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12 The Global Impact of New Technologies

W. Russell Neuman

Provocative predictions follow new technologies like a shadow. Satellite television will usher in a global village. The Internet will transform broadcasting into narrowcasting. Well-known journalists and columnists will be able to communicate independently and profitably on the Web no longer dependent on corporate megamedia to convey their insights to an interested audience.

In my view these prognostications are not without merit and are based on a relatively sophisticated understanding of changing technology, media economics, corporate strategies, and audience expectations. But they may well miss the mark primarily because there are so many more ways to get it wrong than right. Furthermore, most scenarios for the future tend to highlight one change (such as the explosive growth of the World Wide Web or the dramatically declining cost of global communication) and assume everything else will remain constant—a demonstrably flawed modeling strategy.

Skeptics are quick to pick up on frequent errors of prediction and ridicule the effort, often criticizing what they view as a naive technological determinism.¹ I am inclined to encourage the speculation, however, precisely because I am a skeptic of technological determinism. The pace of change in the technologies of human communication is particularly rapid now. We are in the process of designing and building a global digital communications infrastructure. The architecture and cost structure of that global electronic grid is subject to human control and not determined unilaterally by the nature of the technology itself. So to speculate about the “effects of technology” on news, news institutions, the role of the journalist, journalism economics, news flows, and possible changing public perceptions of the political realm is to think about how to design technology to serve human ends, a worthy enterprise indeed.²

Technology does not determine, but it can make a difference. New technologies are too often engineered to do what preceding technologies did a little better, faster, or cheaper. As a result, not to speculate shortchanges imaginative thinking about new functions and opportunities, precludes arguments about

the viability of alternative structures, diminishes debate about the social value of evolving institutions.

There is another shadow following technical change. It is the economic self-interest of the major institutions profiting from existing technologies. Newspapers watch the evolution of news Web sites with pained fascination. Television network news executives track developments in cable and satellite programming as gamblers follow news from the racetrack. They too are gamblers, and they understand that the corporate stake is at risk.³

The scholarly literature concerning these new media and their impact on the public sphere is decidedly schizophrenic. There is a euphoric tradition, represented by such enthusiasts as Nicholas Negroponte, George Gilder, and Michael Dertouzos; they find promise of individualization, democratization, and empowerment in a digital world.⁴ And there is a critical tradition exemplified among others by Mark Alleyne, Robert McChesney, and Vincent Mosco; they appear convinced that just the opposite is already evident.⁵ This essay will try to steer a middle course between these two poles, and such a strategy dictates that we draw a bit on both literatures. The first focuses on the nature of the technology, the second on the structure of the political and economic system that begets the technology. My focus will be the interaction of the two.

Unlike other chapters in this book, this one will not track election trends, examine the text of political rhetoric, or analyze the balance of control between reporters and officials in determining the flow and framing of political ideas. Rather, it examines the technical and structural context of news production, transmission, and ultimate consumption by a curious public. My perspective is broadly historical, yet my central theme borders on the ahistorical. With a tip of the hat to Frank Fukiyama, having traced a predictable cycle-series of technical advance and institutional adjustment, I argue that this cycle is unique.⁶

The Technology of Creating and Delivering News

There have been new media technologies before. There has been a tradition of competition among news media in most industrialized societies. Why do analysts claim the Internet changes everything? Is this just the hype and hyperbole of young commercial entrepreneurs hawking their wares? Although there is no shortage of hyperbole, the basic argument that the Internet is radically different from all of its analog ancestors is fundamentally correct. The key concept is digital convergence.⁷

Historically, a series of unique, stand-alone analog technologies were optimized for the capture and communication of news and entertainment in different formats. The primitive technologies of the town crier and wall poster were replaced by the penny press with the high-profile extra edition for fast-breaking news. The telegraph and undersea cable brought instant news from distant locations. Photography and photolithography permitted reproduction of modest still images. Magazines evolved with higher quality printing, weekly or monthly publication cycles, and more specialized audiences. Newsreels at the movies captured the sound and motion of actual news events with dramatic titles, stirring music, and a breathless announcer, all somehow especially appropriate for this theatric news venue. Radio and television ultimately supplant newsreels and extra editions, but not the fundamental economics of magazines and newspapers. The result in most industrialized democracies is a happily profitable and vibrant set of competing news media, drawing heavily on advertising revenues and each playing to its technological advantage. Thus, car radios dominate drive-time news. The evening paper gives way to the evening network news. The morning newspaper and news magazine thrive as near monopolists.

Thus far in the history of media evolution, we witness a consistent pattern. New media emerge with different technical properties that are optimized to meet human needs. For the most part, the old media (such as radio) adjust, taking advantage of their technical character to survive by providing a unique new format.

But everything changes with the Internet. As all specialized media begin to migrate to an interconnected digital network, audio, video, and text-with-graphics become interchangeable. The electronically delivered morning "newspaper" can be printed out on a high-speed, high-resolution home-printer, or it can be recorded as audio and played on a Walkman or car stereo, or it can be viewed as video on a computer monitor. A newsletter delivered by e-mail can contain audio, graphics, or full-motion video. Digital communication precludes the possibility of a stand-alone technology; everything is interconnected. Digital communication erases the "uniqueness" of any of the predecessor technologies.⁸

As a result, the marketplace for news is no longer a stable equilibrium. The taken-for-granted definitions of news and newsworthiness are drawn into question. Threats and opportunities abound. If new technologies threaten established ways, who will benefit? With new competition and abundance, will the control of news agendas and news framing migrate from the elite news oligopoly to the mass audience, community groups, and issue publics?

Who Controls the News?

On the surface these technological developments look quite promising. As the cost and complexity of capturing and communicating news declines, new forms of community-based and special-interest communication can supplement traditional news forms and forums. What once required special lighting, a sound crew, and a film cameraperson backed up by a high-speed film lab and film-editing specialists is now within reach of a teenager with a handheld video camera. The traditional definition of a news marketplace—a newspaper-television-defined metropolitan area supplemented by weekly local newspapers and an occasional community cable television channel—turns out to be a historical-technological artifact.⁹ The definition of a communications “market,” as any politician or news professional will confirm, is an important political entity. These changes could be profound.

There have been previous attempts to use technology to break down the local programming monopolies. What plagued public-access cable television, for example, was that community programming was shown at a fixed time, available to only a small fraction of those who might be interested.¹⁰ Furthermore, there was no tradition of promotion or outreach to attract attention.¹¹ The new digital media, however, permit communications unconstrained by the assumptions and technical limitations of fixed-format broadcasting. Small-audience and special-interest programming can be provided on demand. In addition, viewers are free to pass along the digital video file to friends and neighbors who might be interested, as they would pass along a news clipping. The economics of capture and transmission do not necessarily require large audiences and commercial production values.

What evidence do we have that the new digital media will succeed in stimulating special interest news and citizen communication despite the fact that their analog forebears may have failed? Evidence is tricky here; it is very early in the diffusion of technologies and in the evolution of their use. The enthusiasts and skeptics both have their assemblage of anecdotes. But some lessons might be drawn.

In research conducted at the MIT Media Lab, we posited that the early adopters of home computer technology, by dint of their technical interests and background, would have patterns of Web use systematically different from the large mass of midterm adopters as penetration rates increase (by all indications, quite quickly) from 30 percent to 60 percent of American homes.¹² So we matched up early adopters recruited through local Internet Service Providers in two locations with a special sample of friends, coworkers, and family

who heard about the Web but had not yet had much contact with it at work or at home. With their permission, we provided them with loaned laptop computers and modems and tracked their usage patterns and content predilections, which we then compared with our parallel early-adopter cohort.

To our surprise, although the early adopters spent more time at computer-oriented Web sites and were more facile at making their Web browsers behave, their content tastes and usage patterns were not distinctly different from the novice sample. Both samples used the Web primarily for special interest information and entertainment seeking, not just monitoring some of the many mass media Web outlets. The newspaper and TV still provide the best resource for news, and both samples reported some but not a dramatic fall off in traditional media usage. (This was confirmed in the much larger survey-based study in 1996 by the Pew Research Center for the People and the Press.)¹³ We concluded that the flexible and interactive nature of the Web is suited to an active style of information-seeking in contrast with the more passive “monitoring” of traditional print and broadcast news media. It is not technological determinism, but evidence technologies interact in distinct ways with different domains of human curiosity and interest.

A similar field trial was conducted in Pennsylvania.¹⁴ In this study researchers at Carnegie Mellon University found that the difficulty of adapting to new technology greatly limited Internet use, especially for older users. The teenagers, notably male teenagers, used the home-based personal computers provided by the experimenters six to ten times more often than their parents. This finding may not be generalizable, however. This study was based on high school students who brought computers home, and there was little incentive for the parents to experiment with the computers and no peer support for the older users. Nonetheless, the patterns of use for all subjects were similar to those in the MIT study. The interactive nature of the Web led even novice users to very diverse subject matters. The researchers report 55 percent of the Web sites hit were visited by only one user of the 100 households participating, and only 10 percent of the Web pages viewed were visited by ten or more study participants.¹⁵

There have been many frustrating failures in journalistic experiments with community-oriented, small-scale news online, so some skepticism is due, especially if the proposed system depends on sustained labor by volunteers. But earlier experiments on the Web promise new formats, new flexibility, indeed new definitions of what news could be, only part of which is derived from traditional media streams and formats. The new formats of news involve audience discussion and commentary not easily incorporated in the broadcast domain, and detailed coverage of specialized topics not ordinarily found outside of

specialty magazines. Perhaps some new mix of amateur enthusiasm, quasi-professional and fully professional journalism will give birth to a new definition of news and a new economics for news production.

The dynamics of the evolving video technologies have other effects. For example, established authorities' ability to control how news events are framed can be challenged. In most cases the "open microphone" of Web-based discussion groups generates ideas and perspectives that bubble up into such "official media" as talk radio and ultimately traditional media commentary and reportage. In other cases the participatory technologies make news. The beating of black motorist Rodney King by white police officers would certainly have been recorded on the books as a routine traffic arrest were it not for the presence of an amateur video camera. Given the prominence of the King case and several similar incidents in recent years, authorities and community groups may increasingly conduct their business well-armed with the latest video gear.

The model for Web-based video may turn out to be more like present-day talk radio than mainstream newspaper and television reportage, although it is perhaps too early to tell. Professional producers and charismatic hosts provoke reactions from the audience and keep the discussion lively and the audience sizes big enough to be viable for advertising-based economics. The competitive incentives drive the programmers to differentiate themselves rather than compete head-to-head for a small slice of the news and public affairs audience. Thus, talk-radio host Rush Limbaugh on the conservative side and others (although perhaps less commercially successful) on the liberal side focus on spin and ideological framing and leave straight reporting to other media. According to a recent Ford-Carnegie study at the Annenberg Public Policy Center, talk radio attracts healthy audiences: 18 percent of an American adult population report listening at least twice a week to call-in, politically-oriented talk radio. Talk-radio enthusiasts did not stop paying attention to mainstream media; in fact, they consumed more than the average. But they were distinctly more critical and skeptical of mainstream news reporting.¹⁶

The Changing Economics of the News Business

The spate of new books on the state of the fourth estate has a demonstrable tendency to, first, celebrate a golden age of Western journalism peaking in the recent past and, second, to decry the current and presumably evident decline of serious journalism.¹⁷ Television, the new media, and the new media economics represent the usual suspects, the convenient *bête noire* as these narra-

tives unfold. This critical perspective would probably be in evidence absent the invasion of new technologies, but it is worthwhile to explore the logic of these critical inquiries nonetheless.

Critiques of modern media resonate with three central themes: autonomy, format, and funding. The first theme is the need to protect the independence and unapologetic honesty of reporters and editors as they chronicle the issues and events that swirl around their employers' corporate empires. Expanding corporate crossownership, joint ventures, and ever larger corporate command structures inevitably challenge that tradition of journalistic independence.¹⁸ Numerous case studies of potential abuse circulate in the academic journals and professional trade press. From the media executives' point of view, the need to reduce the risk of new competitors and to control technology expenditures drives the merger mania. From the point of view of the critic, these pressures have important unanticipated effects on journalistic integrity.¹⁹

The second theme revolves around the evolution of news formats. In the newspaper world the audience-research-derived model for *USA Today* is derided as McPaper. This format—short, simple, colorfully printed, with cute graphics and universalistically bland content—tastes best to the largest number of readers. But it is not necessarily nutritious. In television news the growth during prime time of the magazine format mix of news and entertainment is decried as a sure sign of journalistic decline. The format's emphasis on soft news, personality, and celebrity weakens the tradition of hard-hitting serious journalism in the dinner-hour window for traditional network news. Network news viewership is down, primarily as a result of the competition from cable and satellite entertainment programming.²⁰ The TV news-magazine formats are also products of the increasingly competitive battle for viewership in a multichannel environment.²¹

The third and related theme is funding constraints—the pressure on print and broadcast news operations to be more efficient and increasingly profitable. The 1990s have witnessed new limitations on international travel, the closing down of foreign bureaus, new pressures on reportorial efficiency, and less frequent support of long-term and high-cost investigative assignments.²² One might characterize the golden age of serious journalism as primarily a golden age of near-monopoly profits.²³

In the United States the three dominant networks drew in 90 percent of the viewing audience in prime time for entertainment programming. That provides a healthy cushion in advertising revenues to support a high-profile and high-status news operation. In other industrialized nations during the 1990s,

spectrum scarcity and government-sanctioned monopolies generated equivalently large audiences and (in commercial systems) profitable operations to support news programming. Metropolitan newspapers in the industrialized world, the medium of choice for regional retail advertising, also found themselves in a profitable position. Although some have argued that the pressures on the costs of quality journalism are primarily the outcome of a new management culture, the link of the evolving corporate norms in the news business to new competition and new media is in all likelihood highly significant.

How should we respond to the collision of new technology and hard-won values of independent journalism? The playing field is divided between outrageous enthusiasts with roots in technology and capitalism and outraged critics with roots in cultural theory and the political left. The abandoned middle may prove to be the high ground here. It is important not to equate structural change with an abandonment of basic values or selling out. What are now the revered principles of the independent fourth estate were largely crafted by capitalists. The most significant danger to independent journalism is capture by monopoly or oligopoly interests or, in this case, the recreation of artificial scarcity.

American academics and news professionals have dominated the dialogue thus far. European and especially Scandinavian media have different editorial traditions—political party based and more ideologically oriented. Will the new media offer a new lease on life to these traditions or instead reflect an Americanization and commercialization of news practices around the world as many fear?²⁴

One of the defining characteristics of the critical literature is a concern about pandering to the lowest common denominator. The electronic media give rise to instantaneous and two-way communication. Unlike magazines and newspapers, what people like and dislike is immediately apparent. They like the local, the visual, the human perspective, the concrete example; they dislike abstract political rhetoric and institutional perspectives. The mass audience's proclivity is well known but not necessarily well understood. For good or for ill, the ratings game of this era's television will intensify in the next generation of digital video. Consider it a challenge to research-based professional creativity rather than a test of ethical and political will.

The Global Village

Another central theme in the analysis of the impact of new communications technologies is globalization. Walter Lippmann's classic *Public Opinion* is an

examination of public understanding of distant events, in that case Americans' perceptions of the Great War in Europe.²⁵ In his own way, he introduced the globalization issue. Lippmann puzzled over how Americans could be expected to make sense of such structurally complex events a half-world away and in such unfamiliar contexts. Undersea cables connected Europe and North America by the time of the First World War, so up-to-date telegraphic reports from the battlefields were featured in the newspapers of the day. But radio was not yet in common use and, of course, television and satellites were a long way off. Lippmann's book is still frequently assigned in classrooms, even after Vietnam, the first televised war, and the Gulf War, the first war televised live. The questions he raised are no less relevant today than they were in 1922 when *Public Opinion* was published.

There are indeed increased flows of news across international boundaries through satellites, data networks, and the interconnection of new and traditional news media.²⁶ The United States may be the world leader in new technology, but it exhibits the lowest levels of foreign news content in its media and the lowest levels of foreign news interest and foreign news knowledge among the publics of industrialized nations. Is there evidence that the increasing global media flows may nudge public opinion toward a new worldliness? The answer would have to be—not yet. Electronic connectedness cannot be equated with global interest, attention, and most importantly, understanding.

The quadrennial survey of the Chicago Council on Foreign Relations reveals a consistent 33 percent of Americans who express interest in news about other countries.²⁷ The Pew Center studies of news interest also reveal a stable disinterest in international political news, a pattern especially pronounced among young U.S. citizens. Only one in ten under thirty years of age follow such events closely.²⁸

But the digital day is young. The penetration of home PCs with modems in the United States just recently reached the level of one in three households, and they are, of course, highly concentrated among the well-to-do.²⁹ Although it is trumpeted that CNN is available in nearly 100 nations around the world (a fact widely acknowledged by those world travelers who stay in the better hotels), CNN has not yet reached a penetration of 1 percent of the world's population despite wide availability of cable in Europe, North America, and Japan.³⁰ In the industrialized world it took nearly seventy-five years for the telephone to reach near universal penetration.³¹ Although the diffusion of new media is moving more quickly, it is early for definitive measure.

The technical drivers of this diffusion are, as before, relatively straightforward. The migration to electronic communications has prompted a robust international competition among undersea optical-fiber cables, satellite transmission companies, and to a lesser extent terrestrial microwave networks. The technical challenge is to get more and more information through an existing infrastructure while new and even more sophisticated electronic links are constructed. Such are the tests by which capitalism demonstrates its vitality. There are numerous competitors each with sunk costs invested in digital networks desperately looking for business.³² The prices of international voice, video, and data are dropping dramatically. The lower costs become evident to the average consumer in international long-distance rates for telephony.³³ The pervasive impact of lower costs is seen as well in the increasing flow of financial data, international news, and entertainment programming across international boundaries.

But cost is only part of the picture. As increasingly massive flows of digital communication surge across national boundaries, it becomes more and more difficult to patrol and protect political boundaries.³⁴ A truckload of news magazines at the border crossing is easy to identify and, if necessary, to seize. In earlier eras those few broadcasts that spanned borders could be jammed if found to be politically offensive.³⁵ But how is it possible to police the Internet? Some authoritarian regimes around the world will doubtless hunt down an offending Web site or impolitic e-mail message, and the offenders will be pilloried with appropriate ceremony. The pretense of control will be resolutely proclaimed; but the fact of the matter is that the authorities of the industrialized nations are losing the capacity to censor or even to monitor the internal and international communications of their citizenry. It is simply impossible to monitor every electronic utterance. With a few keystrokes on a personal computer, citizens can encrypt messages, resulting in a digital stream that would call for months of analysis engaging banks of government supercomputers to decrypt (if the authorities could find the digital fragment in the first place).³⁶

Because the Internet blurs the distinction between an interpersonal and a broadcast communication network, it blurs the distinction between private and public speech. Authoritarian nations' restrictive regulations designed to prevent speech deemed contrary to national security focus on mobilization appeals and incitement-to-riot concepts of public speech. A rabble rouser on a street corner with a bullhorn is, by definition, easier to locate and to expurgate than, say, a thoughtful but anonymous critic at a computer terminal.

The Public Sphere

In authoritarian media systems the official line of public rhetoric is often viewed with appropriate skepticism. There is a longstanding tradition of sophisticated audience members reading between the lines to catch subtle changes in policy and strategy. There are numerous examples when officially decreed falsehoods are widely understood by the public to be false and sometimes are even freely acknowledged so in private discussion.³⁷ This rich dynamic between the official and grassroots public sphere is what Jürgen Habermas focused on in his celebration of nineteenth-century salon society in Europe.³⁸ By most measures, the evolving media, including talk radio and especially the Internet and the Web, will enrich and empower that tradition of a vibrant public sphere. The critical literature in mass communications research argued for decades that the rhetoric of official news obscured the linkages between public policy and the daily circumstances of private life. We may expect that the dominant public language of the media will continue to interact with the private language of the street. But if, as predicted, the new media truly enhance small group communication, new forms of private speech will migrate forcefully from the street into the surviving mass media.

Michael Schudson's study of the evolution of the American news industry has, like Lippmann's study, become something of a classic and remains widely used in the teaching of journalism, press politics, and public opinion.³⁹ It is a book with a message, especially for those young readers who grew up with mass mediated news and may have a taken-for-granted sense of what news is. News is, Schudson demonstrates powerfully, a socially constructed phenomenon. The idealized objectivity of the fourth estate has its roots in the economics of newspaper competition at the turn of the century. And, as a socially, politically, and economically constructed phenomenon, the definition of news may yet evolve further in response to new needs and new incentives.

Professional journalists squinting ahead at a new economics, new technologies, and new competition may be inclined to circle the wagons to protect old principles and old ways of doing business. Indeed, there is much of value to protect. But in times of dramatic change, there also is an opportunity to affect the definition of news in positive ways, to explore the subtle dynamics of public and private speech in new ways, to examine policy agendas in more depth, to discover new news communities of news interest. Judging from recent history, we have reason to expect that digital news will be much more than yesterday's news on a computer screen.

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