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Communications Policy in the Era of Choice
and Convergence with Reflections on
the Markle Foundation

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Abstract

In the 1960s, technological progress caused the technologies of communications media to begin to converge. Convergence enhanced the prospects for competition in the media, promising consumers more choice – but only if historically anticompetitive policies could be reversed. As the era of convergence with choice was dawning, Lloyd Morrisett became the President of the John and Mary Markle Foundation, and immediately changed the focus of the Foundation’s program from medical research to communications policy. This essay traces both the history of technology and policy in communications, and the closely related activities of the foundation, during the Morrisett presidency, from September 1969 to December 1997. As such, the essay provides both an intellectual history of policy research in communications and a chronicle of how a relatively small but well-managed foundation can have a major impact in an important area of public policy.
COMMUNICATIONS POLICY IN THE ERA OF CHOICE AND CONVERGENCE

WITH REFLECTIONS ON THE MARKLE FOUNDATION

by Roger G. Noll and Monroe E. Price*

By the late 1960's information technologies had begun to exhibit two characteristics that have become increasingly significant during the last third of the 20th Century. The first is choice: more options -- numbers and diversity -- for those seeking communication, information, and entertainment. The second is convergence: ever greater overlap in the capabilities of different information technologies. This essay examines how, in the post-war era, these significant new characteristics emerged. But it does so primarily to come to understand a wholly different history: that of the Markle Foundation as it evolved from 1969 to 1997. During those years, Lloyd Morrisett was its extraordinary president and had the enviable position of leading the only philanthropic institution that was devoted to understanding and encouraging choice and convergence during the era in which wondrous new opportunities emerged in the communications sector.

The history of the Markle Foundation is important because of its extraordinary relationship to communications policy over three decades. But it is also interesting as an example of a foundation finding a sense of purpose, attempting to articulate those purposes, and having a sense of accountability. To obtain tax-exempt status in the U.S., a foundation must have a public service goal requiring, in some broad manner, that the foundation supports a socially beneficial activity, such as

* Department of Economics, Stanford University, and Cardozo School of Law, Yeshiva University, respectively. This essay honors the service of Lloyd Morrisett, President of the Markle Foundation, 1969-1997. The authors thank Edith Bjornson for helpful comments on an earlier draft, and gratefully acknowledge financial support from the Markle Foundation.
education, charity, public health, or the advancement of knowledge through research. The very openness of this goal suggests the public dimensions of the management choices facing a private foundation. The government imposes little discipline over such issues as how management picks a tax-exempt function and some measure of accountability to determine whether it is performing this function well. Like for-profit firms, non-profits face the problem of assuring that management acts in the best interest of the corporation, rather than pursues the manager's personal agenda. In a public company, shareholders, or shareholders acting through the Board of Directors, can enforce a standard upon management. Nothing in charitable law requires optimizing behavior in pursuit of a foundation's goals, and certainly not anything remotely resembling the profit-maximizing behavior that characterizes private businesses. In most states, the Attorney General seeks to ensure adequate performance by charitable institutions, but the record is not promising as to the adequacy of review. In many cases, weak boards or boards stocked by members with a combination of personal agendas yield underperforming non-profits.

The Markle Foundation, both historically and under Morrisett's management, is a case study in surmounting these special distinguishing features of non-profit entities. At the Markle Foundation, the idea of a maximizing discipline was built in from the beginning. When John Markle created the first board, he appointed as members a select group of individuals--J.P. Morgan was one-steeped in a maximizing philosophy. A self-discipline that was begun then and continued in the Morrisett era ensured that there was always a working definition of what needed to be done, and how to measure the Foundation's effort or contribution. The annual reports of the Morrisett era are efforts to articulate this goal ex ante and, over time, to clarify and sharpen this goal and the strategy for achieving it.
Take the very question of "line of work." When the Markle Foundation was established, its founder, and his friends, initially decided that social services were to be the foundation's focus. But nothing required that the focus remain constant, and indeed, within a few years the Foundation changed its focus to medical research. Just like a firm, a foundation might need to change, and change radically, in order to pick activities in which it can have a measurable impact. To do this, a modern foundation needs to take into account the activities of government and other institutions. In most public service activities, government is an overwhelming presence. Even a very large foundation has very small annual expenditures compared with federal, state, and local government; hence, the first task of a foundation leader is to identify areas that the government is ignoring or grossly mismanaging. Likewise, if a foundation duplicates the activities of private businesses or several other foundations, its expenditures are likely to make a minimal contribution.

For a relatively small foundation, these problems are magnified. A small foundation must not only find an activity in which its contribution will not be overwhelmed by the activities of government, business, or a larger foundation, but also one in which significant progress can be made with modest expenditures. The Markle Foundation is relatively small. When Lloyd Morrisett assumed its presidency, the market value of Markle's assets was less than $50 million, and its annual budget for philanthropic purposes was less than $2 million. At the end of Morrisett's term, the Foundation was larger in nominal dollars. In 1997, the market value of its assets was $172 million, and its annual budget was $7.7 million. Considering the effects of inflation, the 1997 figures are roughly equal in purchasing power to the 1969 numbers. To obtain some sense about just how small these numbers are, consider the following statistics. The federal government spends about $75 billion on research, about a third of which is accounted for by national laboratories and two-thirds
by grants and contracts. The National Science Foundation spends over $2 billion annually. Stanford University's budget for 1997 was about $1.5 billion, of which over $200 million comes from government research grants. Indeed, the annual expenditure of Stanford's Department of Economics and Center for Economic Policy Research is roughly equal to the budget of the Markle Foundation.

Before September 1969, the Foundation's biggest program, Scholars in Academic Medicine, provided five-year grants of $30,000 to about 30 young medical school professors and an annual conference for these scholars. By 1969, a program of this size was not likely to make a dent in the field of medical research and education. Since the inception of the Markle Scholars program in 1947, and its predecessor program for providing project support in medical research that began in 1935, federal government medical research programs had become enormous, and state support for medical schools at public universities was immense compared to Markle's budget. In addition, numerous other foundations, including some an order of magnitude larger than Markle, had been established in the post-War era with a primary mission in medicine. If anything the field was destined to receive still more attention in the years to come as the federal government assumed responsibility for health care for the poor and the elderly through Medicaid and Medicare. In this environment, it was highly implausible that anything important but cheap would be persistently overlooked for long.

Mass communications provided a sharp contrast with medical education and research. On the research front, government was not supporting any significant amount of research on either communications policy or the effects of mass media. The federal government clearly was an 800-pound gorilla in supporting relevant science and engineering R&D, with its basic research programs in the National Science Foundation and its applied projects in operating agencies like Defense and
the National Aeronautics and Space Administration. But in social sciences, the NSF programs were small and aimed at "basic" methodological topics, and the operating agencies had minimal research budgets and largely ignored the economic, social and psychological implications of information technology. Markle, despite modest annual expenditures, could become a major factor in this area of research.

On the applications side, the Foundation faced only a slightly less difficult problem in finding a niche in which it could have a major impact. The advantage of communications over medicine was that the former was not a primary focus of any competing foundation. Nevertheless, there were other impressive players. The communications sector contained numerous large organizations who were perfectly capable of developing new products and participating effectively in public debates about communications policy. In addition, the Corporation for Public Broadcasting was being launched for the purpose of substantially improving noncommercial television. Although the government's financial support for CPB was not generous, it was still large compared to anything the Markle Foundation could spend. The challenge was to find niches in the area of mass communications that were not occupied by any of these institutions.

In 1969, the connection between mass communications and children was a promising arena for a small foundation. Although public education is an enormous sector, it has neither the budget nor the institutional flexibility to do very much in exploring the use of electronic technologies in education. Both public and commercial television were focused primarily on providing services for a general audience. Commercial television derived its incentives from the need to sell advertising, which was accomplished most effectively through light entertainment, even on Saturday mornings when TV oriented its programs toward children. Public television, with a modest programming
budget and a financial structure that required obtaining voluntary contributions from business and adult viewers, had little discretionary money to spend on experimenting with educational programs that could not generate private donations.

**A Brief History of Choice and Convergence**

Prior to examining the evolution of Markle's grant policies, it is useful to examine the communications history in which they fit. Before 1960, significant choice was not a feature of electronic communication technologies. In the U.S., a single, ubiquitous firm -- the American Telephone and Telegraph Company -- enjoyed a virtual monopoly in long distance telephony, and controlled over 80 percent of local telephone service and the manufacture of telephone equipment. Only slightly less impressive was the position of IBM, with over three-quarters of the computer market. Television, which had vaulted past motion pictures, newspapers, and radio as the most important mass communications medium, enjoyed only a little more competition, with two strong commercial networks (CBS and NBC), a weaker third network (ABC), and a few almost invisible commercial independent and educational stations.

The old fashioned technologies -- print media, motion pictures, and recordings -- were not as concentrated, and so offered more choice. The motion picture industry was somewhat diverse, but a handful of studios still controlled almost all film production and distribution. The industry had not responded effectively to the rise of television as the primary means for providing light entertainment. Recorded music exhibited a similar structure to motion pictures, although small, independent companies were somewhat more important. In addition, recordings and radio, unlike movies and television, had created a symbiotic relationship that offset their natural competition as a source of musical entertainment. Record companies had discovered that giving their products to
radio stations, and even occasionally paying stations and disc jockeys to play their releases, was an effective strategy for increasing record sales. In the print media, metropolitan daily newspapers were merging and dying, causing many major American cities to have but one source of in-depth news. Finally, national circulation general audience magazines like *Colliers* and *Life* also were dying.

Although communications technologies exhibited some overlap, the overriding feature of these industries was that they operated largely independently. Computers were used as a superior means of storing information and making arithmetic calculations. Telephone networks were used almost entirely for conversation beyond shouting distance. Newspapers, radio, and television were means of delivering current information, but they had already become quite specialized: newspapers for in-depth information and features, radio for music and opinions, and television for headline news and light entertainment. Audio recording was used for home musical entertainment and by radio; home audio recording was cumbersome, expensive, and inferior in quality, so economically unimportant. Video players and recorders for consumers were nonexistent, and the only connection between telecommunications and television was that network programs were delivered to local affiliates over the long-distance telephone network.

Communications policy in 1960 was as fragmented as the technologies. The Federal Communications Commission (FCC) regulated telecommunications and broadcasting, but in wholly different ways arising from both statutory and constitutional considerations. The underlying law for regulating communications was passed in 1934, but its essential features had been adopted earlier -- in 1910 for telephones and in 1927 for radio.

When the 1934 legislation was passed, telecommunications was viewed as a natural
monopoly, so the primary issues were how to prevent it from exploiting consumers through high prices, low quality, and insufficient investment in capacity, and how to allocate regulatory authority between federal and state regulators. TV was still in the design stage, so radio was the only commercial broadcast medium, and it was presumed to be sufficiently competitive to make economic regulation unnecessary.

The new act raised only two constitutional issues. For telephone regulation, the constitutional constraint was the prohibition against imposing regulations that, in effect, expropriated the property of telephone investors without compensation. For radio, the constitutional issue was the extent to which the first amendment protections of the press applied to the new medium.

Radio and television policy was primarily an issue of frequency allocation, which determined the number and geographic reach of stations. The FCC made these allocation decisions, but was substantially constrained by two policies. First, most of the spectrum was controlled and allocated by the national security agencies. Second, Congress strongly preferred that the FCC allocate most radio and all TV licenses so as to create relatively low-power stations that each serve a single metropolitan area. The alternative policy, which is practiced in most of the rest of the world, is to create fewer but more powerful stations that can serve a larger geographic region. These two constraints caused consumers to have access to fewer stations than the market could sustain, and made impossible the creation of more than three national TV networks.

Given this policy-created scarcity in stations, a second concern of the FCC was how to decide who should receive the scarce broadcast licenses. Out of this concern grew the continuing conflict between imposing program performance requirements and respecting the first amendment rights of broadcasters. The essence of the FCC's approach was to hold licensing contests among competing
applicants, and to favor applicants who had local ownership, were not affiliated with other media companies (especially disfavoring newspapers in the same locality and "chains" that were or might become networks), and promised the most news, public affairs and locally produced programs.

In the print media, policy in 1960 focused almost exclusively on the first amendment protection of the press, although on occasion antitrust issues also arose. Freedom of expression and the press raise fascinating, thorny, but superannuated policy questions, such as those concerning censorship regarding material that is sexually explicit, a threat to national security, or recklessly harmful to others. In 1960, the reigning legal theory was that first amendment issues had much less application in broadcasting than in print media, based on the view that the spectrum was a scarce public resource, the use of which could be closely regulated by the government as long as regulators did not prescribe the content of programs.

Other aspects of communications were essentially off the table from the perspective of public policy except for an occasional antitrust case. The most important of these was *U.S. v. Western Electric*, filed in 1947, which sought to force AT&T to separate its equipment manufacturing business from telephone services. This case required that the federal government consider the relationship between computers and telecommunications. AT&T was an early player in experimenting with electronic computers, although no commercial computing existed at the time the case was initiated. Through its patent on semiconductors, AT&T had promising opportunities to enter the computer business successfully; however, in the settlement of the antitrust case in 1954, AT&T was permitted to keep its telecommunications equipment manufacturing affiliate, Western Electric, in return for allowing others to use its semiconductor patents without royalties and promising not to enter the computer business. A fair assessment is that neither the government nor
the company understood at the time that these technologies were destined to converge. The decision to prohibit AT&T from making computers would profoundly effect both industries.

The 1960s Revolution

When Markle decided to enter the communications field, both technology and policy were changing, the first creating and the second responding to opportunities for convergence and choice. Early in the decade, the space race with the Russians led the U.S. to consider how satellites might be used for something other than international prestige. Because the government financed satellite R&D, controlled launches, and allocated spectrum for communicating with satellites, the federal government controlled the market structure of the U.S. satellite services industry. Internationally, the government established Comsat as a monopoly; however, domestically the government decided not only to allow competition in satellite services, but initially to prohibit telephone companies from entering the business.

In ordinary telecommunications, policy was also changing. The computer industry had solved two technical problems of enormous significance. One was parallel processing, enabling computers to perform several tasks simultaneously. The other was remote access, which allowed users to connect to computers, and computers to connect to each other, using telephone lines or other physical connections over substantial distances. These innovations enabled networks to combine many smaller computers and related equipment into one large system. An important feature of this development is that it gave the designer of a network new choices about where to put different kinds of information and intelligence. For example, while a file was being printed, would it be stored in the computer, the printer, or the network that connected them? Would a user store both data and a computational program in the same computer, or different ones? Would errors in a file be corrected
by a computer, or by the features in the network transmission system that detected and corrected transmission errors? The opportunities to make these choices began the process of blurring the boundaries among the computer, its peripheral devices, and the network that connected them.

These new technical possibilities forced the FCC to reconsider its entire regulatory structure for the telephone industry. Historically, the FCC had allowed telephone companies to manufacture all equipment that connected to the telephone network, and the technical characteristics of all the services that used the network. But the 1954 settlement of *U.S. v. AT&T* prohibited AT&T from making computers, which were now being connected to the network for the purposes of offering remote computer services. The FCC launched a major investigation of the relationships between computers and telecommunications regulation, and in 1968 decided to favor convergence with choice. The FCC would not regulate computers or computer services that merely used the network for interconnection; it would let telephone companies become regulated monopolists of computer services only if the service was primarily telecommunications in nature. For the first time, end users of the telephone system could own their terminal devices and decide exactly how they would be used, including, within a loose limit, the role that the public telephone network would play in their system.

In rapid succession, other important impediments to consumer choice in telecommunications were eliminated. *Carterfone* allowed consumers to own their own speaker-phones, and by implication other terminal devices, as long as customers acquired a protective device that prevented their "foreign attachments" from harming the network. (A few years later, the requirement for a protective device was replaced by a much simpler and cheaper standard and certification system for competitive manufacturers.) In *MCI and Specialized Common Carriers*, the FCC decided to allow
competition in "private lines" for long distance telecommunications, which enabled large companies to lease lines between cities and thereby to avoid long distance toll charges. Several companies (including IBM) quickly made use of the new policies regarding satellites, computers, and private lines to launch an entire new business: constructing computer services networks that were completely independent of the public telephone network. Moreover, within a few years the camel's nose of leased lines had become full-fledged competition in long distance telephone calls for all customers, including residences.

Another dramatic change was the emergence of a nascent cable television industry. Cable began in the 1950s as a mechanism for overcoming reception problems in areas that were remote from television stations or that, due to local topography, had signal reception problems. In the 1960s, cable systems began to emerge in all but the largest cities for the purpose of importing the signals of distant stations. This service allowed citizens in cities with a small number of stations to gain access to a full complement of all three networks, a public television station, some commercial independents, and, through "network duplication," the local news and sports from an economically powerful station in a different city.

Initially the FCC found this development to be shocking, and froze further growth of signal-importing systems on the ground that it threatened the historical policy of making television a localized mass medium. If citizens in San Diego watched Los Angeles stations, the FCC reasoned, then TV could not succeed as a means for informing San Diegans about local public affairs and otherwise broadcasting programs to suit their specialized needs. San Diegans and their cable company disagreed. They sued the FCC, questioning the view that the FCC knew better than San Diegans what San Diegans ought to watch; however, the Supreme Court sided with the FCC,
allowing regulation to protect broadcasters by preventing distant signal importation.

Nevertheless, by 1969, cable television was sufficiently established in enough communities that the industry could not simply be put out of business without causing a serious protest. Hence, the issue of how to regulate it had to be treated seriously, and the FCC began to consider the future role for cable. By 1972, the Commission would remove the freeze on cable development and would allow cable systems to import some distant signals -- enough, it turned out, to allow the industry to develop.

Cable policy issues were faced in an era when Americans were recognizing the revolutionary nature of television as a mass communications medium. By the mid 1960s, scholars began speculating that TV was more than a way to deliver news and entertainment, much as newspapers and radio had done before. Full-motion video, especially after the development of color TV, could affect people's attitudes and behavior far more profoundly than other mass communications media. Some saw this possibility as a promise: TV could be used to educate, to make people better citizens and parents, and to provide a common experience that could galvanize large numbers of individuals for a common purpose. Some saw TV's ability to affect people as a threat, contending that TV made viewers passive receptacles of a supremely effective form of propaganda, destroyed meaningful interpersonal relations within families and communities, and elevated popular culture beyond an entertainment to an addiction. One particularly powerful and influential view, expressed by former FCC Chair Newton Minow, accepted the promise, but saw the threat in the reality of TV programming, which he termed a "vast wasteland" that had forsaken the destiny in its promise.

In 1968, in the midst of the debate about the value of television, the federal government created the Corporation for Public Broadcasting. Whereas the FCC had created a substantial number
of noncommercial television stations, the industry that emerged was underfinanced and weak. Many licenses were held by educational institutions, which placed strong emphasis on televised instructional programs that were produced on a shoestring budget and so were little more than video recordings of classroom lessons. CPB was created to infuse the system with new funds for national programs, and its spin-off, the Public Broadcasting Service, was created to operate as a national noncommercial network, much like ABC, CBS and NBC.

It would be hard to overstate the significance of the events of 1968 and 1969 in shaping the future of the communications sector and the course of public policy. Technological developments in the early 1960s had forced a complete reconsideration of all important policy issues affecting the industry. It would also be hard to overstate the unique state of interest and excitement that was generated by these developments. Communications experts, whether in industry, government agencies, or universities and think tanks, all realized that, all of a sudden, everything was up for grabs: who would offer what services to whom under what regulatory rules were no longer settled questions. Convergence with choice was just beginning, and had created chaos that offered both threats and promises to literally everyone.

*The Revolution That Just Won't End*

As the Twentieth Century draws to a close, the world is much different from the state of affairs in 1969. Telecommunications is now the domain of many large firms. Every aspect of the industry is now reasonably competitive except cable television systems and local telephone service for residences and small businesses.

In telecommunications, long distance is now reasonably competitive for all users, and for certain types of users so is local telephone service. Office buildings, apartment houses, and
businesses with more than a few telephones now can and do create their own local telephone networks, and no longer use local telephone monopolies for calls among members of their local mini-network or for access to long distance carriers. These developments still leave most local calls and virtually all long-distance termination in the hands of local monopoly telephone companies, but with the passage of the Telecommunications Act of 1996 the remainder of local service also is targeted for competition.

Cable television, now serving seventy percent of all households, usually with 30 to 100 channels, has induced dozens of new television networks (including three hybrids, Fox, UPN, and Warner, that combine off-air affiliates with cable distribution to reach a national audience). Most motion picture studios (Disney, Fox, Paramount, Universal, Warner Brothers) have entered the network television business. Whereas many new networks provide light entertainment (including sports) very much like the programming of the old over-the-air stations, others, like CNN, the History Channel, the Discovery Channel, the Learning Channel, Home Shopping Network, and Bravo, have substantially diversified the range of video services. Collectively, new networks have caused the audience shares of ABC, CBS and NBC to fall below half, and one, Fox, now achieves prime time audiences that are comparable to those of the three older networks.

In the 1990s, a new medium, the internet, arrived that holds the promise of completing the convergence of all communications media. The internet was made technically feasible by the convergence of computers and the telephone network, and institutionally feasible by the introduction of substantially more competition -- hence, choice -- in telecommunications infrastructure. In a modern telephone network, the switches are computers that can store and process data. The connecting links, due to digitalization as well as advances in transmission, have far greater capacity
for carrying information, and so can be enhanced to carry pictures as well as sound to every household. As a result, newspapers, broadcasters, motion picture studios, book publishers, and direct mail advertisers -- and many others who are new to mass communications -- all can deliver their products over telephone lines, cable television systems, off-air multipoint distribution systems, and direct satellite transmissions to a user's combined television and home computer.

Technological advances also have begun to change public services. In 1960, public education extensively used only one medium -- printed text. Gradually first television and now computer software and the internet are enabling students to learn through video instruction and to gain easy, inexpensive access to far more information than was ever available in the school library. In addition to providing marketable skills in the use of computers, the use of electronic hardware and software in the classroom is just beginning to exploit its potential for rapidly improving educational performance. Likewise, similar changes are beginning to emerge in health care (remote diagnostics), law enforcement (criminal data base and identification), and transportation (computerized traffic control and highway toll systems).

Technological convergence will not necessarily lead to a single, ubiquitous technical method for delivering all forms of communications services. Different technical systems have different strengths, weaknesses, and costs for performing the same communications function. In any case users who do not desire the full fire-hose of information flow may find specialized backbone systems easier and cheaper to use for years to come. In the next decade, we will learn how complete convergence will be; however, we have learned enough in the 1990s to know that the communications sector has changed permanently and fundamentally, most obviously in the choices that have become available for almost all services.
To date, the most important companies in connecting businesses and residences to national services -- local telephone companies and cable television systems -- have not made the investments necessary to enable them to deliver the full range of mass communications services, and perhaps they never will. But the barrier to far greater diversity in services is no longer technological. Instead, the key issues are, first, how much service customers want and will pay for, and second, whether public policy will facilitate or retard giving customers the opportunity to chose how many and which services they will have. The key public policy issue is about the last mile in the delivery of telecommunications and video services. Will policy protect the two specialized monopolies, cable and telephone, or encourage competition and diversity? The war for convergence and choice is nearly over; the final battle is over the last mile.

The Morrisett Window on Communications Policy

Every Markle Annual Report during the Morrisett era begins with an essay by the president, reflecting on a contemporary issue in communications. All of the important themes in communications policy during the last third of the Twentieth Century received serious attention in these essays, as well as in the Foundation's grant programs, dealt with later in this chapter. Together, the essays and programs demonstrate how dedication to a single, well-defined purpose gave a small foundation an opportunity to make a major contribution.

The focus of the Foundation also immersed its leader in the major research, policy, and business questions in the industry during an extremely exciting period, and the annual essays demonstrate the fruits of this concentration. We can not do justice to the Morrisett essays in a few pages, and we do not intend for our review to substitute for reading them. Instead, this section provides a useful background for understanding the programmatic approaches of the Foundation.
The Markle President's Essay usually had two topical foci: one technological, the other substantive. The most common technical focus was broadcasting, but in the 1990s every essay dealt with new information technologies. The most common usage focus has been children and education; however, in the last ten years the political process has received more attention than any other substantive issue.

**On Television**

Three of the first four annual reports focus on television: the societal effects of television, the relationship of TV to children and education, and the role of public broadcasting. Together they set forth the interesting issues that would dominate policy discussions for the rest of the century.

These three essays discuss the basic issues regarding the rise of television as the most influential mass medium, the promise of cable television for expanding diversity and choice and for facilitating convergence of the media, and the role of public television. The baseline concern is the performance of the over-the-air television industry. What television did well then, and would do even better in the future, is provide light, escapist entertainment. Morrisett set forth the problems arising from the direction that television has taken: it is a passive medium that may affect people's behavior adversely, and in any case fails to educate and inform up to its capabilities or to provide entertainment to other than a mass audience.

Morrisett also correctly identified how policy and economics have interacted to produce this result. First, policy was designed to make broadcasting local, thereby sacrificing numerical options and competition for a system in which virtually all metropolitan areas with more than 50,000 population have at least one local television station, but few have more than five. Second, economics overcomes policy localism because it favors national programming. Television
programs, like all information products, are "public goods" in that the cost of producing content is independent of how many people have access to it. Hence, the cost per consumer are minimized when content is distributed nationally. For this reason, book publishers, news services, magazines, and networks all tend to be national in scope rather than localized. Moreover, most consumer tastes are not defined by geography -- a notable exception being interest in sports teams. Instead, once one gets beyond national mass audiences, consumer demand for both entertainment and information tends to be based on commonalities of education, occupation, and culture, rather than geography.

In plain language, Morrisett outlines the basic economic argument about the relationship between market structure and content diversity, which is known as the "Steiner Model" after Peter Steiner, who first articulated it in the 1950s in the context of the choice of formats by radio stations. The essence of the argument is that if a mass medium has few competing outlets, the optimal content choice for private entrepreneurs is likely to be homogenized entertainment that is designed to appeal to a very large audience. As the number of competing outlets increases, eventually the best available strategy for a new entrant will be to appeal to a narrower audience by designing content that appeals more to their special tastes.

Morrisett explains a second implication of the Steiner model: that a multichannel monopolist would offer more diverse programming than a competitive industry operating the same number of channels. The reason is that independent firms will compete for and divide the mass audience; however, a monopolist, having attracted the mass audience in the first one or two channels, would operate additional channels to try to attract viewers to whom mass audience programs did not appeal. After observing that this philosophy is reflected in most foreign broadcast systems, with one or two entities operating all channels, Morrisett explains why this model is not really relevant in the U.S.
because Americans have dedicated themselves, in Learned Hand's immortal words, to the "marketplace of ideas" -- that is, a reliance on free choice among many independent voices as the best means to provide information products to the public. The problem, then, for improving choice, diversity, and information content in American television is to expand opportunities for aggregating specialized national audiences, rather than heterogeneous, localized audiences, by increasing the number of independent choices available to a viewer.

Finally, Morrisett discusses the implications of financing television by advertising. The system is not all bad, because advertiser-supported television outlets are quite adept at providing mass entertainment that viewers find very attractive. The problems are that some types of viewers are uninteresting to advertisers. Morrisett explains why advertiser supported television was especially unsuited to serve children. Children can be an attractive target for advertising, but light entertainment as a means of attracting their attention is far more problematic than it is with adults. The first priority for children is their emotional and intellectual development. While educating them can be more effective if the material is presented in an entertaining way, the purpose of the program is its educational value, not simply its ability to produce little consumers of cereals, candy, and toys.

The analysis of the future of cable television is a magnificent example of policy analysis that is firmly rooted in knowledge about the industry, including its basic economics. After observing that cable television will require enormous investments and at least a decade to begin to supplant over-the-air broadcasting, the essay address the key issues: how is the industry likely to develop, and what can policy do to encourage the most beneficial form of development? Morrisett formulates the key issue as posing two questions: for citizens, "What's in it for me," and for the social critic, "Is it any good?"
The answer to "What's in it for me?" is implied by the Steiner model. More options means more choice among more diverse offerings, some of which may appeal to an individual's more specialized tastes than the mass audience fare. Applied to cable, the implication is that once cable gains a large enough foothold among the population, companies will begin to provide programs exclusively for cable distribution, most likely financed primarily by national advertising. Thus, in expanding viewer choice, cable will evolve from importing distant broadcasting stations to delivering completely new source of programs.

As to "Is it any good?" Morissett sees more uncertainty. One problem is that multiple channels fragment the audience, and therefore generate less advertising revenue per viewer. Lower revenues are likely to lead to lower investments in program quality. Morissett singles out news programs as especially vulnerable; however, with uncanny prescience in 1971, he boldly forecasts the rise of CNN and its followers, stating: "In the long run this problem should be overcome by the growth of specialized news services over cable television, perhaps in the form of all news channels."

Another problem is that channel growth may not be as extensive as society would find most beneficial. Cable systems are likely to be successful once they offer a few more options than over-the-air broadcasting, and so might not have a financial incentive to offer as much choice as the market could support. Moreover, some specialized audiences may not be attractive to advertisers (due to either their small numbers or their low purchasing power) to be served by commercial programming. To solve these problems, Morissett proposes regulatory changes to insure adequate cable capacity, access to cable systems by program sources, and a broader base of financial support for cable programming, including pay-TV (viewer payments for access to programs that can not be financed by advertising), paid access, and subsidies for producing and distributing certain types of
programs that may be socially desirable but commercially unsustainable. Morrisett focuses on how new forms of revenue can expand choice through private, commercial ventures.

In 1971 a liberal policy towards pay-TV was highly controversial, the FCC had all but banned it, and in California voters had passed an initiative outlawing it. Morrisett faithfully repeats the conventional argument that allowing pay television will lead to the elimination of "free TV" because all broadcasters will want to tap into this new course of revenues. But Morrisett correctly rebuts this argument.

First, "free TV" is not free, but is supported by advertising, which is largely a zero-sum game among competing producers of consumer goods that is financed by higher prices for advertised products. Hence, free TV is paid for by a form of private tax-subsidy system. Second, it is far from obvious that competition among mass audience outlets will allow them to charge for their product. The fact that existing commercial broadcasters covet this revenue does not mean that they will be able to capture it. Subsequent history has proven that mass entertainment fare will not all shift to pay. Third, access to the possibility of subscriber fees frees program producers from having to rely exclusively on advertisers, and so increases the financial viability of programs that appeal to smaller audiences with an intense taste for a particular type of program, thereby increasing choice and diversity. Here Morrisett predicts how cable TV pricing will evolve: a per channel subscription fee, or a single payment for an additional bundle of channels that provides several services. He errs only in suggesting that each viewer may build a special bundle, rather than all receive what has come to be known as the "extended basic" service bundle of twenty or more cable television networks.

Paid access is another way to deliver programs to consumers that has emerged in the modern cable business. Paid access refers to a circumstance in which someone who wants to obtain access
to consumers pays for the right to use the cable channel. Normally we think of payments going the other way: broadcasters pay program sources for programs, and then either sell advertising in and around the program, or sell program access to viewers. Paid access reverses this payment flow, with program producers paying broadcasters for the right to deliver their message to viewers. Contemporary examples are the Home Shopping Network and "infomercials" in which advertising is built directly into a program. Morisett correctly predicts that this source of revenues for cable television is likely to be smaller than advertising and fees from viewers, but argues that nevertheless it should be permitted to expand the range of program choice.

Morisett describes how with minor enhancements cable television can be made a two-way communications system, allowing viewers to pick programs in real time or to respond to inquiries from the programmer. This development makes feasible the convergence of communications media. Two-way communications over a video delivery system permits interactive television programs, thereby terminating the complete passivity of the medium that so many social critics find threatening. Among the other potential uses that are mentioned in the essay are in education and politics, both of which eventually received high priority in the Foundation's programs in the 1980s.

In analyzing public television, Morisett applies with remarkable clarity the same arguments that he used to forecast the future of cable. After summarizing alternative visions of public television, he makes two key points. First, public television can not expect to command an audience comparable to that of a national commercial network unless it provides essentially the same type of programs: light entertainment appealing to a broad spectrum of tastes. Second, it is far from obvious why the government should support public television of this form, rather than hand over the public network to a commercial operator. National subsidized mass entertainment is against U.S.
traditions and policy regarding the proper role of government, and in any case is susceptible to political interference that would detract from its quality.

If a mass audience public system (like those in Europe) is ruled out, what, then, is the role for American public television? The answer is to find and serve special audiences that are overlooked by the mass entertainment orientation of commercial television, which in turn is derived from FCC policies to promote local television stations at the expense of giving viewers access to a greater number of independently programmed outlets. Morrisett begins his prescription by advocating the abandonment of local service in public broadcasting. Instead, he proposes that public television find specialized but national audiences that are not served by a commercial system that is built on few (three) networks and many local affiliates.

To implement this recommendation, Morrisett proposes specifying a target audience and a purpose (entertainment, education, information), and developing program ideas to match these goals. To implement this plan requires two activities. The first is to find a mechanism for determining what viewers want that is not now being provided. Morrisett proposes detailed surveys of audience desires and a detailed audience rating system that would enable public television to assess its ratings within the target audience. The second is to make a value judgement about which of the candidates that emerge from this process ought to be selected, based on technical feasibility and the inevitable necessity to allocate scarce resources among competing uses.

Perhaps the most remarkable (and at the time controversial) part of Morrisett's analysis of public television is his analysis of the importance of incentives in improving public television. Morrisett advocates abandonment of cost-reimbursement contracting for public television programs, instead proposing rewards to producers that are based on their success in reaching their target
audience. Morrisett focuses on how more specialized audience ratings might be used to pay bonuses to especially effective program producers; however, his line of reasoning applies as well to the financial mechanism for public television that emerged in 1973 through the PBS "station program cooperative." In this system, producers proposed programs at a price (not necessarily equal to cost), and public television stations, through a computerized polling systems, responded by voting for the programs that they wanted at that price. Meanwhile, stations, in seeking private donations, began to organize periodic "pledge week" campaigns around the theme of viewers contributing annual dues to support particular programs, thereby connecting viewer tastes through contributions to the PBS program selection process. Simultaneously, this approach implemented two of Morrisett's recommendations: to create incentives for producers and stations to supply the programs that viewers want, and to implement a means for measuring the intensity of viewer demands for programming that differs from the eyeball counts that motivate advertiser support.

The analysis of television in these three essays stands as an exceptionally clear example of why policy research is important. Simple but non-obvious economic analysis is applied to new developments in the industry to make excellent predictions about how it will evolve, and to explain why the policy emphasis should be on facilitating choice, including allowing anyone -- program supplier or viewer as well as advertiser -- to help pay for new services. The policy implications, with powerful arguments against the policies in place in 1971, are carefully drawn out, including by implication a persuasive case for how government can shape the incentives of both public, non-profit and private, for-profit entities in socially desirable ways.

*The Multimedia Future*

In 1994 the presidential essay also was devoted to television, but this time it was a slightly
premature epitaph, "The Twilight of Television." The essay was the first of two to deal with the
convergence of computers and television in multimedia. The important contribution of these essays
is like the series two decades earlier on television, in that they set forth a vision of the future.

The theme of the 1994 essay is that the convergence of computers and television will
reinvigorate print communications -- the use of words and numbers as opposed to visual images.
Morrisett predicts that high-definition television merged with computers will cause a major increase
in the use of books! The reasoning is as follows. First, electronic publication and storage of printed
material is already cheaper than hard copy publication. Second, high-definition TV makes
electronically produced text as easy to read as hard copy. Third, the use of computer search routines
is vastly superior to an index and table of contents as a means for locating specific parts of a text.
Fourth, readers who like to annotate text can do so far more easily. Many people like to annotate
print, whether to add variations to recipes in a cook book or to highlight the most important parts of
a text. Electronic technology allows annotation without defacing or damaging the original material.
Annotations can be inserted into a copy of the text in a way that makes visual access to them
optional.

The re-emergence of printed text also is facilitated by the growth of electronic
communication. On-line computer services companies have found that e-mail and computer bulletin
boards devoted to specialized topics are in extremely high demand. Even the Imagination Network,
designed for interactive video games, provides extremely popular chat rooms where its customers
compare notes about the games.

The multimedia producer also can make use of the informational advantages of print -- its
ability to convey a great deal of information with minimal use of time and space. Multimedia
products make use of all communications media, including electronic transmission and storage. This enables a consumer to combine a mass-produced product (like a television program) with other private files to create an individualized product. Recently television networks have begun to use digital technology to insert scores and other information into the picture of a game. High-definition television can enable viewers to have access to the vast array of player and team statistics that so enrapture the true sports fan, even allowing the viewer to create a private insert from this database pertaining to the action at hand. While one viewer calls up the batter's success in hitting against the pitcher (or all left-handed pitchers or in the same ballpark), another viewer can inquire about the success of the player on first base in stealing second against the same pitcher or team, or in the same ballpark.

The 1995 essay takes one more step forward in analyzing the future of multimedia. The foundation for this essay is the passivity of most previous mass communications media. Whether reading, listening, or viewing, the act of consuming information from mass media does not invite deliberation. Moreover, it gives the content producer control of the agenda. Whereas many see agenda control as meaning an ideological bias, in practice competition among many sources of content enables the consumer to pick and choose among this source of bias, including to select sources that seek to maximize objectivity. Another type of agenda control is present, and may be more important: the selection of the order in which information is presented and questions are answered. Indeed, some information may never appear because the creator just never thought of it.

The mass communications media that are not passive and subject to unilateral agenda control are those that are used in personal communication, like the telephone and the postal service. These two-way media are democratic in that each party is equally empowered to raise a new issue. The
main liability of these media relate to their relationship to time. Mail is slow, which facilitates reasoned, deliberative communication but is subject to long interruptions. Telephone conversations are immediate, which facilitates experimentation with new topics that can quickly be abandoned, but which does not promote deliberation. Telephone technology, by not easily accommodating silence or lengthy, detailed communication, demands continuous conversation in brief statements.

Morrisett argues that our initial experiences with multimedia conversation, through e-mail and chat rooms, holds forth the promise that we can capture the best attributes of all the mass media in the new converged technology. Multimedia communication is instantaneous when we want it to be, but accommodates pauses and long discourse. It converts the extremes of agenda control and pure democracy into a continuum that the user controls. One can construct a multimedia environment that is as passive or interactive as one wants, depending on the purpose of the communication and the preferences of the user. Chat rooms illustrate an intermediate point on this continuum. Participants can offer opinions, ask questions, or just read what others have to say on the same topic.

Morrisett observes two significant features of these developments. One is that they encourage the development of analytical and deliberative problem-solving skills, and so increase individual competence at independent reasoning and informed choice. The second is that they enhance freedom, partly by expanding the range of choice and partly by improving our ability to be effective citizens and to make collective decisions about governance and policy. His first-step policy proposal is universal e-mail, implemented through the provision of an inexpensive computer and modem, plus supporting software to provide access to a simple computer service. After summarizing the rather modest cost of such a proposal, he concludes that it can sufficiently reduce
other costs (such as hard copy mail delivery) that others may be willing to pay for it, or that it can be offered as a new service with a monthly billing charge (freeing the consumer of the necessity to buy a computer) at substantially less than the monthly cost of cable or phone service.

Morrisett's arguments about why new technologies are favoring printed communications over video, how multimedia communications are likely to develop, and what government can do to facilitate the process, are based on a firm technical knowledge of the new media combined with an understanding of their economics. We do not know whether the forecasts in these essays will prove accurate, but we would not advise betting against them, for they represent a distillation of the best information that is currently available in a highly imaginative but sound prognostication.

**Implementing the Vision: Thirty Years of Grants Policies**

Against this background of communications policy and the commentaries of the President, the formal programs of the Foundation, primarily its grants practices, can better be understood. The formal program statement for Markle's new venture first appeared in the Foundation's fiscal 1970 Annual Report: "The goal of the current program is to strengthen educational uses of the mass media and communications technology." The section of the report that more fully described the Foundation's activities also emphasized education, and the first year's appropriations mostly reflected this focus. Grants were made for studying the needs for professional education in journalism, undertaking research on television and children, training young film makers, supporting an internship program on urban affairs for journalists, and, of course, supporting the Children's Television Workshop, creators of *Sesame Street*, in undertaking a research project to develop a greater understanding of how CTW could most effectively reach inner city children. The purpose of creating CTW was to establish an independent programming organization that would provide
permanent support for high-quality children’s programs.

Two important first-year grants were not directly connected to education. A small grant initiated the Foundation’s long tradition of supporting research on the effects of mass media on attitudes and behavior. A much larger package of two grants, one for general support and the other to study cable television, established the communications policy research program at the Rand Corporation. These awards enabled Rand to commission work on telecommunications issues by a long list of strong scholars, such as Stanley Besen, Leland Johnson, Bridger Mitchell, Richard Posner, and Rolla Edward Park. In explaining these grants, which amounted to more than a quarter of the Foundation’s new commitments that year, the Annual Report accurately describes the agenda of the first significant comprehensive research program on the economics of communications policy as focusing on communications regulation. To connect the grants to the Foundation’s mission statement, the Report states that "as the program develops" its researchers "hope to examine new and expanded uses of communications technology in education and instruction" as well as in attacking other social problems. (This hope was not forlorn, as within a few years Rand scholars produced several studies in this area; however, the major contribution of the Rand program has been on the economics of broadcasting and telecommunications policy.)

The main motivation for the Rand grant was derived from the 1968 report of the President’s Task Force on Communications Policy, named the Rostow Report after the task force chair, State Department Undersecretary Eugene Rostow. This report received little immediate attention in the media or in formal Washington, but it contained a prophetic message. The Rostow Report tentatively and cautiously endorsed using new technologies to introduce more competition and diversity in communications, and urged the creation of what became the White House Office of
Telecommunications Policy to provide independent advice to the President about policy issues facing regulators, antitrust officials, and operating agencies in the communications arena.

Good policy making in a technical area like communications policy depends on good information and analysis, as the 1970 Markle Annual Report recognized. True, the Carnegie, Ford, and Sloan Foundations were supporting a small amount of policy research in this area, most notably the grants from Ford and Sloan to the Brookings Institution to initiate its Studies in the Regulation of Economic Activity. And, by the summer of 1970, a few important studies had emerged from scholars at several universities, including MIT, Michigan, Stanford, and Yale. Still, the Markle grant to Rand represented an enormous increment to research on communications regulation, and substantially expanded the information base for making communications policy. Given the size of the emerging need for public initiatives, it was not too far from the mark to suggest, as did the 1970 Report, that: "Policy making on every level is ... hampered by the lack of systematic, objective, and independent studies of policy alternatives and their implications."

By the second year of the new Markle program, projects dealing with mass media and communications policy, rather than specifically education and children, accounted for most new financial commitments. Only one grant dealt specifically with children, although it was a very important one: $171,200 of general support for Action for Children’s Television. With one or two exceptions, all of the other new projects were either for studying the mass media or some aspect of communications policy, developing new programs for public television, or promoting broader participation in the industry and the communications policy process.

Telecommunications played a prominent role in the second year. The Foundation made a major grant to the Mitre Corporation to develop two-way communications in cable television. The
focus of Mitre's work was on making cable a broadband telecommunications service. In the next few years, additional work in telecommunications received support through grants to establish the Harvard Program on Information Technologies and Public Policy, the MIT Communications Research Program, and the University of California, Berkeley, program on communications for the elderly. All of these programs included studies of both mass media and telecommunications.

The focus of the Berkeley program on the elderly also was an element of still another revision in the Foundation's focus. The initial orientation towards children was soon perceived as exemplifying a broader opportunity: to extend the reach of the communications revolution to improve the lives of all specialized groups that might be ignored by business and government. The elderly were one such group; others included women and minorities.

In the first two years of the new program, Markle had found its niche: an area of policy research, policy making, and product development where a small foundation could have a major effect. All of the major themes had been established. The first was to develop a large community of high-quality scholars who would study the mass media and communications policy. The second was to support broader public participation in the industry and its policy making processes, partly by supporting public interest organizations, partly by helping the industry to develop professional watchdog groups, and partly to assist women and minorities in career enhancement. The third was to support the development of new products, with an emphasis on special groups like children, the elderly, minorities, and women. Initially, the program emphasized education and television programs, but eventually this activity broadened, and by the 1990s had become almost totally redirected to educational and public service applications of computer software, including internet services.
Adapting to Change

Once a niche has been found, the task of finding a useful role does not end. One problem is that early success may bring copy-cats with fatter wallets. An example is CTW. The first year of Sesame Street, 1968-69, was financed by grants from the Carnegie and Ford foundations, plus additional support from the newly created Corporation for Public Broadcasting. Markle chipped in a year later with support for evaluating CTW programs. History should record in bold type that without support from Carnegie, Ford and Markle, Big Bird, Ernie, Kermit, Miss Piggy, and Oscar the Grouch may not have become the enduring stars that they are. But very quickly the world recognized that CTW was on to something. Viewers, corporate sponsors, and the public television network were all willing to pay for CTW programs, and CTW successfully marketed offshoot children's products, with the profits plowed back into more children's programming. A small operation like Markle was destined to become a drop in the Muppet bucket, so other overlooked niches offered greater opportunities.

The key to continued success was to be flexible and responsive to change, to recognize that failure and success require redirecting resources. The genius of finding the right field must be followed by the continuing genius of knowing when to quit and recognizing promising new opportunities. Markle's subsequent history shows that it possessed the second genius as well as the first. By fiscal 1977, the program section of the Annual Report contains a quite specific list of topics of interest to the Foundation that, with continuous modest changes, remained through 1997.

"In its efforts to improve the mass media, the Foundation supports projects that expand research on the role of mass communications in society; analyze public policy issues and questions of public
interest; improve the performance of professionals involved in
the mass communications industry; develop better media services
to specialized groups (for instance, children, the elderly,
minorities); explore the relationship between the media and
politics; and enrich the quality of print and electronic
journalism. The Foundation has a general interest in all
aspects of the media and plans to support a wide range of
efforts to improve mass communications."

_A Pause in Telecommunications Policy Research_

For several years Markle de-emphasized research in telecommunications policy. In fiscal
1976, the Foundation made grants to MIT and Rand that continued the work at these institutions on
telephone regulation, but no new telecommunications projects were initiated. In fiscal 1977, all of
the new appropriations were aimed exclusively at mass media. Institutional support for MIT
continued, but with an exclusive focus on television. The Rand program was dropped when its
multi-year grant ended in 1977. Harvard's program was dropped when its multi-year grant ran out
in 1979. The timing of the withdrawal from telecommunications requires some scrutiny.
Telecommunications policy hardly had become a dead letter. The Department of Justice had filed
another antitrust complaint against AT&T. Congress was actively considering mooting the antitrust
case by passing legislation that would more clearly define the role of regulation and the boundary
between monopoly and competition. New telephone switches were computers that were capable of
data processing as well as telephone functions, so the FCC revisited its earlier decision separating
computer services and telecommunications. Cable television was booming, and experimenting with
telecommunications services. Surely the importance and utility of objective, independent research, had not diminished.

Nevertheless, other changes had occurred. The government had institutionalized policy research in telecommunications by establishing the National Telecommunications and Information Agency in the Department of Commerce and the Office of Plans and Policy at the FCC. The National Science Foundation had moved extensively into supporting policy-oriented research by creating such programs as Research Applied to National Needs, the Program on Regulatory Policy, and the Program on Information and Society. Scholars could now receive grants from NSF to study telecommunications policy. Hence, in the mid 1970s, Markle may have faced something like the old *Sesame Street* problem: the success of its earlier grants drew the attention of the 800-pound gorilla, threatening to convert the Foundation from the leading role to a bit player.

In any case, the election of Ronald Reagan quickly led to massive reductions in policy-oriented research throughout the government, especially at the National Science Foundation. The NSF program on information studies survived, but it was smaller, more narrowly focused, and more purely academic. The other policy programs at NSF died. The vacuum, if it had been filled before, was certainly reestablished.

Telecommunications projects returned to Markle in fiscal 1981, when the Foundation established a telecommunications policy research program at Duke University's Washington Center. This grant initiated a long, happy relationship between the Foundation and Henry Geller, who had been the FCC's General Counsel in the Nixon Administration and the Assistant Secretary of Commerce and Director of NTIA in the Carter Administration. When the Reagan revolution arrived at NTIA, Markle provided an institutional home for Geller. In 1982 a small grant of $37,000 to the
Harvard program was given substantial attention in the Annual Report, signaling sustained interest despite little new spending. Then, in 1983, the Foundation supported work on the divestiture of AT&T, the use of telecommunications to increase political participation, the possibility of teleconferencing, and how telecommunications and computer developments should affect job preparation by the educational system. In 1987, a telecommunications research and education program was established at Stanford, and in 1989 the old Rand program was again given substantial support.

Telecommunications was back.

*Program Related Investments*

Another significant policy change occurred in 1982, without elaboration in the body of the Report. The notes to the financial statement disclose a Foundation "program-related investment" of $300,000 (to be increased by a further $66,625) in Family Radio Programming, a company that intended to develop and distribute programs for young people and their families. Program-related investments by nonprofit institutions are not well understood. The issues raised by critics include whether the public interest can be advanced by investment in a company that seeks to maximize its profit, regardless of how interesting the product, and whether using investments to influence private market developments is a legitimate activity for a nonprofit institution.

The proper response is as follows. Private companies have financial and informational assets that a public interest organization can find useful. From the beginning Markle sought to develop new information products, starting with *Sesame Street*. In some cases, a private organization will have intellectual property rights that are extremely useful for purposes that fill the Foundation's mission, and may have skills in developing and marketing products in formats that are especially
attractive to users. In addition, a product that might be very useful for a target constituency of a foundation may fall just short of having sufficiently high expected profits that a private firm would want to develop it. In all of these cases, program-related investments represent a way to combine the special talents of a private company with the financial resources and special objectives of the foundation. The program-related investment can be a foundation's least expensive way to obtain its objectives.

In some cases, projects that foundations support have been highly successful financially to the people involved. *Sesame Street* is certainly one example. A program-related investment in the admittedly unusual case that the resulting product is highly profitable enables the original sponsor to reap some of these financial rewards, which then can be used for still more expenditures in pursuit of its public interest goals.

For these reasons, program-related investments should not be ruled out in principle as a useful pursuit by a foundation. Nevertheless, program-related investments have an important downside. Foundation officials may not be very adept at evaluating the financial prospects of an investment. In essence, a foundation that makes a program-related investment is operating as if it were a venture capital firm, and it may not be very effective in this role. This problem is not so much an argument against these investments as it is a caution in how they should be treated in the budget process.

Treating program-related investments as just another part of a portfolio is a clear mistake, because they are less likely than standard investments to retain their value and to earn a return. Yet treating them as annual grants may be too pessimistic, because, unlike a grant, they have some prospect for retaining value and earning returns. Markle's formal policy in this regard is not
explicitly stated; however, notes to the financial statements indicate that their program-related investments are treated in the second, conservative way.

In 1985, Markle made its second program-related investment. The Foundation invested $560,000 in Television Audience Assessment, Inc., a start-up company that sought to develop technology for measuring the response of audiences to television programs. The focus was on measuring reactions and attitudes, not just whether the set was on or the viewer was watching. In 1986, the Foundation invested another $500,000.

Venture capitalism has its harsh realities. In 1987, Family Radio Programming and Television Audience Assessment both failed. The Foundation lost all but $32,302 of its $1.4 million investment in these companies. Nonetheless, in the 1990s, the Foundation continued its experiment with program-related investments. The most important were:

1989: $272,000 in Voyager Company for the development of optical technology with potential software applications;

1990: $1,068,100 in MultiMedia Corporation for the development of multimedia software;

1994: $750,000 in Infonautics Corporation to develop a new on-line educational software system, Homework Helper; and

1997: $756,800 in Night Kitchen, LLC.

The MultiMedia investment was soon written off, but the others remain active. From a programmatic perspective, the most successful to date has been Infonautics. In 1995, Homework Helper was made available on the Prodigy on-line service system, and was rather extensively used.

The 1997 financial statement reports revenues of $2,977,055 from the sale of a program-
related investment that had previously been written off. This windfall substantially alters the overall picture concerning Markle's investment program. Had the Foundation's earlier $1.4 million loss been invested in a standard portfolio, it would have approximately tripled in value by 1997, to about $4 million. The more recent investments have a present value in 1997 of about $3 million, for a total program-related investment of $7 million in 1997 dollars. Thus, taking account of the 1997 windfall, the Foundation has a net investment of about $4 million. The Foundation's annual budget equals about four percent of its net asset value, so the implicit cost of these investments is equivalent to annual grant expenditures of $160,000.

Six investments hardly establish a reliable estimate of the annualized financial cost of program-related investments; however, at the end of 15 years, this figure represents a rough estimate of the annual amount by which program-related investments have, at the moment, crowded out other expenditures. In an $8 million annual budget, the implicit cost of these investments is hardly extreme.

*Politics and Communications in the Golden Age*

In the Annual Reports after 1986, the expression of program interests clearly announces renewed attention to telecommunications and a broader, more sophisticated approach to computers. For example, the Annual Report covering fiscal 1986 and 1987 includes the following list of topics of interest to the Foundation.

"The current program focuses on the following areas: the potential for of communications and information technologies to enhance political participation; the benefits of communications and technologies for an aging population; an
analysis of public policy issues in communications; the educational and entertainment use and value of computer software on the home; and developments in electronic publishing."

The notable feature of the statements in the 1984-87 period is that children and education have almost disappeared from the Foundation's focus. In the Annual Report covering fiscal 1984 and 1985, less than ten percent of the Foundation's new commitments dealt with public education or media effects on children. By fiscal 1987, no new grants were made in these areas, but nearly twenty percent of the Foundation's new commitments were directed at senior citizens. In prior years, the relationship between communications and the elderly had been a minor Foundation activity.

More than twenty percent of the budget in 1987 was allocated to another item: the role of the media and information technology in politics, and especially the feasibility of using electronic technology in voting. The relationship between media and politics had received substantial support for a long while, but the combined 1984 and 1985 reports reflect an expanded interest that also includes telecommunications and computers. In fiscal 1982, the inventory of the Foundation's grants on politics reveals almost exclusive attention to the coverage of public issues in the mass media and the role of presidential debates. The sole exception was an inexpensive conference on "The Communications Revolution and the Transformation of Politics." The next year, the Foundation made four grants totaling over $350,000 (about ten percent of the budget) to study the effects and uses of new communications technologies in politics. This theme has remained an important part of the Foundation's program to the present.

The wording of the description of program interests has evolved through the years in a
fascinating way that reflects underlying changes in technology. In 1988, the changes seek more precise explanation, rather than some more cosmic programmatic purpose. "Facilitate" replaces "encourage" as a modifier of political participation, "for the home" modifies the interest in educational and entertainment software, and "public" replaces "nation's" to define the interest at stake in policy. Only "for the home" is significant in that it signals lesser interest in public education inside the school.

The 1989 Annual Report also contains a new paragraph that has remained with few alterations through 1995. This paragraph succeeds in articulating with clarity the theme of convergence and choice that we have used as the organizing principle of this essay.

"The convergence of the media has transformed communications and our ability to manipulate, store, and gain access to information and knowledge. As new services become widely available, they are changing the ways in which we live and work, and altering our perceptions, beliefs, and institutions. It is essential that we understand these effects in order to develop our electronic resources for the benefit of society."

The next year, the paragraph was tightened and focused, and the revised version survived unchanged through 1995. The phrase "and knowledge" was dropped from the first sentence, no doubt because it was redundant. In the next sentence, "technologies" replaced services, emphasizing the importance of technological progress in driving service innovations. The last sentence lost its passivity and reasserted the issue of potentially overlooked groups. "We need to understand these effects in order to exploit our electronic resources for the benefit of the many and diverse sectors of society." Some
might interpret the new ending to the last sentence as giving excessive attention to using mass communications to protect differences that do not deserve preservation; however, another implication is that technological progress is more valuable if it offers more choice. Diverse sectors need not be warring tribes; they can be people with different tastes, students who learn in different ways, or even alternative ways to package information and entertainment that a single person might flit among, seeking personal diversity in acquiring knowledge or being entertained. In either reading of the meaning of diversity, the crucial element is choice.

The 1990 Annual Report makes a few minor changes in the statement of areas of program interest. The "emerging" role of information technology in the lives of older people is changed to the "expanding" role. The phrase "electronic publishing" is now about "multimedia and electronic publishing," and the phrase about educational and entertainment software has been dropped. Most importantly, the last phrase abandons "communications policy" for "telecommunications policy."

The last three changes reflect convergence. By 1990, visionaries in the field realized that the different mass communication media all can be delivered by telecommunications networks.

This feature of convergence has two implications. The first is that the mass media should be considered as variations of one thing -- arriving by wire, cable, air, or printed page. The second is that to optimize the development of the mass media in the new technological age, society must adopt sensible policies governing the main delivery system, which is an electronic network. Regulation of the delivery system has elevated importance because it is no longer just about stopping a monopoly from charging too much for telephone service and cable television. In addition, it is about assuring that these backbone systems are neither too simple nor too elaborate, and that new ideas about how to use them are given a chance to fail on the merits, rather than because some
company or regulator fears them or just does not understand them.

The combined reports for 1991 and 1992 make one further change, which is to add "for home learning and entertainment" to modify multimedia and electronic publishing. Again, this change corrects incorrect inferences that might have been drawn from the simplification of the previous year: that the Foundation had lost interest in education, or that it had shifted the focus on education and entertainment in the home to include the school or office. This message correction was short-lived. In the combined 1993 and 1994 report, the reference to the home disappears for good.

The technological bullet train makes its presence felt for the last time in the report for 1993 and 1994. (No changes appear in 1995.) Multimedia is now to narrow, so the relevant phrase in the statement of program interest is rephrased: "the developing role of interactive communications technology, including advances in multimedia and electronic publishing." The technological convergence that holds out the possibility of merging the media also can facilitate education and entertainment that is not passive. Traditional education is largely passive: one reads texts, listens to lectures, and otherwise allows information and analytic methods to be poured into one's head. Likewise, save for pin-ball machines and video games, entertainment is mostly passive: reading a novel, watching TV, a play on the stage, or a movie screen, or listening to the radio or a recording. Technology convergence brings the possibility of "telephone entertainment" in which the relationship between user and producer is bilateral, like a telephone call.

Maybe students and consumers mostly will prefer passive reception of information, If so, converged communications will probably arrive in an evolutionary way -- more snazzy and exciting versions of pretty much the same old stuff, in which case existing institutions probably will do a good job developing them. But maybe interactivity will make entertainment more enjoyable and
education more effective, in which case converged technology may be more radical. If so, an important lesson from economic history is that radical technological innovations rarely come from those who perfected the technologies that were replaced. Apple and Microsoft, not IBM, developed the user-friendly operating system that caused computers to become a mass consumer good rather than a tool reserved for a technical elite. Risk-taking private philanthropy is far more likely to have a useful role under the second scenario than the first.

The last budget of the Morrisett era contains old friends and new arrivals. In the former category, the Aspen Institute, the longest continuing beneficiary of the grant program, received $175,000. Other old friends that continue to be supported are Columbia, Duke, MIT, Rand, the Telecommunications Policy Research Conference, and UCLA. Carnegie-Mellon, where research on learning through electronic technologies has been supported for over a decade, remains on the list, as does Stanford University, which received support in the 1970s to study media effects on children and since 1987 to study telecommunications policy. Some newer grantees are Boston University, the Brookings Institution, the California Institute of Technology, Northwestern University, the University of Massachusetts, and a host of organizations that are developing interactive software. The mix of expenditures reveals the same pattern as before: diversity, continuity, and change, all within the original niche. The program continues to reflect sensitivity to convergence and dedication to choice.

**Conclusion**

Revolutions are threatening, but they offer dramatic new possibilities. Technological progress creates especially exciting revolutions because, while it may cost some their fortunes, it rarely leaves many dead bodies and always expands human capabilities. The revolution examined
in this book is enduring. Information technology is the dominant economic force of the last half of the 20th Century, and promises to continue this role far into the 21st. The revolution would have been profound had each communications industry been confined to its own turf, with innovation simply allowing them to do what they do better and cheaper. Cable television, the personal computer, and virtually costless long-distance telephone connections by themselves have changed our work place productivity and personal lives immensely. But the gods of technological change have not stopped there. In addition, modern technology has brought us to the threshold of picking and choosing among the methods of mass and personal communications, mixing them in whatever manner appeals to us.

We do not know whether society will decide to exercise this choice, although in the information sector no new capability has yet gone unexploited for very long. We also do not know fully the implications of this choice after it is exercised. The role of scholars and innovators in communications is to try to answer these questions. Fortunately, for three decades the Markle Foundation has facilitated this search for answers. We believe that the history of this small but influential foundation sheds a great deal of light on how and why philanthropy can make a significant difference in exploring the implications of new technologies and the policy issues that they bring with them. We also hope that this book lays out the possibilities for the future as well as the Markle presidential essays have done in the past.


