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## Increasing Complexity

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### The Technology of Creating Global and National Television Spaces

In this chapter, I will address the role that various technologies have played in the globalization of television. I argue that the emerging technologies of television, such as satellites, cable systems, and digital production, are making possible a complex world system of television. I will explore how technological changes in production equipment have enabled national production to increase in many countries and cultural markets. I will also explore how new television distribution technologies, such as satellites, have both encouraged a renewed flow of U.S., Japanese, and European programming via direct satellite broadcast and cable TV and also helped a number of large countries, such as Brazil and China, to reach their whole national populations. I also explore the considerable differences in technology available to different countries, regions, and cultures, which greatly restrict the impact of new television technologies or even broadcast television itself in many places.

The role of technology in world television is presented from several angles. At the most general level, technology forms the grounds of what Appadurai (1990) called the technoscape. Technology also enables the form of globalization that Tomlinson (1999) called complex connectivity. This is a level of interaction between nations and cultures that many see as one of the driving forces of current globalization.

Just as some writers tend to see economic relations as determinant of world cultural systems, including television, other writers have seen technology as the prime determinant (McLuhan, 1994). For cultural industries such as television, technological change greatly affects how television is produced, distributed, and consumed. As technological impacts became visible, some experts thought technology would let people create content that was localized and liberating (Pool, 1983). Scholars focused on social movements and alternative media often still perceive that possibility (Downing with Ford & Stein, 2001). Others, such as Mattelart and Schmucler (1985), thought that technologies such as satellite television and VCRs would expand the outflow and domination of U.S. television programming. This study sees both of these trends at work in a complex, contradictory process. Empirically, technology is increasing the outflow of U.S. television programs and films on VCR/DVD, cable TV, and direct broadcast satellites. It also is making local production cheaper and easier; recording and transmission equipment costs less, and the integration of television production with low-cost digital computer technologies is under way. I will try to both chart these trends empirically and to look for theoretical explanations.

## Television Technology as a Structuring Force

This study deliberately turns to technology after discussing the history and political economy of world television precisely because it sees the two as closely interwoven. The forces of globalization are all interdependent, interpenetrated. Economics, technology, and culture all facilitate, yet set bounds for each other. Along with other social and cultural conditions, economics adds greatly to what is currently called the social shaping of technology (Dutton, 1999), but technological change is also a structuring force. Technological change creates conditions for increasing complexity of communications. A new technology can permit what seems like epochal, even cataclysmic change, reshaping the boundaries of what is possible for actors in the system and permitting various resources to be employed in new ways. Technology can even restructure the possibilities of the economy, permitting the entry of new forces into an area of the media, making new economic activities possible, and making others too expensive to continue.

As Castells (1997) pointed out, the economic conditions of most African economies—the product of centuries of economic neglect and abuse by colonial powers, postcolonial multinational corporations, and local actors—virtually preclude the widespread use of the Internet. That, he noted, virtually precludes the incorporation of African companies and other actors in the

global economy, which depends so heavily on that technology for almost all communications. As a result, African economies are increasingly excluded from the global economy for reasons that seem technological but really rest in the underlying global political economy.

For example, the economic resources available in Mozambique deeply limit the basic structural possibilities of television organization. In the mid-1990s, a group attempted to create a private, second television network to compete with the state network, Radio-Television Mozambique. However, given a small consumer economy in a poor nation damaged by civil war and natural disasters, there was not enough advertising available to support such a commercial effort, especially because the state network was also increasingly turning to advertising to support its own operations. There was not enough advertising revenue in the economy to support both, so the second, private network survived only by being purchased by a religious broadcasting group from Brazil, the Universal Church of the Reign of God. Television in a country like Mozambique is limited by global and national economic factors. However, as the economy grows and the number of consumers increases, then advertising might conceivably add new resources for television operation.

The political economy of the state and other national institutions is also crucial. The fact that a national economy like Mozambique does not have the structural potential yet for a widespread consumer economy increases the importance of the state as a facilitator of local media. Katz and Wedell (1976) observed in the 1970s that broadcasting in most African countries was undertaken by the state, in part because no other actors had emerged to do so. Because the underlying conditions have not changed radically, it is not surprising that the state remains the mainstay of many television operations, which are expensive, while competitive private commercial operations have developed much faster in radio, which is much less expensive. For example, in Mozambique, several commercial and community radio stations have found resources to broadcast, in addition to the state radio system.

Technology is constrained at the systemic level by the political economy of the nation or region and the institution or firm. It is also constrained at a more microlevel by the class stratification of television or other media audiences or users. Technology is constrained by what the collective mass of the audience or users can afford. A global elite can afford access to virtually everything, from satellite or cable TV to the Internet. The middle classes of technologically advanced and affluent nations likewise can afford access to the main television technologies and most of the new media. However, many people in large parts of the world are constrained by poverty from having access even to broadcast television, much less satellite or cable TV.

## Technologies Facilitate Pattern Ruptures

Within borders framed by factors like economics, other critical conditions, for example, the availability of certain new cultural technologies, may create or enable new possibilities. In complex cultural systems, technology often creates ruptures or cataclysmic changes that enable new cycles of radical change, and technology is prominent among the initial conditions that shape cultural patterns. For example, new digital video and audio production technologies have lowered costs for producing television programming so that a developing country's limited economic base may now permit a much larger quantity of television production. New forms of television delivery, such as videocassettes, DVDs, cable TV, direct-to-home satellite dishes, and the Internet create new options for those who can afford them.

Recent technological history is full of stories of seemingly insignificant technologies interacting with culture, geopolitical forces, and other technologies to create a significant but unpredictable wave of change. Technologies that have significant impact are not necessarily the latest or best in technical terms. There is a certain amount of randomness, which in effect means that some technologies will die, regardless of their technical superiority. The technical merits of a given technology interact with other social and symbolic factors within a cultural context and create what Ricoeur (1984) called a *cultural prefiguration*. He defined that as a set of cultural meanings and understandings that both creators and consumers of cultural products refer to and, in both the process of creating and interpreting, modify as well. In complexity terms, a cultural prefiguration could be seen as an initial symbolic condition, a set of cultural understandings that can both frame, bound, and pattern cultural practices such as television production and viewing. Bourdieu (1984) might have called it a collective disposition by a group to approach something in a certain way. It is the boundary of thought, the framing, if you will, of the individual, the group, or the culture. A particular use of a technology may be feasible, such as the creation of community-based radio to challenge a central authority's control over media, but not possible within the prefigured cultural or social boundaries of society. Then, it will not occur or may not be developed very far. One well-known example involves China and Korea, where major aspects of moveable type printing were invented centuries before Gutenberg in Germany. However, Gutenberg's printing press had a much more revolutionary impact in Europe because other critical initial or prefigurative conditions—a movement toward more massive literacy, a need for clerks for commerce, a latent demand for personal Bible reading, and protoindustrial technologies to facilitate printing—were available to coalesce in a pattern of

mass printing and reading. This is a classic example of how social forces can shape the development and use of technology (Dutton, 1999). Conversely, given a prefigurative cultural and social disposition toward a particular technological concept or the cultural use of a particular technological possibility, then that technology is almost sure to emerge when conditions permit, in the way that television seemed to be almost simultaneously imagined and developed in several parts of the world from the early 1900s to the 1930s.

When the telegraph emerged as a technology, what complexity theory might call a rupture of patterns created the conditions for a new pattern to emerge. For the first time, humans could send messages faster than a messenger on horse, ship, or train could carry it (Carey, 1989). As a result, communication was dramatically reconceptualized as something that spanned distances quickly, an initial condition for new kinds of technologies, uses, and interactions. It is little wonder that many innovators began to move fairly quickly to telegraph without wires (radio), then wired telegraph with sound (telephone), and then radio with pictures (television), all building on the telegraph's paradigmatic breakthrough to a new level of speed and reach. As television moves into new distribution methods and enhanced quality projection, it is likely that continued fascination with the medium owes something to a prefigurative disposition toward visual and auditory communication over distances that began with the technological rupture of the telegraph. It is no surprise, then, that different ways of distributing and consuming television over the Internet have developed since 2000: for example, Web sites such as YouTube; services to download television programs or music videos over iTunes and MySpace; various forms of streaming video on major media sites such as CNN.com; individually produced video sites such as sendspace.com; or institutional sites such as the Singapore government site, where one can stream the hours-long but highly iconic and widely viewed National Day Parade.

## Cycles of Technology

The overall conditions of dependency and poverty faced by many nations greatly constrain what they can accomplish with communications technologies. Technological dependence is itself an importance aspect of the overall problem. Most developing countries were long dependent on imported technology for television production, transmission, computer effects, and so on from more fully industrialized countries (Mattelart & Schmucler, 1985). This has changed, in some countries since the 1970s, in others more recently. Hardware development still takes place in a few countries, although that list

has grown as both China and India have become centers of technology research and development since 2000. Meanwhile, hardware manufacturing has diversified to many more countries. Mature technologies first moved to the East Asian and the Latin American Newly Industrializing Countries (NICs) for manufacturing; they have since moved further into developing areas. Brazil, China, India, Malaysia, Mexico, Singapore, South Korea, Taiwan, and quite a few others now produce VCRs, DVD players, satellite dishes, microcomputers, and minor production equipment. A larger number of countries now produce television sets, although increasingly free trade has ironically reconcentrated television set production in some of the highest-volume, lowest-cost, and most efficient producers. As Sony (Japan) displaced RCA (United States), so Samsung (South Korea) has severely challenged Sony on both price and quality of television sets, and other countries produce lower quality but cheaper sets, with more than 40 countries now assembling televisions, so sets also cost about one tenth of what they did in the mid-1950s (Mougayar, 2002).

However, the manufacture of hardware may not be a key cultural issue, aside from the economic desirability of gaining jobs for the national economy by building manufacturing industries that will employ workers and managers. A larger view of technology examines how it is employed and used, rather than just where it comes from. There is “soft” technology, or ways of using hardware to create other products, particularly television or video programming. Looked at more broadly, then, one can see an even larger absorption of mature technologies for the production of cultural content into many smaller industrial countries and developing countries.

Television sets, while almost ubiquitous in rich and middle-income countries, are still a scarce luxury in many poor or rural areas of much of the world. Some poorer developing countries are still struggling to absorb radio production and diffuse radio receivers to all their population. For instance, in Mozambique, only half of the population in areas surveyed had a radio at home, and roughly two thirds hear radio regularly (Craddock, 2003). Similar or lower levels are found in most other African countries. In India, radio also reaches slightly more than half of the population, while somewhat more than 100,000 households have television (Research, 2006). However, in Latin America and East and Southeast Asia, majorities of the population have both radio and television at home. Those who do not have television at home tend to see it frequently in public places. As discussed in Chapter 3, this audience growth tends to mean more money for regional, national, and local television, whether from advertising revenues, taxes, or

license fees, and more money is available for regional, national, and local production.

## Technology and Production

The production media of the 1950s and 1960s were usually bulky, non-portable, expensive, and based in tube or early transistor technologies. The move to transistor solid-state technologies and then to digital technologies made equipment more inexpensive, flexible, and portable through miniaturization. Cameras, microphones, recorders, lights, and mixers are among the appliances that have become steadily smaller, lighter, and easier for television producers to take into the field to use existing locations and take advantage of live events. Those same pieces plus studio equipment such as cameras, lights, switchers, and special effects generators, have also become much cheaper. When I visited several Dominican Republic television networks in the mid-1980s, I found them doing a great deal of live programming out of one or two studios with two or three cameras, a few lights, a couple of microphones, and simple switchers. Several stations had put adequate studios together for less than \$80,000. With those studios, they were often producing 8 hours of television a day or more, which helps explain some of the growth in national production that occurred in the 1980s in a number of countries (described in Chapter 6).

Production is being made much easier by sharp decreases in the cost of technology along with increases in portability, ease of use, flexibility, and other characteristics. One political activist and producer in Brazil, Luis Fernando Santoro, estimated that except perhaps for cameras, production equipment in 1990 cost about a quarter of what it cost in 1980 and that the equipment bought in the late 1980s was much easier to operate and use in field production (Santoro, personal interview, August 20, 1989).

This kind of elementary studio production relied on simple genres that could be produced live in front of a few cameras or a studio audience: live variety shows, live news readers, live discussions and panels, and live music. That helps explain some of the trends in genre development described in Chapter 6, too. It also enabled new producers to find local and national jobs, get experience, and begin to explore what they could do with the technology, money, genres, and other cultural resources available to them, which helps explain some of the developments described in Chapter 6.

With digitization, costs have gone down substantially further, supporting all manner of television production. Because most production can now be done with computer-based equipment, which also permits easier and cheaper editing, producers can go beyond live programming; their costs have gone down while options for production have increased. My visits to similar simple broadcast studios in the northeast of Brazil in 2002 through 2005 showed that the studios could now be mounted for even less, often less than \$30,000, but creating much higher-quality visual images.

In Latin America and Asia, at least, the larger countries had already absorbed and dominated the use of television production technology by the 1980s, although that is still an ongoing process for the smaller and poorer countries. For example, major broadcasters in Brazil, especially TV Globo, have mastered and used television production increasingly efficiently and creatively since the 1960s. Domination of the technology arrived later in smaller developing countries, such as the Dominican Republic and Bolivia, where the decrease in costs of production technology and transmission led to a profusion of television stations in the 1980s and to a considerable increase in local production (Prada & Cuenco, 1986). Since the 1980s, there has been rapid growth in new commercial stations and networks. Private television networks are starting in several nations in Africa, where competition to existing state-owned broadcasters had been seen as economically unfeasible as recently as the late 1990s.

Technological change permitted more actors and institutions to enter music production, radio and television broadcasting, and other media because the costs of doing so declined considerably. Social actors who want to use a technology like television can creatively employ it within the limits imposed by economics, institutions, and culture. This enables more production by more producers at all levels, from the local, such as alternative video producers, social movements, universities, and local governments, up to sophisticated national and regional broadcasters (see Chapter 6). For example, public cable channels mandated by law in Brazil in the 1990s had gone undeveloped until radically lowered costs permitted universities to exponentially increase student television production, which now fills many of those channels.

This has increased even further after 2000, as thousands of groups and individuals across the world now create both simple and sophisticated video programs for distribution over the World Wide Web. Most of these television productions are short. Patterns on new distribution channels such as YouTube or Grouper show that few videos are longer than a few minutes, but some are much longer, and many are quite sophisticated, revealing careful use of computer editing and effects. Most are designed to be entertaining, but one can find anything from Al Qaeda instructional documentaries on



how to make a bomb to development education on how to conduct oral rehydration therapy in African villages.

## Technology and Media Distribution and Flows

Some of the first writing on how technological changes in television would affect media imperialism and the flow of media products assumed the worst, assuming that technology would simply reinforce the unequal flow between countries by adding a new set of channels that would favor U.S. exports over other television possibilities (Mattelart & Schmucler, 1985). In fact, video-cassette recorders (VCRs), cable TV, and home satellite dishes did open new channels for the flow of U.S. feature films and, to lesser degree, U.S. television programs and music videos (Boyd, Straubhaar, & Lent, 1989).

However, the new distribution technologies also created a number of other possibilities. Satellite distribution of television signals has enabled a number of large countries, from the ex-USSR to Brazil, India, and Indonesia, to reach their geographically dispersed audiences with national programming (Hudson, 1985; Kraidy, 2002; Page & Crawley, 2001; Wang, 1993). VCRs and DVDs permit political, religious, ethnic, and other groups to circulate alternative video productions completely outside the formal world of broadcast television, a sort of electronic *samizdat* or underground video literature (Downing et al., 2001). Cable and direct-to-home satellite TV also permits the entry of new channels at the national level, opening the doors to new religious and musical expression in Turkey, new political views in Taiwan, national feature films in Brazil and Mexico, and news from home for migrants all over the world.

## Satellites

One of the theoretical misapprehensions of the satellite television phenomenon was to extend the mass media metaphor of the 1960s and 1970s, an era of national television networks, into the global sphere. Critics perceived a massive potential effect of cross-border satellite-based television in the 1960s and 1970s, long before direct satellite broadcasting or even satellite delivery to cable systems became technological realities (McPhail, 1989; Nordenstreng & Schiller, 1979). Fears that cross-border television controlled by other countries would find and affect mass audiences was reflected in policy debates in the U.N. Commission on the Peaceful Uses of Outer Space in the 1960s (de Sola Pool, 1979), in the New World Information and Communication Order debate in UNESCO and the International Telecommunication Union (ITU) in

the 1970s (McPhail, 1989), and in academic work by Mattelart (e.g., Mattelart & Schmucler, 1985) and others in the 1970s and 1980s. Some studies indeed found effects of cross-border satellite television, particularly in small countries such as Belize or parts of the English-speaking Caribbean, where direct reception of foreign satellite television started before national broadcast television had begun (Oliveira, 1986).

The first major cross-border satellite-to-cable TV flows of programming took U.S. cable channels into Canada and the Caribbean in the early 1980s. U.S. cable programming had an extensive impact in English-speaking Canada (Raboy, 1990), the English-speaking Caribbean (Hoover & Britto, 1990), and Belize (Oliveira, 1986). It had less impact in the Spanish-speaking Caribbean, where it tended to be used only by English-speaking elites (Straubhaar, 1989b; Straubhaar & Viscasillas, 1991). When cable systems initially expanded in Europe, particularly in smaller countries such as Belgium or Switzerland, they often brought in channels and networks from other European countries in the same or similar languages, to add diversity to what those countries could afford to produce on broadcast television (Straubhaar, 1988).

Meanwhile, in many countries of the former Soviet Union, Latin America, South Asia, Southeast Asia, and North Asia, the primary initial impact of satellites was to permit dominant national broadcasters to achieve truly national coverage by relaying signals across large expanses of land (as in Brazil, India, or Russia) or ocean (as in Indonesia and Malaysia). The main overall impact of satellites, at least until the 1990s, probably has been this facilitation of national distribution, particularly in several large countries containing much of the world's population: Brazil, China, India, Indonesia, Mexico, Russia, and the United States, all of which developed early-generation national satellite systems precisely to cover their own national audiences. This was discussed more extensively in Chapter 3 but is important to recall in this global context (Sinclair, 2005). Still, because satellites can technologically cover a good part of the globe, many people expected them to produce a global village of the sort anticipated by Marshall McLuhan.

### From Cross-Border Spillover to Direct Satellite Broadcasting

The main global impact has probably been distribution of cable channels across borders but within regions. Starting in the 1970s and early 1980s, international spillover of satellite-based cable channels beyond the borders of their intended national audience took place from the United States to its North American and Caribbean neighbors, from Japan to Taiwan, and from

Europe to the Mediterranean region. Spillover continues to be an important part of international satellite impacts, accentuated as people in a number of countries covered by the footprints of television and cable distribution satellites acquired C-Band satellite (4 to 6GHz) dishes (1.5 to 2 meters across). These were large enough to permit individual homes to receive satellite signals directly, accidentally initiating the era of direct satellite broadcasting in the mid-1980s.

Direct broadcast satellites (DBS) had been anticipated since the 1960s but weren't seen as commercially viable then, at a time when individual satellite dish owners precipitated the de facto DBS known in the United States as TVRO (TV receive-only dishes). In fact, DBS systems began to succeed commercially in a variety of countries in the mid- to late 1990s. Until then, direct reception from satellites on a wide scale was limited by receiving dish costs. In the early era of de facto DBS, C-Band dishes often cost at least \$2,000 in the United States and more in other countries, although this cost declined as manufacturing achieved some economies of scale and spread across nations. (A C-band dish for picking up unscrambled national television distribution signals in Brazil cost about \$300 in 2006.) In Brazil, thousands of small towns have spent municipal funds on satellite dishes and retransmitters to bring in national television signals, which are rebroadcast locally to provide television coverage (La Pastina, 1999).

Millions of such dishes sprouted across the globe to capture satellite spillover channels from other countries. Initially, only a few channels were distributed globally (such as CNN, the U.S. Armed Forces Radio-Television Network, and the U.S. Information Agency's WorldNet—see below), and regular national broadcast channels were distributed to affiliates by satellite, especially in large countries with vast rural areas not served by television—Brazil, India, Indonesia, and Mexico, for example. India's first major experience of widespread national television distribution and reception was via large satellite dishes to community reception centers and schools in the Satellite Instructional Television Experiment in 1975 to 1976.

Costs of DBS increased again in the late 1980s, when satellite channel distributors, such as the American cable channels, began to scramble their signals, requiring the purchase of a decoder and the payment of a monthly fee to permit reception. Costs decreased again in the 1990s with a new generation of smaller dishes, made to receive higher power signals broadcast in the Ku frequency band (12 to 14 GHz). In the United States, these new systems cost less than \$200 by the late 1990s or were installed free after 2000 by such providers as DirecTV and Dish network to compete with cable-based systems. Dishes often cost slightly more in most other countries, plus at least \$20 to \$30 per month for programming fees. This level of price and

accessibility has turned DBS into a mass medium in the United States, Great Britain, and a few other places but keeps it an elite or middle-class medium in much of the world. (This is discussed in detail below.)

Besides providing DBS reception to home dishes, satellites also deliver broadcast and cable channels for rebroadcast and retransmission over cable systems. In some places, not only broadcast channels but also cable channels such as CNN or MTV are locally retransmitted on either VHF or UHF channels after being downlinked from a satellite. MTV achieved most of its audience penetration in Brazil, for example, on newly opened UHF channels fed by a national satellite signal (Duarte, 1992).

## Satellites and Cable TV

Cable systems were and still are the dominant means by which satellite-delivered channels are actually carried to the viewer in most countries. Cable television systems often have substantially different dynamics than DBS; as a result, subscriber costs are lower, and cable became more of a mass-audience service in a number of countries. Cable was cheaper in cities or affluent towns, where many people could be wired up in dense areas, creating economies of scale (Baldwin & McEvoy, 1988), whereas satellite systems initially flourished primarily in rural areas or poorer regions and countries where only a few potential subscribers could afford them. Satellite systems have since decreased considerably in price, but cable systems have also increased in capability, providing an attractive base for broadband Internet connections, as well as increased numbers of cable channels.

Cable systems are cheaper in many countries, costing only a few dollars a month in some places, for example, India, where systems are informal or illegal. Governments as diverse as Canada, China, and France have favored cable systems over DBS because they offer greater national control for governments trying to mitigate the direct inflow of foreign culture or political information (Price, 1999; Straubhaar, 1988). Government policy can control dozens or hundreds of cable companies more easily than millions of individual home or apartment-block satellite dishes.

## Satellite TV at Global, Regional, and National Levels

All the major spheres or levels of television distribution—global, transnational, cultural-linguistic, geocultural, translocal, and national—are facilitated by satellites. CNN can cover the entire globe using three or four satellites, becoming a truly global phenomenon. Satellite TV can also be used to cover all or most of Latin America or Asia, as cultural-linguistic regions.

It can take programming aimed translocally from Singapore into India for Zee TV and send it further, with other satellites, toward a transnational diaspora of South Asians across North America, Europe, the Middle East, and Africa (Kumar, 2006). It can also be used to make sure that all Brazilians or Indonesians get a national television signal, either through DBS dishes or, more commonly, through receiving dishes hooked to local broadcast television retransmitters or cable TV systems.

Satellites and the increasing network of broadband undersea cables permit the increased delivery of globally segmented channels, such as Discovery, ESPN, MTV, or HBO. However, those global/U.S. channels have had to adapt to regional and even country-specific markets, focusing on much smaller areas than the broad footprint of a regional or even multiregional satellite beam.

Several notable attempts have been made to use the regional technical reach of satellites to create or address television audiences or markets, defined by geographic region, that span multiple cultures and languages. For example, the European Economic Community (EEC) has made a pronounced effort to promote a Europe-wide television market, beginning with its report, *Television without Frontiers: Green Paper on the Establishment of the Common Market for Broadcasting, Especially by Satellite and Cable* (Commission of the European Communities, 1984). Critics such as Schlesinger (1993) thought that the EEC efforts were unlikely to succeed because they are attempting to define as European what is in fact an economics-focused geographical alliance of several distinct language and cultural groups—English-, German-, and French-speaking groups, among others, which are found in both countries and subnational minority populations. Experiences to date with satellite-delivered cable TV or DBS programming in Europe indicates that it either faces considerable resistance unless it fits existing interests in either national programming, U.S. genres of interest, or certain genres, such as music, sports, and news, where regional channels seem to succeed better. For example, since 1954, Eurovision has provided a specific exchange mechanism in Europe, which functioned before satellites and came to focus on news item exchanges; live events such as sports, which were considerably facilitated by satellite technology; and the annual Eurovision Song Contest, which has become one quite visible point of Europe-wide cultural interaction (Agger, 2001). The Eurovision sports and news programs were popular enough to produce the specialized pan-European channels Eurosports and Euronews.

Although the technical capability of satellites has encouraged some—regional groups such as the European Union and companies such as Rupert Murdoch's Star TV—to assume that markets can be defined by technology,

the evidence to date shows that television markets are defined by culture and language, instead. Some striking early results of satellite television were perhaps deceptive. For example, people were surprised by the degree to which audiences in both Canada and the Caribbean were drawn into watching more American television by the accidental spillover of the footprint of the first U.S. cable distribution satellites in the 1970s and 1980s (Lee, 1980; Oliveira, 1986). However, the effect was so strong in large part because many of those populations spoke English and were tied to the United States by trade and migration. Based on a series of in-depth interviews in the Dominican Republic between 1986 and 1988, I found that even Spanish-speakers felt closer to U.S. culture due to physical proximity to the United States and Puerto Rico and circular migration to and from the United States; hence, they were more likely to watch U.S. cable channels than were Brazilians whom I interviewed between 1989 and 1990 in São Paulo.

Global/U.S. channels often make regional adaptations, dubbing programs into languages that are widespread throughout regions, such as Mandarin Chinese or Spanish. They are also increasingly adjusting or localizing the selection of contents (films, documentaries, or music videos) to reflect regional tastes. For example, MTV channels in Asia, Europe, and Latin America play more local music and less American music to adapt to local taste. ESPN Brazil plays more soccer and less American football. This process of localization is discussed in more detail in Chapter 7.

Related is the capability of satellites to support cultural-linguistic markets that are either centered in one geographic region or spread across several. In Latin America and the Middle East, geocultural markets are in fact centered on a geographic region, although immigrants and migrant workers have carried the Arabic market into Europe and the Latin American market into North America. In Asia, a satellite permits a television channel to address the audience of greater China, even though the audiences in question are spread across East Asia, Southeast Asia, and the considerable extent of China itself (Man Chan, 1994; Curtin, 2003). Satellites have helped the growth of channels and networks aimed at cultural-linguistic markets, both those concentrated in single geographic regions and those that follow diasporas, like the overseas Chinese and the Indian or South Asian populations widely dispersed across Asia, North America, Europe, and elsewhere as well.

Overall, the primary initial impact of television satellites seems to have been to permit complete national distribution and penetration of television in a number of larger countries, such as Brazil, Canada, China, India, Mexico, and the former USSR. Next, it has permitted a number of channels to grow from national to global. Some of those have truly global ambition and reach, like Discovery or CNN. Perhaps more widely watched are those that supply programming from major producers to those who share a

language and culture with them, whether in the country next door or in California's Silicon Valley.

A quite different effect, following a quite different logic of globalization, may be to permit upper and middle classes to become more distinguished from working and lower classes of their own nationality. That can happen on either a global or regional basis, as global and regional channels come to them via satellite through DBS or cable TV.

## TV Technology, Access, and Choice

One thing that emerges from studies of audiences for different kinds of television is the primacy of social class in explaining audience access and preferences. In particular, I propose that the use of new television technologies to gain access to the global flow of television outward from the United States or other core countries is most common among two groups: a globalized elite who speak English and are interested in CNN's perspective on world news and people in the Anglophone nations of the world, where U.S. television exports tend to be most popular (and best understood; Abram, 2004).

CNN is famous for having a global audience. However, a review by Sparks (1998) showed that the actual audiences for both CNN and BBC worldwide were quite small and that neither source provided a common core of information and perspective for what might be considered a potentially global public sphere. Both surveys and in-depth interviews I did in Brazil (Straubhaar, 1991, 2003), in the Dominican Republic (Straubhaar & Viscasillas, 1991), and among Latinos in central and south Texas (from 2003 through 2005) showed that relatively few people watched CNN. Many people explained that watching CNN was difficult because it demanded knowledge of current events and also knowledge of English, which very few had. Featherstone noted,

Access to these, not imagined but virtual communities, to these neo-worlds constituted by the "iconic-symbolic" and "graphic/dictive" flows is exclusive. It is based on the power and ability to decode (and encode) the signals in the flows. Such decoding/encoding ability depends on the possession of particular, virtual-community-specific types of cultural capital. (in Featherstone & Lash, 1995, p. 11)

## Economic Capital and Access to Television Technologies

One theory relevant to the personal construction and use of information and communication technologies examines various forms of capital, how they are gained, the fields they are deployed in, and how they are accumulated in a

larger group of class *habitus* (Bourdieu, 1984, 1986, 1998). Economic capital or disposable income basically determines what communications media a person can afford to access (Rojas, Straubhaar, Fuentes-Bautista, & Pinon, 2005). Cultural capital, such as education, family experiences, language ability, exposure to foreign cultures, and travel, is related more to what a person chooses to watch than to what they can afford. The economic capital aspect of social class has the greatest impact with the newest television technologies, such as satellite television or satellite-fed cable TV in the 1990s and computers or the Internet after 2000 (Rojas et al., 2005). For instance, whereas less than 10% of the audience had cable or satellite television in most of Latin America as of 2006, more than 80% of homes in increasingly middle-class Taiwan had cable (Oba & Chan-Olmsted, 2005). In many developing countries, including most of Latin America and Africa, direct satellite reception or cable television is a middle-class or even upper-middle-class technology, unavailable to most of the population. For example, cable or satellite-based pay television in Brazil and several other Latin American countries costs \$20 to \$30 per month, which greatly limits its penetration below the middle class (Porto, 2001).

One key limit on access to television in general is personal wealth or, as Bourdieu (1984) refers to it, economic capital. People must have enough income to buy a television set and, in rural areas, an expensive antenna or satellite dish. Even though people buy televisions before stoves, refrigerators, or indoor plumbing, hundreds of millions in the world still cannot afford a television. Perhaps 50% to 60% of people in Mozambique cannot. Perhaps 10% in the Dominican Republic cannot. Less than 5% in Brazil cannot. One reason that radio is still more widespread as the medium of the world's poorest is that radio receivers are still much cheaper to buy and radio signals much cheaper to transmit over greater distances. Radio transmitters are a much less expensive way to bring media transmissions or signals to where the people are. In places like Mozambique, as many as a third of the population cannot afford even simple receivers for AM radio or the batteries to keep them running.

However, in some countries, such as India, cable television was developed as a localized, often pirated technology that often cost only a few dollars (Sinclair, 2005). Cable has also been encouraged as a technology in some countries, such as Singapore, because it is more easily controlled than DBS television reception. Governments can weigh in on which channels will be offered and which will be excluded. Relatively low-cost cable television systems have been built up as part of an overall broadband telecommunications infrastructure in some areas, such as Hong Kong and Singapore. In some countries, cable TV developed as a mass-audience technology that reached below the middle class into the working class.



To date, DBS technologies are usually more expensive than cable TV, including the initial cost of the satellite dish. But nearly all countries have developed at least a small DBS industry to serve those who have both money and interest in programming that tends to lean heavily toward international channels. The exceptions are countries where DBS is politically forbidden as in China (Pashupati, Sun, & McDowell, 2003) and Singapore (Datta-Ray, 2006). Local or translocal channels for DBS services, such as Zee TV in India (Kumar, 2006), may develop when a mass audience, usually developed through lower cost cable television, justifies production of new material for the local audience.

### **Cable and Satellite TV Relative to Broadcast TV**

The other factor to take in account in understanding whether cable or satellite television has developed further as a mass-audience technology in a given country or region is the relationship to what has been offered to audiences via traditional broadcast television. In some countries, broadcast television developed as a robust multichannel system with both quality and diversity of offerings. Examples might include Great Britain and Japan, which have both strong public service systems and strong commercial networks and which have both offered such diverse channels that television households, even though they could afford either satellite or cable television, did not initially show much interest. Other examples might include Brazil and Mexico, where broadcast television was overwhelmingly commercial; they developed multichannel cable or satellite systems offering some diversity of choice as well as dominant channels that delivered high-quality entertainment, such as prime-time telenovelas, that also succeeded as export products to other countries (Sinclair, 1999).

My interviews with programmers at satellite and cable television systems in Brazil, Hong Kong, Singapore, and Taiwan show that they are aware of the need to increase the local content of satellite and cable systems to attract mass audiences. An example from the early 1990s was the local news and talk that made TVBS (a joint venture in Taiwan between local backers and TVB of Hong Kong) popular with the Taiwanese audience. These programmers recognized audience demand for cultural proximity as they sought to localize satellite channel programming, supplemented by programming from nearby producers within cultural-linguistic regions, such as TVBS's use of some crime drama, kung fu, and soap opera from TVB in Hong Kong. That process was well-established early in Taiwan, where more than one dozen local Taiwanese satellite-delivered cable TV channels were available as early

as 1993, plus Chinese channels from elsewhere in the greater China cultural-linguistic region, mostly China and Hong Kong. Taiwan now has nearly 40 locally produced channels, showing the high level of audience response. Localization or translocalization of satellite/cable channels has also taken place in Argentina, India, South Korea, Turkey, and a number of other places, mostly countries with a large middle-class population and well-developed broadcast television systems that had been held back by government controls, at least until the 1990s, when most of this satellite channel development took off.

### Geography, Language, and Other Barriers to Satellite or Cable TV

Another main barrier for many people is sheer geographic distance from coverage by broadcast signals. A significant fraction of the world's people are still geographically isolated from the towns and cities that provide electronic media coverage, as well as the centers of education that would give them access to print media. Close to a fifth of Mozambique's people do not have reliable access to radio signals, and slightly over half have access to television signals. Some are too far away from the transmitters. In theory, they could listen to long-distance short-wave radio and use satellite dishes to get television, but those are both prohibitively expensive technologies for most rural dwellers. As some countries become more prosperous (and as some technologies become cheaper), satellite dishes are in fact proliferating in rural areas.

However, one of the most fundamental dynamics in many countries in the past century has been internal migration from rural areas to cities. Most people are increasingly migrating to or relocating in or near towns or cities, experiencing much more direct exposure to the electronic media. The first purchases of many new migrants are radios and televisions to permit them access to what they see as the modern media. (One of the most poignant interviews I have ever conducted was with a homeless man in 1989 in São Paulo, who was deeply shamed to admit that he did not have a television. He saw a television as the minimum possession required to be a "real Brazilian.")

Language is another aspect of access to television that tends to exclude many people in a number of countries. Many people speak certain television export languages, such as Chinese, Hindi, and English, increasing the fortunes of both Hollywood (Wildman & Siwek, 1988, 1993) and Bollywood (Kumar, 2006). However, television is still broadcast largely in the main national languages of various countries. Quite a few people—from India and Mexico to most of sub-Saharan Africa—are still isolated (or protected) from

both national and global cultures by their exclusive use of local, subnational languages. That, again, is changing as production and transmission costs for television go down. It is gradually becoming more feasible to produce television in local languages. That tendency is most visible in India, where large regional-language communities support both film and television production (Kumar, 2006), but it is also quite evident in Great Britain, Spain, and some other parts of Europe, where local-language television for various subnational regional cultures, such as Wales or Catalonia, has been gradually increasing since the 1980s, often driven by increasingly autonomous regional governments (Moragas Spa, Garitaonandia Garnacho, & Lopez, 1999). Such localization or regionalization of television production and distribution is also increasing among large minority populations in less wealthy countries, for example, some of the major language groups of India, such as Bengali, Telegu, or Tamil. But often even sizable groups of people who do not speak the dominant national language—for example, the Maya in Central America and southern Mexico, who often do not speak Spanish—still largely do not have much television in their local languages. The situation is worse for minority languages in the poorest countries, such as Mozambique, even where, as in that case, less than a third of the populace speaks the supposed national language, Portuguese. Radio is growing in some local languages there but seldom television, which remains too expensive.

Most people are increasingly pulled into using one of the world/main national languages, in some part precisely so that they can watch the available television programming. Others are hastening to learn English in particular so that they can have access to more material from countries on the Internet. A number of people are worried that this tendency is hastening the extinction of small indigenous languages. Hundreds of such languages disappear every year. “In the world, approximately 6,000 languages are spoken . . . of which only about 600 are confidently expected to survive this century” (MIT Indigenous Language Initiative, 2006). However, among other language groups, the native language remains the language of the family, the village, and, increasingly, the radio because radio is still much cheaper to produce, transmit, and receive than television. A well-documented case involves the indigenous-language radio stations that have sprung up in many Latin American cities, especially in Andean nations such as Peru and Central American nations such as Guatemala, to serve indigenous-language speakers who have migrated to the city for work.

One outcome of these processes is that different languages may become the mode of access to different media. I have interviewed people in Brazil who listen to radio for music in a local dialect that mixes Portuguese and indigenous languages, who watch television in the national version of

## 130 Chapter 5

Portuguese, and who read materials in books or on the Internet in English. Lack of in-depth ability in English or other world languages limits access to a great deal of global media content. However, the lack of prevalent ability to understand English also provides an essential protection for many cultural markets in other languages.