
The Soul of a News Machine: Electronic Journalism in the Twenty-First Century

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Introduction

Human nature being what it is, some people fear change while others eagerly embrace it. Some are excited by the opportunity to profit from changing circumstances. Others are inclined to follow the rule of the "dangerous precedent," which states that absolutely nothing should ever be done for the first time. In today's world, however, it is impossible for anyone to escape the relentless process of change. This is especially true for those working in journalism and communications.

Unlike the incremental developments of the past, today's telecommunications revolution marks a fundamental change of direction. We are faced with the challenge, and the opportunity, of doing things in an entirely different way. New technology is reshaping the most fundamental aspects of our communications system, and we are now forced to reconsider our most basic assumptions about how that system will be used to gather and to distribute the news. This Article will offer a brief glimpse of the shape of things to come, followed by some difficult, and still unanswered, questions that should concern anyone who cares about journalism and its impact on society.

I. The "New Media"

The news business is changing faster and more fundamentally than at any time since the steam-powered printing press ushered in the age of mass media almost 200 years ago. In barely a century, news technology has progressed from telegraph wires and crystal sets to color television and geosynchronous satellites. Soon, even more powerful technologies will transport journalism far beyond the familiar boundaries of radio, television, databases, telephones, and the printed page. In coming years, news programming and distribution will be creatures of what are being called the "new media."[\(note 1\)](#) Most important, journalism will be freed from the restraints that have always been imposed on it by a scarcity of time and space. Values and assumptions that evolved in response to scarcity will have to be revised in order to cope with abundance.

Exciting as this may seem, it will raise troubling questions and pose difficult challenges to those who will design and build the twenty-first century news machine. Newspapers and magazines are already repackaging their material for desktop computers, fax machines, and CD-ROMs.[\(note 2\)](#) Telephone companies are showing interest in buying cable systems.[\(note 3\)](#) Cable systems are preparing to offer long-distance telephone service.[\(note 4\)](#) Cable itself is being

challenged by direct broadcast satellites.[\(note 5\)](#) Broadcasters are asking for permission to use their spectrum allocations for more than just conventional broadcasting.[\(note 6\)](#) Entirely new forms of news presentation are being developed to take advantage of more powerful distribution technologies.[\(note 7\)](#)

A. The Effect of Digital Conversion on Delivery Systems

By far the most significant and far-reaching difference between the telecommunications world we are leaving behind and the new one we are about to enter is the wholesale conversion from analog to digital data storage and transmission. In just about every aspect of telecommunications and electronic journalism, digital delivery will make a difference.

Digital technology is really nothing new. Compact discs depend on digital encoding and storage to reproduce high fidelity sound. The elaborate audio and visual effects now taken for granted in all types of television programming are made possible by the manipulation of digitized signals. In fact, the very first digital telecommunications technology probably was the simple telegraph. The dots and dashes of the nineteenth century telegrapher's Morse code are essentially the same as the on-off binary signals that race through the circuits of every digital computer. The crucial difference between the two is bandwidth—the amount of data that can be moved down the distribution path in a given period of time.[\(note 8\)](#)

The telegraph was limited to a bandwidth of a single digit. If a dot was moving down the wire, the dash had to wait its turn. Today's broadband pathways are capable of carrying billions of dots and dashes simultaneously.[\(note 9\)](#) Sophisticated software at each end sorts the signals and decodes them into recognizable data, sound, and pictures. Cleverly written programs compress the digital data into tighter packages in order to move more data down the line in less time.[\(note 10\)](#) Even more importantly, a digital data system is programmable. Digital data can be sorted and manipulated in an infinite number of ways without making any change in the hardware used to carry the signal.[\(note 11\)](#) It does not matter to the system whether the material moving through it is destined to be decoded into pictures, text, or speech. Everything moves on the network at the same time and in exactly the same form—digital bits.

Spacious as the network is, in comparison to the humble telegraph, this telecommunications system does have limitations. Expensive switching equipment compensates for limited bandwidth by efficiently routing material on and off the data highway.[\(note 12\)](#) Before long, the bandwidth limitations still taken for granted will look as primitive as those of the old telegraph. Thanks to digital technology, even the coaxial cable and copper wire networks that already reach into most homes soon will be capable of carrying many more times the volume of material possible than in the analog domain.[\(note 13\)](#) Soon, the ironclad assumption of bandwidth scarcity, on which the most basic assumptions about telecommunications have always depended, will be irrelevant. The means will exist to build a new and very different news machine. Although virtually unlimited bandwidth will make possible new and more powerful devices for delivering the news, one cannot assume that the editorial standards and the constitutional protection that have always been taken for granted will survive the high-speed journey from analog scarcity to digital abundance.

B. Evolution Within the Marketplace

One should not assume that the familiar economic relationship between programming and distribution that evolved in the age of scarcity will continue to make sense in the coming age of abundance. Even in an era of media mega-mergers, small organizations have a natural advantage in programming. They are able to respond more quickly and creatively than larger organizations to unpredictable changes in public taste and rapidly developing technological opportunities.[\(note 14\)](#) Efficient distribution, on the other hand, still requires capital resources and economies of scale typically available only to larger players.[\(note 15\)](#) As the marketplace grows both larger and more fragmented, it will be increasingly difficult for programming and distribution to coexist comfortably under one roof. It remains to be seen whether the new regulatory structures that will emerge in response to changing technological and economic circumstances will help or hinder the development of a more efficient and competitive marketplace. Unfortunately, regulation has tended more often than not to protect the old and discourage the new.[\(note 16\)](#)

1. Broadcasting as a Model

An example of how the marketplace evolves in response to new technological circumstances can be seen in the world of traditional radio and television broadcasting. The number of radio stations on the air has nearly doubled in twenty years. [\(note 17\)](#) The number of television channels available to the average household has grown significantly in the past decade. [\(note 18\)](#) As the radio and television markets have become more crowded and fragmented, the value of the average broadcast station's transmission license, as a percentage of the total value of the business, has declined. [\(note 19\)](#) At the same time, however, the relative overall value of a station's programming has increased. [\(note 20\)](#) It seems that as the supply of transmission franchise licenses increases, their relative value should go down. So, as more players compete for a share of the audience, the value of an exclusive programming agreement is bound to increase. The same thing will happen to cable television distribution when new developments, such as telephone company entry and direct broadcast satellites, break up the traditional monopolies long enjoyed by local cable systems.

Basic economics dictates that as long as a commodity—even a commodity as ephemeral as the capacity to transport electromagnetic energy between two points—remains scarce, it will be correspondingly valuable. As a commodity becomes more plentiful, its price will drop accordingly. For example, a century ago, aluminum was scarce and exotic. When a process was developed to refine aluminum cheaply, it became so plentiful that people started to wrap sandwiches with it. Before the development of refrigerated ships, the humble banana was an expensive curiosity. Today, bananas are a supermarket staple all because new technology altered the balance of supply and demand.

2. The Relationship Between Computer Architecture and Telecommunications

When computer memory was expensive, a desktop machine boasting sixty-four kilobytes of random access memory (RAM) was considered state of the art. [\(note 21\)](#) Today's desktop machines often require ten times that much RAM just to get started. Yet, they can be bought for less than what their far less powerful predecessors cost just a few years ago. As the cost of computer memory and processing power continues to drop, more and more inexpensive desktop machines come with enough storage and processing power to efficiently handle the huge volumes of digital data required to manipulate pictures and sounds. Full function desktop audio editing is an inexpensive reality. Desktop video editing is just around the corner. [\(note 22\)](#) As a result, the most basic assumptions about computer architecture and its relationship to telecommunications are changing. The center of gravity in computing used to be the monstrous mainframe. Then came smaller, but still centralized, machines serving a collection of "dumb" terminals. Today, the more typical arrangement is a large network of powerful desktop computers working with each other with no mainframe in sight. In such a system, intelligence is widely dispersed among users communicating freely among themselves. There is often little or no need for centralized switching or control. The efficiency of the system is limited only by the processing power of the individual machines on the network and the bandwidth available to move data between them.

The same thing is happening to the telecommunications system that moves data between these localized computer networks. In the digital domain, the ability to move pictures, sounds, and every other sort of digitized data back and forth on an open network will be limited only by the availability of bandwidth, which is becoming more plentiful all the time. [\(note 23\)](#) In fact, even before any new "information superhighway" [\(note 24\)](#) is in place, unused data transmission capacity is available in many parts of the system. [\(note 25\)](#) Thanks to the rapidly increasing capacity of the data highway, today's telecommunications infrastructure, with its expensive telephone switches, cable headends, and narrow bandwidth broadcasting stations, will eventually be replaced by a much simpler and cheaper network capable of almost infinite data transmission and storage capacity. This will change the rules by which everyone does business.

C. An Information Infrastructure Blueprint: Superhighway or Parking Lot?

When the so-called "information superhighway" finally reaches hometowns around the country, it won't look like a highway at all, and it definitely won't be just a fancier version of today's scarcity-based infrastructure. Unlike a conventional highway, it won't have lanes or shoulders, and it won't proceed directly from one clearly marked place to another. The emerging information infrastructure will more closely resemble the loosely organized, interactive Internet than the switched telephone network or one-way broadcasting system. Instead of a linear highway, the new information infrastructure will be more like a vast parking lot on which anyone will be free to travel in any direction,

wherever and whenever they please. Smaller networks and "virtual communities" will be free to emerge, evolve, and disappear as the needs of the moment require. [\(note 26\)](#)

Like the Internet, tomorrow's telecommunications system will use many pathways simultaneously. It will utilize fiber-optic lines, high- capacity coaxial cable, direct broadcast satellites, and broadcast spectrum. [\(note 27\)](#) Thanks to digital compression, even the twisted copper wires of the ordinary telephone network will carry bandwidth that once required much more exotic and expensive transmission equipment. [\(note 28\)](#)

In order to understand where television and the rest of the electronic media might be going in the next few years, it helps to look at trends in radio. Not so long ago, the typical radio market was a fairly comfortable competitive environment. A few big stations with sizable staffs and full- service formats dominated the dial. Most stations had active news departments that covered stories and produced programs. The average station's goal was to be all things to all listeners. Double digit audience shares were the rule rather than the exception. [\(note 29\)](#) Today's radio marketplace is a very different place. More stations are competing for thinner slices of a thoroughly fragmented audience. [\(note 30\)](#) Overall, radio stations provide more news and information than ever before, but the delivery is packaged much differently than the old full-service formats.

The same thing is now happening in television. For many years, the typical television market consisted of the three network affiliates, each doing early and late evening news shows. In bigger markets, independent stations would challenge network prime-time programming with local news shows. Today, while the late local news is an endangered species in many markets, locally produced morning shows are turning up in time slots that were once the networks' exclusive domain. [\(note 31\)](#) Aggressive major market independents are programming full schedules of evening news against the network affiliates. In at least one major market, there are more independents in the local news race than affiliates. [\(note 32\)](#) Add all the cable-exclusive offerings like CNN, C-SPAN, and CNBC into the news market, and one begins to appreciate the explosion of television news programming that has taken place in just a few years.

II. The Twenty-First Century Electronic Journalist

Thanks to an abundance of bandwidth, the model for electronic journalism in the digital domain will be the on-line database, rather than the daily newspaper or regularly scheduled television news program. The primary vehicle for news distribution will be a self-defining, open network, rather than traditional point-to-multipoint broadcasting or print. The twenty-first century news machine will be an interactive, multimedia system possessing the power of television, the portability of newspapers, and the flexibility of the telephone network. It will take maximum advantage of an open network that makes much more efficient use of available bandwidth than a one-way, closed system like broadcasting or cable television. Consumers will be able to participate in the news process. Journalism will become less of a lecture and more of a conversation. Journalists will spend less time guessing what their customers might want to know and more time packaging and organizing an almost infinite body of raw material into reliable and useful information packages.

More separate news organizations will appear, each a good deal smaller and more specialized than those we see today. From these smaller and more efficient news operations, a far greater volume and variety of news will emerge, aimed at much smaller audiences than today's news departments. The very notion of "mass" media will fade into history. Before long, the hot news format will be individually customized "information on demand." News gathering and production equipment will continue to get cheaper and easier to use. The news gathering and presentation process that once required a large staff of technical specialists will be performed quite routinely by lone reporters armed with inexpensive camcorders, notebook computers, and portable telephones. The material these newsmen produce will be simultaneously created and distributed in a wide variety of formats. To survive in this more demanding and competitive environment, news producers will have to find new ways to profit from smaller shares of the total audience.

A. Interactive Relationships

One technique that the next generation of news programmers will use to capture the attention of their increasingly

fragmented audience is interactivity. Today, despite all the talk about "interactive" media, it is almost impossible to agree on a single, coherent definition of the term.[\(note 33\)](#) But, while it may be unclear how to define the interactive media experience, the next generation of consumers will look at electronic media far differently than they do today. Most of today's television viewers are quite content to sit back and let the television set talk to them. Talking back to a television set seems just a bit strange. Even the use of the powerful personal computer is often little more than high-tech typing. But, the next generation will have less patience with their television sets and computer screens. Video games and computers teach there is something positive to be gained from a two-way relationship with the television set. These future viewers will intuitively reject the notion that television programming must always be what some distant producer or director decides it should be. They will not be hesitant to talk back to the television screen and will expect the television to respond.

1. The Viewer-Producer

In one sense, interactivity is already an integral part of today's television news. Not so long ago, the typical television news viewer waited until the appointed hour and then passively watched a carefully planned, coherently arranged news broadcast. Experienced producers in distant newsrooms decided what was worth watching and in what order it should be presented. A few influential news organizations set the information agenda. In the age of spectrum scarcity, choices were severely limited. Viewers watched what the producers showed them, because they had nowhere else to turn. Today's viewer, armed with a remote control, has the power to be his or her own producer, grazing impatiently across a rich landscape of real-time images and assembling a package of news coverage suited to his or her personal taste and attention span. The shift away from news programming that is fixed in time, length, and format will continue, as the intelligence of the delivery system migrates inexorably from central points of distribution to individual homes and offices. The news products of the next century will be both unbelievably diverse and capable of almost infinite manipulation by the individual consumer: no more passive viewers, closed end news programs, or daily newspaper editions.

2. The News Machine Format

Today's newspaper, with its computerized pagination, digital photo manipulation, and satellite-connected printing plants, already looks and acts remarkably like a television newsroom. In the not-too-distant future, the vast information resources of the modern newspaper will be routinely repackaged in ways that will make the soggy bundle of newsprint one finds under the bushes every morning look very primitive indeed. The news machine into which tomorrow's journalists will pour their interactive, multimedia material will bear little resemblance to television, newspapers, or today's on-line databases. In addition to the breaking news, it will offer consumers instant access to rich libraries of text, sound, and video. The format will look more like CompuServe or Prodigy than CNN or the *New York Times*. The twenty-first century news machine will blend news and information in a variety of audio and video formats, with huge pools of background data, all available to the consumer instantly. The next generation of news producers will spend more time cataloging and classifying information than actually gathering it. They will tell their stories with audio, video, graphics, text, and "hyperstacks" of background data in all sorts of formats.[\(note 34\)](#) The twenty-first century news machine will let consumers read the text, watch the video, hear the sound, examine the underlying documents and transcripts, and even interact with reporters, editors, and others interested in the story. The structure will be flexible and responsive to the rapidly changing needs and tastes of the audience. The essential technology to do most of this exists today.[\(note 35\)](#) It is just a matter of putting all the pieces together in an affordable, user-friendly product.

B. Value from Programming and Databases

Because the database model will be so dominant in the next media generation, newspapers will have a natural edge in the development of the next news machine. Just as smart television companies have come to realize that their business rests more on the programming they produce than on their exclusive franchise to distribute, newspaper companies are starting to recognize that their real value lies in the enormous information databases they command, and not in their capacity to efficiently manufacture and distribute printed paper.[\(note 36\)](#) The content of the story will not be affected

whether it is printed, broadcast, sent over copper wires, fed on a fiber-optic cable, or mailed out on cassettes.

1. Messages Defining the Medium

Today's information businesses tend to be identified with the technologies on which they depend: the newspaper business, the telephone business, and the television business. But journalism in the next century will no longer be easy to categorize as broadcast, cable, radio, television, or print. Everyone will be a producer of digital bits moving back and forth across an interconnected broadband network. The choice of what to take from the stream of digital data, and in what format, will be left largely to the individual consumer. The distinct media businesses will need to be reorganized. In the information-on-demand digital environment, everything will be available to everyone all the time. Universal service will mean open access to a two-way network. Everyone on that network will have the power to be both a producer and a consumer of information. The information superhighway, however many twists and turns it may take along the way, will lead eventually to a land of infinite databases, virtual switches, and supremely intelligent personal terminals.

The new digital information infrastructure probably will depend on exotic new distribution technologies not even invented yet, well beyond the limitations of both broadcasting and coaxial cable. Whatever makes it work, however, the new information infrastructure will have the capacity to carry an almost infinite quantity and variety of programming to and from every home, office, and individual. It will be universally accessible and affordable, assuming, of course, that government regulations designed to protect incumbent technologies are not allowed to stunt the natural development of their successors.

The twenty-first century telecommunications infrastructure is often described as a "500-channel" universe. [\(note 37\)](#) But looking at tomorrow's broadband digital environment in terms of today's six megahertz television channels is hopelessly misleading. Bandwidth will be both plentiful and flexible in the digital domain. For example, high-definition video feeds require larger chunks of bandwidth than text, audio, or still pictures, but in the digital domain all will be able to move simultaneously across the network. The future digital network will deliver different volumes and configurations of material to individual customers, entirely at their option, much as the telephone network now carries voices, data, and facsimile images over the same lines at the same time. The message will define the medium that carries it, not the other way around.

2. Bandwidth Flexibility

Broadcasters are about to be given access to additional spectrum to transmit high-definition television. [\(note 38\)](#) But why should they be content to use this additional bandwidth merely to transmit a single television picture? It probably would be more efficient and profitable to use this additional bandwidth either to transmit several conventional television signals or some other mix of video and audio data. If the spectrum is to be used efficiently, regulators will have to realize that broadcasters, like their counterparts in other areas of the telecommunications field, need the flexibility to develop new products and find new sources of revenue. Eventually, as bandwidth becomes ever more plentiful, the government's stranglehold on the spectrum will weaken.

C. Who Will Be the Gatekeeper? <> At first glance, a powerful appliance that allows journalists to deliver huge amounts of audio, video, text, and database information in real time would seem to be the best thing to happen to the news business since the invention of moveable type. This new power, however, may come with a heavy price. In the age of scarcity, the fundamental act of journalism, regardless of the medium of distribution, was selection. Journalists not only had to gather information, they had to make tough decisions about which stories would fit into the broadcast or find a spot in the newspaper. Things will be very different in the age of bandwidth abundance. When everyone has instant access to live pictures of just about anything happening anywhere in the world, and telecommunication is defined by open networks rather than selective linear feeds, the role of the journalist will change.

Professional journalists may not even be needed when infinite amounts of easy-to-use raw data are available to anyone at the push of a button. The familiar concept of a journalistic "gatekeeper" may be meaningless when every consumer has the power to command his own gate. It is unclear what the role of ethics and editorial responsibility will be when everyone has easy access to technologies that will allow them to package and distribute professional quality news

programming. The legal and ethical implications of inexpensive digital equipment that allows anyone to manipulate, or even invent, realistic video images will need to be explored. No longer will the traditional notion that "seeing is believing" hold weight.

When the database model comes to dominate the practice of journalism, it will be difficult to correct minor errors before they replicate themselves endlessly in the expanding body of raw data. Even today, errors in the NEXIS newspaper and periodical database can be repeated and reentered so often that they become accepted as fact, simply because of multiple citation. What will happen when the whole world is plugged into digital databases infinitely larger and more powerful than NEXIS's databases that include sound and pictures as well as text?

When all news and information are gathered and distributed electronically, the government may be tempted to step in and regulate the material that travels on the digital bitstream, unless constitutional concerns about censorship are sufficient to force adoption of more content-neutral media regulation. Content-neutral common carrier regulation would seem to be the obvious choice for an open network, but it is by no means certain that well-meaning government regulators will be able to resist the urge to have their say about the substance of what moves through the new digital network.

D. Checks and Balances Deriving from Editorial Responsibility

Enormous as they have been, the changes in the way news has been gathered and delivered since the arrival of television pale in comparison to the new technological revolution now underway. While television and radio are essentially linear in form, a newspaper is infinitely "browsable," providing a convenient means of randomly accessing information. Unlike newspapers, television and radio still do not offer the consumer much opportunity to intervene in the story selection process, short of simply turning off the television set or radio. On-line databases are also difficult to deal with. As powerful and flexible as they are, they frequently provide more information than the consumer needs.

At the same time, however, widely available on-line databases are changing information expectations, just as radio and television have done in the past. People can now experience news as it happens anywhere in the world. As the technology required to perform these communications miracles becomes cheaper to own and easier to use, competition, diversity, and access will increase. But more powerful technology can also disrupt the delicate system of checks and balances known as editorial responsibility. Viewers love live coverage, but they want to hold someone responsible for editing and verifying the content of a live report. Delivering raw data is fine, but there is still a need for someone trustworthy to say what it all means, and to turn the pictures into a story.

1. Technology's Effects on the Presentation of News

Journalism has come a long way in the past thirty years, as television news has grown to a dominant position in the journalism marketplace. Until very recently, however, new technology had done little to alter the essential nature of the news product. In its early years, television news was little more than a promising blend of radio and the movie theater newsreel. [\(note 39\)](#) A decade or two earlier, radio news itself had emerged directly from the world of newspapers and magazines. Early radio news was really little more than a talking newspaper. The natural sound, actuality, and conversational style now taken for granted were all but unknown in radio's early years. Edward R. Murrow's legendary wartime broadcasts from London were noteworthy, in part, because they employed a very personal style of delivery and used natural background sound, neither of which was typical of radio news reporting at the time. [\(note 40\)](#) Most early radio news featured rather stiff and formal "announcing" of carefully written copy, and early television news was little more than radio presented in front of a camera. The written word, not the spoken presentation, was still the driving force, and even the most basic techniques of visual storytelling, long since evolved in motion pictures, did not find their way into daily television news until relatively recently. [\(note 41\)](#)

2. Value in the Journalist's Role as Storyteller

More powerful telecommunications technology will force the next generation of journalists to adjust to yet another new set of circumstances. When scarcity in the delivery system is replaced by abundance, story selection will play a diminished role in the editorial process. At the same time, the role of journalist as storyteller will take on even greater

importance. Machines will learn to sift and sort the oceans of data pouring through the system, but they will never replace humans at the task of explaining what all the raw data mean and how they fit into a larger picture of the world. By keeping track of what people watch and read, and even listening to casual conversations, computers will soon be able to predict with considerable accuracy what kinds of news and information each person prefers to receive. New technology will make it possible to construct easily accessible and navigable databases of unimaginable richness and size. But these databases will only be useful if one knows where one wants to go. The twenty-first century news machine will build upon all the power and flexibility now associated with television, personal computers, and on-line information services. But, it will never reach its full potential unless it can guide people smoothly to those unexpected pieces of information they had no idea they wanted in the first place.

III. The Conflicting Demands of News Consumers and Government Regulations

A decade ago, *USA Today* pioneered a new style of newspaper presentation patterned after the visual elements of television. [\(note 42\)](#) Television news is now returning the favor by taking advantage of digital technology to borrow a paintbox full of graphic techniques from print. Looking ahead and conjuring up the image of conventional television news as it might appear on high definition video screens, it is not far-fetched to imagine those same stories presented in some form of virtual reality. Live television can already take viewers to the scene of a fire. The twenty-first century news machine will have the power to take those viewers inside a virtual re-creation of the burning building itself.

More than 70 percent of Americans now say they depend on television for most of their news. [\(note 43\)](#) News consumers in the next century will depend even less on paper and ink to get the information they need, and they certainly will not have to respect the traditional boundaries that now define audio, video, and text. Tomorrow's news consumers will not have any patience with newspapers they have to retrieve from under the bushes or radio stations that make them wait five minutes for a traffic report. They will expect to receive their news when they want it, and in the format they find most convenient.

This fundamental shift of control from producer to consumer should usher in a new age of freedom and choice, but, like everything else in the modern world, access to the electronic media is a complex social and political issue. The consumer should remember while eagerly gazing through the electronic looking glass that the government is right there, peering over the consumer's shoulder. Governments have always been wary of anything new in the way of communications technology, especially anything that threatens the existing balance of power. As a result, new communications technologies almost always are born into some form of regulatory captivity. The first printing presses were strictly controlled by rulers who feared, with considerable justification, that the mysterious new technology would upset the social and political status quo. [\(note 44\)](#) Today, five centuries later, television and radio are regulated in much the same way, and for exactly the same reasons. In the future, long after more advanced technologies have come along to make today's television look even more primitive than those early printing presses, it would not be surprising to find government still trying to intrude.

A. The Effects of Unlimited Distribution Capacity upon Current Regulatory Schemes

The present telecommunications regulation scheme, with its mandatory licensing scheme for radio and television stations and the elaborate common carrier regulations for telephone companies, is based on the assumption that a very limited amount of distribution capacity must be divided among a large number of competitors eager to make use of it. But "scarcity" is rapidly being replaced by abundance. [\(note 45\)](#) Most television viewers now receive their signals entirely over cable wires, using no scarce broadcast spectrum whatever. In many markets, television stations could shut down their government-licensed transmitters entirely and would probably risk losing only a small percentage of their potential audience. Telephone companies have already adjusted to competition in the long-distance business. Now, they are facing the uncomfortable prospect of competing with cable systems for local customers. [\(note 46\)](#) As previously noted, cable systems will have to deal with competition in the video distribution business from direct broadcast satellites as well as local phone companies. [\(note 47\)](#) The distribution bottlenecks that still remain in the system are largely artifacts of outdated regulations. Conditions have changed, but the regulations have not kept up.

B. The Role of the First Amendment

The founders of the American republic could not have imagined television or telephones, but they did understand human nature and politics. They dreaded the power of a strong central government almost as much as they feared the consequences of not having one. Their concern that strong government posed a serious threat to individual liberty was the motivating force behind the Bill of Rights—the first ten amendments to the Constitution designed to set strict limits on government power.

The founders understood that strong government is naturally antagonistic to free expression and press freedom. They realized that if government were inherently sympathetic to free speech, there would be no need for a First Amendment. They knew that if government could be trusted to promote individual liberty, there would be no need for a Bill of Rights; that is why they wrote it. It spells out fundamental rights demanded by the people before they would accept a strong central government.

The Bill of Rights is not a bill of "privileges" bestowed by a benevolent government on its well-behaved citizens. The Bill of Rights was written to protect the people from the government, not the other way around. It imposes on the citizen no responsibilities to the government or any of its officials. This is especially true in the case of the First Amendment. The First Amendment reflects a concern about the possible abuse of government power. However, this remarkable forty-five word statement is by no means a child of political insecurity. It took considerable courage to allow such wide-ranging freedom of conscience and comment. It took real guts to encourage robust, even disrespectful, criticism of the fragile new government the authors of our Constitution were trying to create. Thanks to the First Amendment, the American press is supposed to operate free from government control. In other countries, individual "rights" are defined by the government. Freedom of the press extends only as far as the party in power feels comfortable allowing it to go. The American political system, however, rests on the sovereignty of the people, not on the power of government. The founding fathers understood that to exercise their power wisely, the people had to be well informed, and their sources of information had to be free from government influence. The system could only work if the people were free to question, criticize, and even embarrass the government itself.

Democracies and dictatorships alike have always done their best to control the flow of information and criticism. But in a world where most news and information are now delivered on wires and waves rather than printed pages, the government's special power to regulate the electronic media poses a serious and immediate threat to the principle of press freedom embodied in the First Amendment. For too long, regulations intended only to organize the electromagnetic spectrum have been used to stifle criticism and excuse intrusions into the editorial process.

C. Content Regulation at the Expense of Free-Flowing Information: The Need for Reevaluation

As the next giant step in communications technology is taken, the First Amendment protections traditionally associated with print journalism, rather than the stringent content regulation now imposed on broadcasting, must be carried forward and applied to the emerging new media. It is time to ask again why cable television, which uses no scarce radio spectrum, is nevertheless subjected to many of the same content regulations that have always applied to over-the-air broadcasters. It is time to ask again why content regulations based on "scarcity" are still being enforced at a time when radio and television outlets far outnumber unregulated daily newspapers. It is time to wonder why otherwise reasonable people still pay attention to pleas for content regulations, like the so-called Fairness Doctrine and more recent attempts to control indecency and violence that would give government the power to decide what can be aired on radio and television. If the Constitution were being written today, the framers might well ask how any reasonable person could expect the government to objectively judge the "fairness" of a critical news report. Yet, American law books are thick with regulations that give bureaucrats and obscure political appointees just such authority. The founders saw it coming. Having fought a bloody revolution to overthrow the British, they were naturally inclined to consider big government guilty until proven innocent. In the First Amendment and the rest of the Bill of Rights, the framers placed the burden of proof squarely on the shoulders of those who would limit individual liberty and gave the benefit of the doubt to those who would seek to expand it.

1. A Succession of Content Regulation

Remarkably, the leaders of the radio and television industry have rarely spoken up in defense of their most basic constitutional rights. From the beginning, they have been quite willing to accept stiff content regulation in exchange for government protection of their transmission monopolies, overlooking the fact that government can never be an entirely neutral player. In order to advance their political agendas and deflect public criticism, government officials are only too eager to use whatever tools may be available, including the power to regulate radio and television licenses.

At the very dawn of the electronic media age, the Roosevelt administration used content regulation to harness the emerging power of radio as a political counterweight to the overwhelmingly anti-New Deal print media establishment.[\(note 48\)](#) Many years later, the Kennedy and Johnson administrations used the Fairness Doctrine and other content regulations aggressively to silence right wing critics.[\(note 49\)](#) President Nixon used the same regulations to threaten the *Washington Post* in an effort to stifle its coverage of the Watergate scandal.[\(note 50\)](#) Regardless of which party happens to be in power, the same thing will happen again. Those who seek government regulation of their competitors overlook the fact that the same rules probably will be applied to them one day. The First Amendment can only protect one medium to the extent that it protects them all. Bartering fundamental rights for short-term competitive advantages is bad business, as well as bad citizenship.

2. The "Market Failure" Justification

Regulators often cite what they call "market failure" to justify intervention in the electronic media marketplace.[\(note 51\)](#) But the notion of market failure is an oxymoron. Free markets merely reflect what the public wants and what it is willing to pay for. The laws of supply and demand cannot be repealed by legislation, even when free markets fail to satisfy the desires of powerful politicians. The government will always try to muscle the market back into line, but this kind of government intervention is more akin to a perpetual motion machine. It satisfies the hungry crowd for a while, but when the immutable laws of inertia inevitably catch up, the phony mechanism grinds to a halt.

3. Vivacity in a Free Information Market

Increased competition in the telecommunications and electronic journalism business is bound to upset those who have grown accustomed to comfortable, government-protected monopolies. But no government is clever enough to outwit the free market forever. Regulating domestic media content will only force people to find what they want elsewhere, putting American programmers at a competitive disadvantage in an increasingly global marketplace. The deposed Communist leaders of Eastern Europe were able to control their domestic media markets quite effectively for fifty years. Eventually, however, they learned that electromagnetic waves have no respect for national borders. The more widespread and universal the telecommunications system becomes, the harder it will be for government to interfere with it. A greater abundance of information, and the means to distribute it, will tempt the government to further intrude into the editorial process but will also make it harder to do effectively.

Still, as the media continue to converge into entirely new forms, and as the news distribution system comes to depend increasingly on electricity instead of printer's ink, the threat posed by government content regulation will continue to grow. Some well-intentioned public official might even seek to regulate the content of newspapers like the *Wall Street Journal* and *USA Today*, simply because they, like the television networks, depend on communications satellites for nationwide distribution. It is certainly possible that the government will try to regulate the content of interactive talk shows on the Internet in the same way it has regulated similar shows broadcast over the air. In such a rapidly changing technological environment, one cannot be sure that the blurring of once clear lines between broadcasting, telephones, databases, and newspapers will not give government an excuse to regulate everything that flows on any kind of public network. If the government can presume to regulate the content of radio and television programs, it would almost certainly be tempted to regulate the content of computer databases, electronic mail, or facsimile transmissions, when they are all sharing the same digital network.

D. Additional Considerations

Content regulation, of course, is not the only challenge posed by the deployment of new telecommunications technology. Even if the new media are kept free from government intrusion, a number of serious social and political questions posed by the evolution from scarcity to abundance still remain. For example, the idea of consensus upon which democracy depends may be threatened when anyone can retreat into his or her own corner of the cyberspace, avoiding all but the most cursory personal contact with the wider social and political community. New telecommunications technologies could help preserve the essential ingredients of representative government by reshaping our concept of community from one based on geography and economics, to one based on more subtle considerations of personal interest. Alternatively, new technology could replace the tyranny of the majority with the anarchy of the unrestrained individual.

Traditional concepts of intellectual property and copyright may also be undermined when the digital network makes information available to everyone at once, without the need to physically copy anything. It may not be possible to keep track of who owns what when everyone is simultaneously a producer and a consumer of bit-radiated information flowing back and forth across the open digital network. None of this may even matter when everyone is able to rearrange and reassemble digital data into information packages of purely idiosyncratic design, and then put that material back out on the network for others to manipulate still further.

Conclusion

The real danger is not from monopolistic corporations setting up tollbooths on the electronic superhighway, or from digital pirates hijacking intellectual property. It is from well-intentioned public officials who try to protect outdated, incumbent technologies and seek to regulate content. New technology soon will provide the power to turn billions of digital bits into unlimited amounts of useful information available to all. But this new power will create the awesome responsibility to preserve every citizen's freedom of access to that information and the right of everyone to participate in the continuing digital conversation. Traditional journalistic practices developed in an age of scarce distribution. But, journalistic values are not dependent on scarcity, and they need not be compromised by abundance. The value of storytelling will not diminish merely because there is greater access to the underlying raw data. At the same time, however, it would be foolish to ignore the fact that if new technology encourages everyone to speak at the same time, nobody will be heard or understood.

The twenty-first century news machine will soon be a reality, bringing enormous benefits, even as it forces society to make difficult choices. Without a doubt, this new technology will change journalism. It is up to society to make sure that this change is for the better. If the free press and journalistic ethics are to survive the treacherous journey into cyberspace, society needs to answer the tough questions that new technology will raise about the role of journalism in a free society, remembering that technology, no matter how powerful, can only be as useful and worthwhile as human beings decide to make it. As Edward R. Murrow warned many years ago, technology without thoughtful human involvement is merely "lights and wires in a box." ([note 52](#))

Notes

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1. The "new media" include, but are not limited to, direct broadcast satellite (DBS), high definition television (HDTV), and digital cable systems. *See generally* M. Ethan Katsh, *The First Amendment and Technological Change: The New Media Have a Message*, 57 *Geo. Wash. L. Rev.* 1459 (1989). The term "new media" may have evolved from *Red Lion Brdcast. Co. v. FCC*, 395 U.S. 367, 386 (1969). "Although broadcasting is clearly a medium affected by a First Amendment interest, . . . differences in characteristics of new media justify

- differences in the First Amendment standards applied to them." *Id.* [Return to text](#)
2. See generally David Armstrong, *Hooray for Cyberhood*, S.F. Examiner, July 17, 1994, at E4; Vic Sussman, *News of the Wired*, U.S. News & World Rep., May 16, 1994, at 60, 62. [Return to text](#)
 3. See Josh Hyatt, *AT&T Heads Home-Again: For Consumers, the Merger Could Offer a Wide Array of New Competition*, Boston Globe, Aug. 17, 1993, at 33; Mark Landler & Bart Ziegler, *Bell Ringer!*, Bus. Wk., Oct. 25, 1993, at 32, 32-36; Sandra Sugawara & Paul Farhi, *Bell Atlantic, TCI Call Off Merger*, Wash. Post, Feb. 24, 1994, at A1. [Return to text](#)
 4. Fred Dawson, *Baby Bell Challenges '84 Cable Act Provision*, Multichannel News, Dec. 21, 1992, at 1, 33. [Return to text](#)
 5. *Regional Rollout Planned: DBS Leaders Predict Satellite Service Will Have Big Impact on Cable*, Comm. Daily, Mar. 25, 1994, at 5. [Return to text](#)
 6. H.R. 3626, 103d Cong., 2d Sess. (1994); S. 1822, 103d Cong., 2d Sess. (1994); *Compromise Possible: Broadcasters Bashed in Comments to Hill on Spectrum Flexibility*, Comm. Daily, Mar. 9, 1994, at 2; *Lobbying Continues: Anstrom Upbeat on Cable's Future, Predicts Legislative Action This Year*, Comm. Daily, June 16, 1994, at 5. [Return to text](#)
 7. See Kevin Maney, *Techno Tsunami: Surf's Up! Ride the Wave of Innovation*, Quill, Mar. 1994, at 16, 16-18. [Return to text](#)
 8. See generally Phillip Moeller, *The Age of Convergence*, Am. Journalism Rev., Jan.-Feb. 1994, at 22, 24. [Return to text](#)
 9. Phillip Moeller, *A Multimedia Primer*, Am. Journalism Rev., Jan.-Feb. 1994, at 26, 26. [Return to text](#)
 10. Programs include but are not limited to: ADSL (Asymmetric Digital Subscriber Line), JPEG (Joint Photographic Experts Group), and MPEG (Moving Pictures Experts Group). See Ron Goldberg, *The Big Squeeze: Compression Technology is the Driving Force Behind the Digital Video Revolution. Here's How the Data-Shrinking Wizardry Works*, Popular Sci., Nov. 1993, at 100, 102; Frank Vizard, *Building the Information Superhighway*, Popular Mechanics, Jan. 1994, at 28, 31-32. [Return to text](#)
 11. Current telephone networks carry a variety of digital data which include voice communication, data communication, and compressed video images. See Vizard, *supra* note 10, at 31. [Return to text](#)
 12. See Edwin E. Mier, *Staying on Top of WAN Bandwidth*, Comm. Wk., Mar. 4, 1994, at 43, 43. [Return to text](#)
 13. See Dawn Bushaus, *Video Comes Closer to Home: Phone Companies Search for the Ideal Video Dial-Tone Transport*, Comm. Wk., July 5, 1993, at 4; Vizard, *supra* note 10, at 31. [Return to text](#)
 14. *State of the Art Journalism: Growing Importance of Local News*, Broadcasting, Dec. 3, 1984, at 47, 50. [Return to text](#)
 15. Joseph Fitchett, *Media Empires: A Necessary Evil?*, UNESCO Courier, Sept. 1990, at 38, 41; Louise Kramer, *Cashing in on the News*, Scholastic Update, Sept. 8, 1989, at 22, 22. [Return to text](#)
 16. See generally Jonathan Galst, *"Phony" Intent?: An Examination of Regulatory-Preemption Jurisprudence*, 67 N.Y.U. L. Rev. 108 (1992); Linda Haugstead, *Small Operators: We're Drowning Under FCC Regs.*, Multichannel News, June 7, 1993, at 84, 91; Doane Perry, *Will Wireless LANS Realize Their Potential*, Bus. Comm. Rev., Aug. 1993, at 18, 20. [Return to text](#)
 17. 1 Broadcasting and Cable Y.B. B-604 (1994). [Return to text](#)

18. Robert W. Crandall, *Regulating Communications: Creating Monopoly While "Protecting" Us From It*, Brookings Rev., Summer 1992, at 34, 38. [Return to text](#)
19. See Victoria Kahn, *Fragmentation! Market Fragmentation in Radio Advertising*, Mediaweek, May 3, 1993, at 16, 16. [Return to text](#)
20. *Id.* at 16. *But cf.* Sushil Shergill, *The Changing US Media and Marketing Environment: Implications for Media Advertising Expenditures in the 1990's*, 12 Int'l J. of Advertising 95 (1993) (discussing the fragmentation of the television market and the overall decline in advertising revenue). [Return to text](#)
21. See Robert A. Mamis, *Happy Anniversary, PC, Inc.*, Dec. 1991, at 169, 169. [Return to text](#)
22. Lisa Rudman, *Desktop Video: First Cuts*, MacUser, Nov. 1993, at 136, 136; Phillip J. Stella, *Computers Invade the Edit Suite or DTV is Here to Stay; Desktop Video*, AVC Presentation Dev. & Delivery, Mar. 1992, at 28, 29. [Return to text](#)
23. *From Idiot Box to Information Appliance*, Economist, Feb. 12, 1994, at 5, 6. [Return to text](#)
24. The "information superhighway" is a multipurpose label for the nation's evolving communication system. See Jonathan D. Blake & Lee J. Tiedrich, *The National Information Infrastructure Initiative and the Emergence of the Electronic Superhighway*, 46 Fed. Comm. L.J. 397 (1994) (discussing the roles of private industry and government in developing the "information superhighway"). [Return to text](#)
25. *From Idiot Box to Information Appliance*, *supra* note 23, at 6. [Return to text](#)
26. "Virtual communities" are large computer networks which allow access to vast amounts of information and direct communication with other users of the network. Two better-known examples are Internet and CompuServe. See Michael J. Hewitt, *Virtual Community; Electronic Information Networks*, New Statesman & Soc'y, Feb. 4, 1994, at 38. [Return to text](#)
27. Vizard, *supra* note 10, at 31-32. [Return to text](#)
28. *Id.* [Return to text](#)
29. See Kahn, *supra* note 19, at 16. [Return to text](#)
30. *Id.* [Return to text](#)
31. See, e.g., Lauren Miles, *Phoenix Indie to Rise Early*, Mediaweek, May 9, 1994, at 8 (explaining how an independent station in Phoenix is launching its own morning program to compete directly with the network's morning news shows). [Return to text](#)
32. 1 Broadcasting & Cable Y.B. C-137 (1994) (explaining that in the Chicago-LaSalle market there were 10 independent stations and only 7 network-sponsored stations). [Return to text](#)
33. Gerald O'Connell, *A Virtual Reality: Concentrate on Creative Applications Not the Technology of Interactive Media*, Potentials in Marketing, May 1994, at 6, 6. [Return to text](#)
34. "Hyperstacks" are interactive documents which can incorporate text, graphics, animation, audio, and video. [Return to text](#)
35. Vizard, *supra* note 10, at 30. [Return to text](#)
36. Andrew Prozes, *Delivering the News*, Bus. Q., Spring 1994, at 107, 109; Vic Sussman, *supra* note 2, at 61. [Return to text](#)

37. Vizard, *supra* note 10, at 30. [Return to text](#)
38. *From Idiot Box to Information Appliance*, *supra* note 23, at 6. [Return to text](#)
39. Mitchell Stephens, A History of News: From the Drum to the Satellite 281 (1988). [Return to text](#)
40. *Id.* at 278. [Return to text](#)
41. *Id.* at 280-287. [Return to text](#)
42. See generally Peter Prichard, The Making of McPaperThe Inside Story of USA Today (1989) (recounting the history and development of *USA Today*). [Return to text](#)
43. *Counselor Offers Rules to Live By in the Future World of PR*, PR Services, July 1994, at 14, 14. [Return to text](#)
44. See The Federalist No. 84, at 263 (Alexander Hamilton) (Roy P. Fairchild ed., 1966). [Return to text](#)
45. S. Rep. No. 92, 102d Cong., 1st Sess. 1 (1991), reprinted in 1992 U.S.C.C.A.N. 1133, 1143-44 (cable service is available to 90% of homes in the country). [Return to text](#)
46. See Jonathan Seybold, *The End of the Local Phone and Cable Monopolies*, Digital Media, Sept. 20, 1993, at 3. [Return to text](#)
47. Sugawara & Farhi, *supra* note 3, at A1; *Regional Rollout Planned: DBS Leaders Predict Satellite Service Will Have Big Impact on Cable*, *supra* note 5, at 5. [Return to text](#)
48. Matthew L. Spitzer, *The Constitutionality of Licensing Broadcasters*, 64 N.Y.U. L. Rev. 990, 1048-49 (1989). [Return to text](#)
49. *Id.* at 1051-52. [Return to text](#)
50. *Id.* at 1050-51. [Return to text](#)
51. See Keith Bradsher, *A Call for Economic Intervention by Government*, N.Y. Times, Feb. 15, 1994, at D1. [Return to text](#)
52. Edward R. Murrow, Address to Radio and Television News Directors in Chicago (Oct. 15, 1958), in In Search of Light: The Broadcasts of Edward R. Murrow, at 354 (Edward Bliss, Jr. ed., 1967). [Return to text](#)