unnecessary, not improper. It holds that with converging technologies, the removal of controls will produce competition. Where this does not turn out to be the case, the deregulators are ready to step back in and regulate. But in the arena of speech and press we need also to consider other guidelines that have been left in the outfield in recent policy controversies—ones that recognize the preferred position of freedom of discourse.

Guidelines for Freedom

Difficult problems of press freedom, as well as of economics, arise at the intersections of regulatory models. When resource constraints are small and circumstances neatly fit the historical pattern of publishing, or when resource constraints are severe and circumstances fit the historical situation of a common carrier, then norms exist. The difficulties arise in situations that have elements of each. This was the problem in deciding about the broadcasting system in the 1920s; it is also a problem in the regulation of electronic networks today.

Regulators find it convenient to segregate activities and to keep each organization on its own turf. Much of regulatory law consists of specifications as to who may engage in what activities. Frequency allocations are made for particular uses; CBers or amateurs may not broadcast entertainment; public broadcast stations may not carry ads.⁹ In the United States, AT&T and Western Union have been largely partitioned, with AT&T kept out of telex and telegraph traffic and Western Union kept out of voice. Deregulation loosens such restrictions and allows companies to move onto each other's turf. But some segmentation persists.

A price is paid for this rigid delimitation of turf, not only in efficiency and innovation but also in freedom of speech. The notion that government may specify which communications entity is allowed to participate in particular parts of the information industry's vertical flow is hard to reconcile with the First Amendment. To research and write, to print or orate, to publish and distribute, is everyone's right.

If government licensing of reporters, publishers, or printing presses is anathema, then so also should be the licensing of broadcasters and telecommunications carriers.

Yet the repeated argument has been made, which may be right or wrong in particular cases, that some degree of natural monopoly prevails in particular parts of the communications field. Whether because there were thought to be only 89 broadcasting frequencies, or because having more than one company digging up the streets was intolerable, or because the carrier that reached most persons was the one most worth joining, it seemed likely that a dominant organization would gain control of a communications resource that other citizens also needed. Under these circumstances the best solution seemed to be to define a monopoly's turf narrowly and to require those who had the monopoly to serve all comers without discrimination.

Since the institutions in such strategic positions are usually basic carriers of physical signals, one way to narrow their domain is to separate the carrier from content-related activities. But there are problems in doing this, in terms both of undercutting the economics of the business and, in America, of bending the Constitution. The unfortunate compromise that has often followed is to license and regulate the monopoly.

Such limited franchises have a way of being extended beyond their original rationale. Enfranchised monopolies that at one time are thought simply to reflect in an orderly fashion the natural realities of the market, and are indeed intended to restrict monopoly, get converted into matters of right. Stations and carriers that are licensed simply to ensure good service by carefully selected organizations when monopoly seems inevitable come to see themselves, and to be seen, as having a vested right in their franchise. Regulatory powers assumed by the government to cope with monopoly also acquire a life of their own.

This faces the communications field with a dilemma. Not all parts of the communications system fit well under the preferred print model. Bottlenecks do exist where there are severe resource constraints. And the regulations that in those situations seem to be required have an insidious bent. They acquire legitimacy; they outlive their need; they tend to spread. The camel's nose is under the tent.

Yet when there is severe scarcity, there is an unavoidable need to regulate access. Caught in the tension between the tradition of

freedom and the need for some controls, the communications system then tends to become a mix of uncontrolled and common carrier elements—of anarchy, of property, and of enfranchised services. A set of principles must be understood if communications in the electronic era are to hold as fully as possible to the terms of the First Amendment. The technology does not make this hard. Confusion about principles may.

The first principle is that the First Amendment applies fully to all media. It applies to the function of communication, not just to the media that existed in the eighteenth century. It applies to the electronic media as much as to the print ones.

Second, anyone may publish at will. The core of the First Amendment is that government may not prohibit anyone from publishing. There may be no licensing, no scrutiny of who may produce or sell publications or information in any form.

Third, enforcement of the law must be after the fact, not by prior restraint. In the history of communications law this principle has been fundamental. Libel, obscenity, and eavesdropping are punishable, but prior review is anathema. In the electronic media this has not been so, but it should be. Traffic controls may be needed in cases where only one communicator can function at a particular place at a particular time, such as street meetings or use of radio frequencies, but this limited authority over time and place is not the same as power to choose or refuse to issue a license.

Fourth, regulation is a last recourse. In a free society, the burden of proof is for the least possible regulation of communication. If possible, treat a communications situation as free for all rather than as subject to property claims and a market. If resource constraints make this impossible, treat the situation as a free market rather than as a common carrier. But if resources for communication are truly monopolistic, use common carrier regulation rather than direct regulation or public ownership. Common carriage is a default solution when all must share a resource in order to speak or publish.

Under common law in the nineteenth century, vendors could not be made common carriers against their will.¹⁰ If they offered a service to the general public, it had to be without discrimination, but if they chose to serve a limited clientele, that was their right. This philosophy applies well to publishing. One would not require the Roman Catholic *Pilot* to carry ads for birth control or a trade union magazine to carry ads against the closed shop. But these cases as-

sume that diverse magazines exist. A dilemma arises when there is a monopoly medium, as when a monopoly newspaper in a town refuses ads to one party and carries them for another.

In the world of electronic communications some but not all of the basic physical carriers, and only those, seem likely to continue to have significant monopoly power. It is hard to imagine a value-added network having the dominance in a community that a local newspaper has today. Even now the communications monopolies that exist without privileged enforcement by the state are rare. Even basic physical conduits become monopolies precisely because they cannot exist without public favors. They need permissions that only the state can grant. These favors, be they franchises to dig up the city streets or spectrum to transmit through the air, may properly be given to those who choose to serve as common carriers. This is not a new idea. In 1866 telegraph companies were given the right to string wires at will along post roads and across public lands, but only if they became common carriers. Where monopoly exists by public favor, public access is a reasonable condition.

Fifth, interconnection among common carriers may be required. The basic principle of common carriage, namely that all must be served without discrimination, implies that carriers accept interconnection from each other. This principle, established in the days of the telegraph, is incorporated in the 1982 AT&T consent decree. All long-distance carriers have a right to connect to all local phone companies. That is the 1980s outgrowth of the 1968 Carterphone decision which required AT&T to interconnect with an independent radio-telephone service.¹¹ Universal interconnection implies both adherence to technical standards, without which interconnection can be difficult, and a firm recognition of the right to interconnect.

Carriers may sometimes raise valid objections to interconnection. Some will wish to use novel technologies that are incompatible with generally accepted standards, claiming that they are thereby advancing the state of the art. Also, when they handle highly sensitive traffic, such as funds transfers or intracompany data, they may not wish to be common carriers and bear the risks of having outsiders on their system. Such arguments are often valid, though they may also be used to lock a group of customers out of using the carrier.

An argument in favor of general interconnectivity is that it facilitates market entry by new or small carriers. It also makes universal service easier. It may even be useful for national security, since a

highly redundant system is less likely to be brought down. In short, there are conflicting considerations that must be balanced. As a policy, the requirement of interconnection is a reasonable part of a common carriage system.

Sixth, recipients of privilege may be subject to disclosure. The enforcement of nondiscrimination depends critically on information. Without control of accounting methods, regulatory commissions are lost in a swamp. I once asked the head of the Common Carrier Bureau of the FCC what he would ask for if he could rub Aladdin's lamp. "Revelatory books" was his reply.

Yet American lawmakers, who have imposed far more oppressive and dubious kinds of regulation, such as exit, entry, and tariff controls, have never pushed the mild requirement for visibility. Apart from requiring accounts, legislators have been highly considerate of proprietary information. A firm that enjoys the monopoly privileges which lead to being a common carrier should perhaps forgo, like government, some privileges of privacy. Unbundled rates for cable leasing, for example, help reveal who is being charged for what. Disclosure is not a new idea. Patents and copyrights are privileges won only by making their object public. The same principle might well apply to action under franchises too.

Seventh, privileges may have time limits. Patents and copyrights are for finite periods, and then the right expires. Radio and television licenses and cable franchises, though also for fixed periods, are typically renewable. Some monopoly privileges that broadcasters and cablecasters have in their licenses could expire after a fixed period. This is a way to favor infant industries but limit their privileges when they become giants.

Eighth, the government and common carriers should be blind to circuit use. What the facility is used for is not their concern. There may be some broad categories of use. Emergency communications often have priority. Special press rates for telegraph have been permitted, though their legality in the United States has been questioned.¹² But in general, control of the conduit may not become a means for controlling content. What customers transmit on the carrier is no affair of the carrier.

Ninth, bottlenecks should not be used to extend control. Rules on undeliverable mail have been used to control obscene content. Cablecasting, in which there is no spectrum shortage, has been regulated by the FCC as ancillary to broadcasting. Telegraph companies

have sought to control news services, and cable franchisees have sought to control the programs on the cable. Under the First Amendment, no government imposition on a carrier should pass muster if it is motivated by concerns beyond common carriage, any more than the carrier should be allowed to use its service to control its customers.

Tenth, and finally, for electronic publishing, copyright enforcement must be adapted to the technology. This exceptional control on communication is specifically allowed by the Constitution as a means of aiding dissemination, not restricting it. Copyright is temporary and requires publication. It was designed for the specific technology of the printing press. It is in its present form ill adapted to the new technologies. The objective of copyright is beyond dispute. Intellectual effort needs compensation. Without it, effort will wither. But to apply a print scheme of compensation to the fluid dialogue of interactive electronic publishing will not succeed. Given modern technologies, there is no conceivable way that individual copies can be effectively protected from reproduction when they are already either on a sheet of paper or in a computer's memory. The task is to design new forms of market organization that will provide compensation and at the same time reflect the character of the new technology.

The question boils down to what users at a computer terminal will pay for. For one thing, they will pay for a continuing relationship, as they will continue to need maintenance. It may be easy to pirate a single program or some facts from a data base by copying from a friend of a friend of a friend who once bought it. But to get help in adapting it or to get add-on versions or current data, one might pay a fee as a tender for future relations. The magazine subscription model is closer to the kind of charging system that will work for electronic publishing than is the one-time book purchase with a royalty included.

A workable copyright system is never enacted by law alone. Rather it evolves as a social system, which may be bolstered by law. The book and music royalty systems that now exist are very different from each other, reflecting the different structures of the industries. What the law does is to put sanctions behind what the parties already consider right. So too with electronic publishing on computer networks, a normative system must grow out of actual patterns of work. The law may then lend support to those norms.

If language were as fluid as the facts it represents, one would talk in the electronic era of service right, not copyright. But as language is used, old words are kept regardless of their derivation, and their meanings are changed. In the seventeenth century reproducing a text by printing was a complex operation that could be monitored. Once the text was printed on paper, however, it required no further servicing, and no one could keep track of it as it passed from reader to reader. In the electronic era copying may become trivially easy at the work stations people use. But both the hardware and the software in which the text is embodied require updating and maintenance. In ways that cannot yet be precisely identified, the bottleneck for effective monitoring and charging is migrating from reproduction to the continuing service function.

Not only in copyright but in all other issues of communications policy, the courts and legislatures will have to respond to a new and puzzling technology. The experience of how the American courts have dealt with new nonprint media over the past hundred years is cause for alarm. Forty years ago Zechariah Chafee noted how differently the courts treated the print media from newer ones: "Newspapers, books, pamphlets, and large meetings were for many centuries the only means of public discussion, so that the need for their protection has long been generally realized. On the other hand, when additional methods for spreading facts and ideas were introduced or greatly improved by modern inventions, writers and judges had not got into the habit of being solicitous about guarding their freedom. And so we have tolerated censorship of the mails, the importation of foreign books, the stage, the motion picture, and the radio."¹³ With the still newer electronic media the problem is compounded. A long series of precedents, each based on the last and treating clumsy new technologies in their early forms as specialized business machines, has led to a scholastic set of distinctions that no longer correspond to reality. As new technologies have acquired the functions of the press, they have not acquired the rights of the press. On print, no special excise taxes may be applied; yet every month people pay a special tax on their telephone bill, which would seem hardly different in principle from the old English taxes on newspapers. On print, the court continues to exercise special vigilance for the preferred position of the First Amendment; but other considerations of regulatory convenience and policy are given a preferred position in the common carrier and electronic domains.

Since the lines between publishing, broadcasting, and the tele-

phone network are now being broken, the question arises as to which of these three models will dominate public policy regarding the new media. There is bound to be debate, with sharp divisions between conflicting interests. Will public interest regulation, such as the FCC applies, begin to extend over the conduct of the print media as they increasingly use regulated electronic means of dissemination? Or will concern for the traditional notion of a free press lead to finding ways to free the broadcast media and carriers from the regulation and content-related requirements under which they now operate?

Electronic media, as they are coming to be, are dispersed in use and abundant in supply. They allow for more knowledge, easier access, and freer speech than were ever enjoyed before. They fit the free practices of print. The characteristics of media shape what is done with them, so one might anticipate that these technologies of freedom will overwhelm all attempts to control them. Technology, however, shapes the structure of the battle, but not every outcome. While the printing press was without doubt the foundation of modern democracy, the response to the flood of publishing that it brought forth has been censorship as often as press freedom. In some times and places the even more capacious new media will open wider the floodgates for discourse, but in other times and places, in fear of that flood, attempts will be made to shut the gates.

The easy access, low cost, and distributed intelligence of modern means of communication are a prime reason for hope. The democratic impulse to regulate evils, as Tocqueville warned, is ironically a reason for worry. Lack of technical grasp by policy makers and their propensity to solve problems of conflict, privacy, intellectual property, and monopoly by accustomed bureaucratic routines are the main reasons for concern. But as long as the First Amendment stands, backed by courts which take it seriously, the loss of liberty is not foreordained. The commitment of American culture to pluralism and individual rights is reason for optimism, as is the pliancy and profusion of electronic technology.