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The Technology and the Society

It is often said that television has altered our world. In the same way, people often speak of a new world, a new society, a new phase of history, being created—'brought about'—by this or that new technology: the steam engine, the automobile, the atomic bomb. Most of us know what is generally implied when such things are said. But this may be the central difficulty: that we have gotten so used to statements of this general kind, in our most ordinary discussions, that we can fail to realize their specific meanings.

For behind all such statements lie some of the most difficult and most unresolved historical and philosophical questions. Yet the questions are not posed by the statements; indeed they are ordinarily masked by them. Thus we often discuss, with animation, this or that 'effect' of television, or the kinds of social behavior, the cultural and psychological conditions, which television has 'led to,' without feeling ourselves obliged to ask whether it is reasonable to describe any technology as a cause, or, if we think of it as a cause, as what kind of cause, and in what relations with other kinds of causes. The most precise and discriminating local study of 'effects' can remain superficial if we have not looked into the notions of cause and effect, as between a technology and a society, a technology and a culture, a technology and a psychology, which underlie our questions and may often determine our answers.

It can of course be said that these fundamental questions are very much too difficult; and that they are indeed difficult is very soon obvious to anyone who tries to follow them through. We could spend our lives trying to answer them, whereas here and now, in a society in which television is important, there is immediate and practical work to be done: surveys to be made, research undertaken; surveys and research, moreover, which we know how to do. It is an appealing position, and it has the advantage, in our kind of society, that it is understood as practical, so that it can then

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be supported and funded. By contrast, other kinds of questions seem merely theoretical and abstract.

Yet all questions about cause and effect, as between a technology and a society, are intensely practical. Until we have begun to answer them, we really do not know, in any particular case, whether, for example, we are talking about a technology or about the uses of a technology; about necessary institutions or about particular and changeable institutions; about a content or about a form. And this is not only a matter of intellectual uncertainty; it is a matter of social practice. If the technology is a cause, we can at best modify or seek to control its effects. Or if the technology, as used, is an effect, to what other kinds of cause, and other kinds of action, should we refer and relate our experience of its uses? These are not abstract questions. They form an increasingly important part of our social and cultural arguments, and they are being decided all the time in real practice, by real and effective decisions.

It is with these problems in mind that I want to try to analyze television as a particular cultural technology, and to look at its development, its institutions, its forms, and its effects, in this critical dimension. In the present chapter, I shall begin the analysis under three headings: (a) versions of cause and effect in technology and society; (b) the social history of television as a technology; (c) the social history of the uses of television technology.

Versions of Cause and Effect in Technology and Society

We can begin by looking again at the general statement that television has altered our world. It is worth setting down some of the different things this kind of statement has been taken to mean. For example:

(i) Television was invented as a result of scientific and technical research. Its power as a medium of news and entertainment was then so great that it altered all preceding media of news and entertainment.

(ii) Television was invented as a result of scientific and technical research. Its power as a medium of social communication was then so great that it altered many of our institutions and forms of social relationships.

(iii) Television was invented as a result of scientific and technical research. Its inherent properties as an electronic medium altered our basic perceptions of reality, and thence our relations with each other and with the world.

(iv) Television was invented as a result of scientific and technical research. As a powerful medium of communication and entertainment it took its place with other factors—such as greatly increased physical mobility, itself the result of other newly invented technologies—in altering the scale and form of our societies.

(v) Television was invented as a result of scientific and technical research, and developed as a medium of entertainment and news. It then had unforeseen consequences, not only on other entertainment and news media, which it reduced in viability and importance, but on some of the central processes of family, cultural, and social life.

(vi) Television, discovered as a possibility by scientific and technical research, was selected for investment and development to meet the needs of a new kind of society, especially in the provision of centralized entertainment and in the centralized formation of opinions and styles of behavior.

(vii) Television, discovered as a possibility by scientific and technical research, was selected for investment and promotion as a new and profitable phase of a domestic consumer economy; it is then one of the characteristic 'machines for the home.'

(viii) Television became available as a result of scientific and technical research, and in its character and uses exploited and emphasized elements of a passivity, a cultural and psychological inadequacy, which had always been latent in people, but which television now organized and came to represent.

(ix) Television became available as a result of scientific and technical research, and in its character and uses both served and exploited the needs of a new kind of large-scale and complex but atomized society.

These are only some of the possible glosses on the ordinary bald statement that television has altered our world. Many people hold mixed versions of what are really alternative opinions, and in some cases there is some inevitable overlapping. But we can distinguish between two broad classes of opinion.

In the first—(i) to (v)—the technology is in effect accidental. Beyond the strictly internal development of the technology there is no reason why any particular invention should have come about. Similarly it then has consequences which are also in the true sense accidental, since they follow directly from the technology itself. If television had not been invented, this argument would run, certain definite social and cultural events would not have occurred.

In the second—(vi) to (ix)—television is again, in effect, a technological accident, but its significance lies in uses, which are held to be symptomatic of some order of society or some qualities of human nature which are otherwise determined. If television had not been invented, this argument runs, we would still be manipulated or mindlessly entertained, but in some other way and perhaps less powerfully.

For all the variations of local interpretation and emphasis, these two classes of opinion underlie the overwhelming majority of both professional

and amateur views of the effects of television. What they have in common is the fundamental form of the statement: "television has altered our world."

It is then necessary to make a further theoretical distinction. The first class of opinion, described above, is that usually known, at least to its opponents, as *technological determinism.* It is an immensely powerful and now largely orthodox view of the nature of social change. New technologies are discovered, by an essentially internal process of research and development, which then sets the conditions for social change and progress. Progress, in particular, is the history of these inventions, which 'created the modern world.' The effects of the technologies, whether direct or indirect, foreseen or unforeseen, are as it were the rest of history. The steam engine, the automobile, television, the atomic bomb, have *made* modern man and the modern condition.

The second class of opinion appears less determinist. Television, like any other technology, becomes available as an element or a medium in a process of change that is in any case occurring or about to occur. By contrast with pure technological determinism, this view emphasizes other causal factors in social change. It then considers particular technologies, or a complex of technologies, as *symptoms* of change of some other kind. Any particular technology is then as it were a by-product of a social process that is otherwise determined. It only acquires effective status when it is used for purposes which are already contained in this known social process.

The debate between these two general positions occupies the greater part of our thinking about technology and society. It is a real debate, and each side makes important points. But it is in the end sterile, because each position, though in different ways, has abstracted technology from society. In *technological determinism,* research and development have been assumed as self-generating. The new technologies are invented as it were in an independent sphere, and then create new societies or new human conditions. The view of *symptomatic technology,* similarly, assumes that research and development are self-generating, but in a more marginal way. What is discovered in the margin is then taken up and used.

Each view can then be seen to depend on the isolation of technology. It is either a self-acting force which creates new ways of life, or it is a self-acting force which provides materials for new ways of life. These positions are so deeply established, in modern social thought, that it is very difficult to think beyond them. Most histories of technology, like most histories of scientific discovery, are written from their assumptions. An appeal to 'the facts,' against this or that interpretation, is made very difficult simply because the histories are usually written, consciously or unconsciously, to illustrate the assumptions. This is either explicit, with the consequential interpretation attached, or more often implicit, in that the history of technology or of scientific development is offered as a history

on its own. This can be seen as a device of specialization or of emphasis, but it then necessarily implies merely internal intentions and criteria.

To change these emphases would require prolonged and cooperative intellectual effort. But in the particular case of television it may be possible to outline a different kind of interpretation, which would allow us to see not only its history but also its uses in a more radical way. Such an interpretation would differ from technological determinism in that it would restore *intention* to the process of research and development. The technology would be seen, that is to say, as being looked for and developed with certain purposes and practices already in mind. At the same time the interpretation would differ from symptomatic technology in that these purposes and practices would be seen as *direct:* as known social needs, purposes, and practices to which the technology is not marginal but central.

The Social History of Television as a Technology

The invention of television was no single event or series of events. It depended on a complex of inventions and developments in electricity, telegraphy, photography and motion pictures, and radio. It can be said to have separated out as a specific technological objective in the period 1875–90, and then, after a lag, to have developed as a specific technological enterprise from 1920 through to the first public television systems of the 1930s. Yet in each of these stages it depended for parts of its realization on inventions made with other ends primarily in view.

Until the early nineteenth century, investigations of electricity, which had long been known as a phenomenon, were primarily philosophical: investigations of a puzzling natural effect. The technology associated with these investigations was mainly directed toward isolation and concentration of the effect, for its clearer study. Toward the end of the eighteenth century there began to be applications, characteristically in relation to other known natural effects (lightning conductors). But there is then a key transitional period in a cluster of inventions between 1800 and 1831, ranging from Volta's battery to Faraday's demonstration of electromagnetic induction, leading quickly to the production of generators. This can be properly traced as a scientific history, but it is significant that the key period of advance coincides with an important stage of the development of industrial production. The advantages of electric power were closely related to new industrial needs: for mobility and transfer in the location of power sources, and for flexible and rapid controllable conversion. The steam engine had been well suited to textiles, and its industries had been based on local siting. A more extensive development, both physically and in the complexity of multiple-part processes, such as engineering, could be attempted with other power sources but could only be fully realized

with electricity. There was a very complex interaction between new needs and new inventions, at the level of primary production, of new applied industries (plating) and of new social needs which were themselves related to industrial development (city and house lighting). From 1830 to large-scale generation in the 1880s there was this continuing complex of need and invention and application.

In telegraphy the development was simpler. The transmission of messages by beacons and similar primary devices had been long established. In the development of navigation and naval warfare the flag system had been standardized in the course of the sixteenth and seventeenth centuries. During the Napoleonic wars there was a marked development of land telegraphy, by semaphore stations, and some of this survived into peacetime. Electrical telegraphy had been suggested as a technical system as early as 1753, and was actually demonstrated in several places in the early nineteenth century. An English inventor in 1816 was told that the Admiralty was not interested. It is interesting that it was the development of the railways, themselves a response to the development of an industrial *system* and the related growth of cities, which clarified the need for improved telegraphy. A complex of technical possibilities was brought to a working system from 1837 onward. The development of international trade and transport brought rapid extensions of the system, including the transatlantic cable in the 1850s and the 1860s. A general system of electric telegraphy had been established by the 1870s, and in the same decade the telephone system began to be developed, in this case as a new and intended invention.

In photography, the idea of light-writing had been suggested by (among others) Wedgwood and Davy in 1802, and the camera obscura had already been developed. It was not the projection but the fixing of images which at first awaited technical solution, and from 1816 (Niepce) and through to 1839 (Daguerre) this was worked on, together with the improvement of camera devices. Professional and then amateur photography spread rapidly, and reproduction and then transmission, in the developing newspaper press, were achieved. By the 1880s the idea of a 'photographed reality'—still more for record than for observation—was familiar.

The idea of moving pictures had been similarly developing. The magic lantern (slide projection) had been known from the seventeenth century, and had acquired simple motion (one slide over another) by 1736. From at latest 1826 there was a development of mechanical motion picture devices, such as the wheel-of-life, and these came to be linked with the magic lantern. The effect of persistence in human vision—that is to say, our capacity to hold the 'memory' of an image through an interval to the next image, thus allowing the possibility of a sequence built from rapidly succeeding units—had been known since classical times. Series of cameras photographing stages of a sequence were followed (Marcy 1882) by multiple-shot cameras. Friese-Greene and Edison worked on techniques

of filming and projection, and celluloid was substituted for paper reels. By the 1890s the first public motion picture shows were being given in France, America, and England.

Television, as an idea, was involved with many of these developments. It is difficult to separate it, in its earliest stages, from photo-telegraphy. Bain proposed a device for transmitting pictures by electric wires in 1842; Bakewell in 1847 showed the copying telegraph; Caselli in 1862 transmitted pictures by wire over a considerable distance. In 1873, while working at a terminal of the Atlantic telegraph cable, May observed the light-sensitive properties of selenium (which had been isolated by Berzelius in 1817 and was in use for resistors). In a host of ways, following an already defined need, the means of transmitting still pictures and moving pictures were actively sought and to a considerable extent discovered. The list is long even when selective: Carey's electric eye in 1875; Nipkow's scanning system in 1884; Elster and Geitel's photoelectric cells in 1890; Braun's cathode-ray tube in 1897; Rosing's cathode-ray receiver in 1907; Campbell Swinton's electronic camera proposal in 1911. Through this whole period two facts are evident: that a system of television was foreseen, and its means were being actively sought; but also that, by comparison with electrical generation and electrical telegraphy and telephony, there was very little social investment to bring the scattered work together. It is true that there were technical blocks before 1914—the thermionic valve and the multistage amplifier can be seen to have been needed and were not yet invented. But the critical difference between the various spheres of applied technology can be stated in terms of a social dimension: the new systems of production and of business or transport communication were already organized, at an economic level; the new systems of social communication were not. Thus when motion pictures were developed, their application was characteristically in the margin of established social forms—the sideshows—until their success was capitalized in a version of an established form, the motion picture *theater*.

The development of radio, in its significant scientific and technical stages between 1885 and 1911, was at first conceived, within already effective social systems, as an advanced form of telegraphy. Its application as a significantly new social form belongs to the immediate postwar period, in a changed social situation. It is significant that the hiatus in technical television development then also ended. In 1923 Zworykin introduced the electronic television camera tube. Through the early 1920s Baird and Jenkins, separately and competitively, were working on systems using mechanical scanning. From 1925 the rate of progress was qualitatively changed, through important technical advances but also with the example of sound broadcasting systems as a model. The Bell System in 1927 demonstrated wire transmission through a radio link, and the prehistory of the form can be seen to be ending. There was great rivalry between systems—especially those of mechanical and electronic scanning—and there is still

great controversy about contributions and priorities. But this is characteristic of the phase in which the development of a technology moves into the stage of a new social form.

What is interesting throughout is that in a number of complex and related fields, these systems of mobility and transfer in production and communication, whether in mechanical and electric transport, or in telegraphy, photography, motion pictures, radio, and television, were at once incentives and responses within a phase of general social transformation. Though some of the crucial scientific and technical discoveries were made by isolated and unsupported individuals, there was a crucial community of selected emphasis and intention, in a society characterized at its most general levels by a mobility and extension of the scale of organizations: forms of growth which brought with them immediate and longer-term problems of operative communication. In many different countries, and in apparently unconnected ways, such needs were at once isolated and technically defined. It is especially a characteristic of the communications system that *all were foreseen—not in utopian but in technical ways—before the crucial components of the developed systems had been discovered and refined.* In no way is this a history of communications systems creating a new society or new social conditions. The decisive and earlier transformation of industrial production, and its new social forms, which had grown out of a long history of capital accumulation and working technical improvements, created new needs but also new possibilities, and the communications systems, down to television, were their intrinsic outcome.

The Social History of the Uses of Television Technology

It is never quite true to say that in modern societies, when a social need has been demonstrated, its appropriate technology will be found. This is partly because some real needs, in any particular period, are beyond the scope of existing or foreseeable scientific and technical knowledge. It is even more because the key question, about technological response to a need, is less a question about the need itself than about its place in an existing social formation. A need which corresponds with the priorities of the real decision-making groups will, obviously, more quickly attract the investment of resources and the official permission, approval, or encouragement on which a working technology, as distinct from available technical devices, depends. We can see this clearly in the major developments of industrial production and, significantly, in military technology. The social history of communications technology is interestingly different from either of these, and it is important to try to discover what are the real factors of this variation.

The problem must be seen at several different levels. In the very broadest perspective, there is an operative relationship between a new kind of expanded, mobile, and complex society and the development of a modern communications technology. At one level this relationship can be reasonably seen as causal, in a direct way. The principal incentives to first-stage improvements in communications technology came from problems of communication and control in expanded military and commercial operations. This was both direct, arising from factors of greatly extending distance and scale, and indirect, as a factor within the development of transport technology, which was for obvious reasons the major direct response. Thus telegraphy and telephony, and in its early stages radio, were secondary factors within a primary communications system which was directly serving the needs of an established and developing military and commercial system. Through the nineteenth and into the twentieth centuries this was the decisive pattern.

But there were other social and political relationships and needs emerging from this complex of change. Indeed it is a consequence of the particular and dominant interpretation of these changes that the complex was at first seen as one requiring improvement in *operational* communication. The direct priorities of the expanding commercial system, and in certain periods of the military system, led to a definition of needs within the terms of these systems. The objectives and the consequent technologies were operational within the structures of these systems: passing necessary specific information, or maintaining contact and control. Modern electric technology, in this phase, was thus oriented to uses of person to person, operator and operative to operator and operative, within established specific structures. This quality can best be emphasized by contrast with the electric technology of the second phase, which was properly and significantly called *broadcasting*. A technology of specific messages to specific persons was complemented, but only relatively late, by a technology of varied messages to a general public.

Yet to understand this development we have to look at a wider communications system. The true basis of this system had preceded the developments in technology. Then as now there was a major, indeed dominant, area of social communication, by word of mouth, within every kind of social group. In addition, then as now, there were specific institutions of that kind of communication which involves or is predicated on social teaching and control: churches, schools, assemblies and proclamations, direction in places of work. All these interacted with forms of communication within the family.

What then were the new needs which led to the development of a new technology of social communication? The development of the press gives us the evidence for our first major instance. It was at once a response to the development of an extended social, economic, and political system and a response to crisis within that system. The centralization of political

power led to a need for messages from that center along other than official lines. Early newspapers were a combination of that kind of message—political and social information—and the specific messages—classified advertising and general commercial news—of an expanding system of trade. In Britain the development of the press went through its major formative stages in periods of crisis: the Civil War and Commonwealth, when the newspaper form was defined; the Industrial Revolution, when new forms of popular journalism were successively established; the major wars of the twentieth century, when the newspaper became a universal social form. For the transmission of simple orders, a communications system already existed. For the transmission of an ideology, there were specific traditional institutions. But for the transmission of news and background—the whole orienting, predictive, and updating process which the fully developed press represented—there was an evident need for a new form, which the largely traditional institutions of church and school could not meet. And to the large extent that the crises of general change provoked both anxiety and controversy, this flexible and competitive form met social needs of a new kind. As the struggle for a share in decision and control became sharper, in campaigns for the vote and then in competition for the vote, the press became not only a new communications system but, centrally, a new social institution.

This can be interpreted as response to a political need and a political crisis, and it was certainly this. But a wider social need and social crisis can also be recognized. In a changing society, and especially after the Industrial Revolution, problems of social perspective and social orientation became more acute. New relations between men, and between men and things, were being intensely experienced, and in this area, especially, the traditional institutions of church and school, or of settled community and persisting family, had very little to say. A great deal was of course said, but from positions defined within an older kind of society. In a number of ways, and drawing on a range of impulses from curiosity to anxiety, new information and new kinds of orientation were deeply required: more deeply, indeed, than any specialization to political, military, or commercial information can account for. An increased awareness of mobility and change, not just as abstractions but as lived experiences, led to a major redefinition, in practice and then in theory, of the function and process of social communication.

What can be seen most evidently in the press can be seen also in the development of photography and the motion picture. The photograph is in one sense a popular extension of the portrait, for recognition and for record. But in a period of great mobility, with new separations of families and with internal and external migrations, it became more centrally necessary as a form of maintaining, over distance and through time, certain personal connections. Moreover, in altering relations to the physical world, the photograph as an object became a form of the photography of objects:

moments of isolation and stasis within an experienced rush of change; and then, in its technical extension to motion, a means of observing and analyzing motion itself, in new ways—a dynamic form in which new kinds of recognition were not only possible but necessary.

Now it is significant that until the period after the First World War, and in some ways until the period after the Second World War, these varying needs of a new kind of society and a new way of life were met by what were seen as specialized means: the press for political and economic information; the photograph for community and entertainment; telegraphy and telephony for business information and some important personal messages. It was within this complex of specialized forms that broadcasting arrived.

The consequent difficulty of defining its social uses, and the intense kind of controversy which has ever since surrounded it, can then be more broadly understood. Moreover, the first definitions of broadcasting were made for sound radio. It is significant and perhaps puzzling that the definitions and institutions then created were those within which television developed.

We have now become used to a situation in which broadcasting is a major social institution, about which there is always controversy but which, in its familiar form, seems to have been predestined by the technology. This predestination, however, when closely examined, proves to be no more than a set of particular social decisions, in particular circumstances, which were then so widely if imperfectly ratified that it is now difficult to see them as decisions rather than as (retrospectively) inevitable results.

Thus, if seen only in hindsight, broadcasting can be diagnosed as a new and powerful form of social integration and control. Many of its main uses can be seen as socially, commercially, and at times politically manipulative. Moreover, this viewpoint is rationalized by its description as 'mass communication,' a phrase used by almost all its agents and advisers as well, curiously, as by most of its radical critics. 'Masses' had been the new nineteenth-century term of contempt for what was formerly described as 'the mob.' The physical 'massing' of the urban and industrial revolution underwrote this. A new radical class-consciousness adopted the term to express the material of new social formations: 'mass organizations.' The 'mass meeting' was an observable physical effect. So pervasive was this description that in the twentieth century multiple serial production was called, falsely but significantly, 'mass production': mass now meant large numbers (but within certain assumed social relationships) rather than any physical or social aggregate. Sound radio and television, for reasons we shall look at, were developed for transmission to *individual* homes, though there was nothing in the technology to make this inevitable. But then this new form of social communication—broadcasting—was obscured by its definition as 'mass communication': an

abstraction to its most general characteristic, that it went to many people, 'the masses,' which obscured the fact that the means chosen was the offer of individual sets, a method much better described by the earlier word 'broadcasting.' It is interesting that the only developed 'mass' use of radio was in Nazi Germany, where under Goebbels's orders the Party organized compulsory public listening groups and the receivers were in the streets. There has been some imitation of this by similar regimes, and Goebbels was deeply interested in television for the same kind of use. What was developed within most capitalist societies, though called 'mass communication,' was significantly different.

There was early official intervention in the development of broadcasting, but in form this was only at a technical level. In the earlier struggle against the development of the press, the State had licensed and taxed newspapers, but for a century before the coming of broadcasting the alternative idea of an independent press had been realized both in practice and in theory. State intervention in broadcasting had some real and some plausible technical grounds: the distribution of wavelengths. But to these were added, though always controversially, more general social directions or attempts at direction. This social history of broadcasting can be discussed on its own, at the levels of practice and principle. Yet it is unrealistic to extract it from another and perhaps more decisive process, through which, in particular economic situations, a set of scattered technical devices became an applied technology and then a social technology.

A Fascist regime might quickly see the use of broadcasting for direct political and social control. But that, in any case, was when the technology had already been developed elsewhere. In capitalist democracies, the thrust for conversion from scattered techniques to a technology was not political but economic. The characteristically isolated inventors, from Nipkow and Rosing to Baird and Jenkins and Zwyorkin, found their point of development, if at all, in the manufacturers and prospective manufacturers of the technical apparatus. The history at one level is of these isolated names, but at another level it is of EMI, RCA, and a score of similar companies and corporations. In the history of motion pictures, capitalist development was primarily in production; large-scale capitalist distribution came much later, as a way of controlling and organizing a market for given production. In broadcasting, both in sound radio and later in television, the major investment was in the means of distribution, and was devoted to production only so far as to make the distribution technically possible and then attractive. Unlike all previous communications technologies, radio and television were *systems primarily devised for transmission and reception as abstract processes, with little or no definition of preceding content.* When the question of content was raised, it was resolved, in the main, parasitically. There were state occasions, public sporting events, theaters, and so on, which would be communicatively distributed by these new technical means. *It is not only that the supply*

of broadcasting facilities preceded the demand; it is that the means of communication preceded their content.

The period of decisive development in sound broadcasting was the 1920s. After the technical advances in sound telegraphy which had been made for military purposes during the war, there was at once an economic opportunity and the need for a new social definition. No nation or manufacturing group held a monopoly of the technical means of broadcasting, and there was a period of intensive litigation followed by cross-licensing of the scattered basic components of successful transmission and reception (the vacuum tube or valve, developed from 1904 to 1913; the feedback circuit, developed from 1912; the neutrodyne and heterodyne circuits, from 1923). Crucially, in the mid-1920s, there was a series of investment-guided technical solutions to the problem of building a small and simple domestic receiver, on which the whole qualitative transformation from wireless telegraphy to broadcasting depended. By the mid-1920s—1923 and 1924 are especially decisive years—this breakthrough had happened in the leading industrial societies: the United States, Britain, Germany, and France. By the end of the 1920s the radio industry had become a major sector of industrial production, within a rapid general expansion of the new kinds of machines which were eventually to be called 'consumer durables.' This complex of developments included the motorcycle and motorcar, the box camera and its successors, home electrical appliances, and radio sets. Socially, this complex is characterized by the two apparently paradoxical yet deeply connected tendencies of modern urban industrial living: on the one hand mobility, on the other hand the more apparently self-sufficient family home. The earlier period of public technology, best exemplified by the railways and city lighting, was being replaced by a kind of technology for which no satisfactory name has yet been found: that which served an at once mobile and home-centered way of living: a form of *mobile privatization.* Broadcasting in its applied form was a social product of this distinctive tendency.

The contradictory pressures of this phase of industrial capitalist society were indeed resolved, at a certain level, by the institution of broadcasting. For mobility was only in part the impulse of an independent curiosity: the wish to go out and see new places. It was essentially an impulse formed in the breakdown and dissolution of older and smaller kinds of settlement and productive labor. The new and larger settlements and industrial organizations required major internal mobility, at a primary level, and this was joined by secondary consequences in the dispersal of extended families and in the needs of new kinds of social organization. Social processes long implicit in the revolution of industrial capitalism were then greatly intensified: especially an increasing distance between immediate living areas and the directed places of work and government. No effective kinds of social control over these transformed industrial and political processes had come anywhere near being achieved or even foreseen.

Most people were living in the fallout area of processes determined beyond them. What had been gained, nevertheless, in intense social struggle, had been the improvement of immediate conditions, within the limits and pressures of these decisive large-scale processes. There was some relative improvement in wages and working conditions, and there was a qualitative change in the distribution of the day, the week, and the year between work and off-work periods. These two effects combined in a major emphasis on improvement of the small family home. Yet this privatization, which was at once an effective achievement and a defensive response, carried, as a consequence, an imperative need for new kinds of contact. The new homes might appear private and 'self-sufficient' but could be maintained only by regular funding and supply from external sources, and these, over a range from employment and prices to depressions and wars, had a decisive and often a disrupting influence on what was nevertheless seen as a separable 'family' project. This relationship created both the need and the form of a new kind of 'communication': news from 'outside,' from otherwise inaccessible sources. Already in the drama of the 1880s and 1890s (Ibsen, Chekhov) this structure had appeared: the center of dramatic interest was now for the first time the family home, but men and women stared from its windows, or waited anxiously for messages, to learn about forces, 'out there,' which would determine the conditions of their lives. The new 'consumer' technology which reached its first decisive stage in the 1920s served this complex of needs within just these limits and pressures. There were immediate improvements of the condition and efficiency of the privatized home; there were new facilities, in private transport, for expeditions from the home; and then, in radio, there was a facility for a new kind of social input—news and entertainment brought into the home. Some people spoke of the new machines as gadgets, but they were always much more than this. They were the applied technology of a set of emphases and responses within the determining limits and pressures of industrial capitalist society.

The cheap radio receiver is then a significant index of a general condition and response. It was especially welcomed by all those who had least social opportunities of other kinds; who lacked independent mobility or access to the previously diverse places of entertainment and information. Broadcasting could also come to serve, or seem to serve, as a form of *unified* social intake, at the most general levels. What had been intensively promoted by the radio manufacturing companies thus interlocked with this kind of social need, itself defined within general limits and pressures. In the early stages of radio manufacturing, transmission was conceived before content. By the end of the 1920s the network was there, but still at a low level of content-definition. It was in the 1930s, in the second phase of radio, that most of the significant advances in content were made. The transmission and reception networks created, *as a by-product,* the facilities of primary broadcasting production. But the general social definition of 'content' was already there.

This theoretical model of the general development of broadcasting is necessary to an understanding of the particular development of television. For there were, in the abstract, several different ways in which television as a technical means might have been developed. After a generation of universal domestic television it is not easy to realize this. But it remains true that, after a great deal of intensive research and development, the domestic television set is in a number of ways an inefficient medium of visual broadcasting. Its visual inefficiency by comparison with the cinema is especially striking, whereas in the case of radio there was by the 1930s a highly efficient sound broadcasting receiver, without any real competitors in its own line. Within the limits of the television home-set emphasis it has so far not been possible to make more than minor qualitative improvements. Higher-definition systems, and color, have still only brought the domestic television set, as a machine, to the standard of a very inferior kind of cinema. Yet most people have adapted to this inferior visual medium, in an unusual kind of preference for an inferior immediate technology, because of the social complex—and especially that of the privatized home—within which broadcasting, as a system, is operative. The cinema had remained at an earlier level of social definition; it was and remains a special kind of theater, offering specific and discrete works of one general kind. Broadcasting, by contrast, offered a whole social intake: music, news, entertainment, sport. The advantages of this general intake, within the home, much more than outweighed the technical advantages of visual transmission and reception in the cinema, confined as this was to specific and discrete works. While broadcasting was confined to sound, the powerful visual medium of cinema was an immensely popular alternative. But when broadcasting became visual, the option for its social advantages outweighed the immediate technical deficits.

The transition to television broadcasting would have occurred quite generally in the late 1930s and early 1940s, if the war had not intervened. Public television services had begun in Britain in 1936 and in the United States in 1939, but with still very expensive receivers. The full investment in transmission and reception facilities did not occur until the late 1940s and early 1950s, but the growth was thereafter very rapid. The key social tendencies which had led to the definition of broadcasting were by then even more pronounced. There was significantly higher investment in the privatized home, and the social and physical distances between these homes and the decisive political and productive centers of the society had become much greater. Broadcasting, as it had developed in radio, seemed an inevitable model: the central transmitters and the domestic sets.

Television then went through some of the same phases as radio. Essentially, again, the technology of transmission and reception developed before the content, and important parts of the content were and have remained by-products of the technology rather than independent enterprises.

As late as the introduction of color, 'colorful' programs were being devised to persuade people to buy color sets. In the earliest stages there was the familiar parasitism on existing events: a coronation, a major sporting event, theaters. A comparable parasitism on the cinema was slower to show itself, until the decline of the cinema altered the terms of trade; it is now very widespread, most evidently in the United States. But again, as in radio, the end of the first general decade brought significant independent television production. By the middle and late 1950s, as in radio in the middle and late 1930s, new kinds of programs were being made for television and there were very important advances in the productive use of the medium, including, as again at a comparable stage in radio, some kinds of original work.

Yet the complex social and technical definition of broadcasting led to inevitable difficulties, especially in the productive field. What television could do relatively cheaply was to transmit something that was in any case happening or had happened. In news, sports, and some similar areas it could provide a service of transmission at comparatively low cost. But in every kind of new work, which it had to produce, it became a very expensive medium, within the broadcasting model. It was never as expensive as film, but the cinema, as a distributive medium, could directly control its revenues. It was, on the other hand, implicit in broadcasting that given the tunable receiver all programs could be received without immediate charge. There could have been and can still be a socially financed system of production and distribution within which local and specific charges would be unnecessary; the BBC, based on the license system for domestic receivers, came nearest to this. But short of monopoly, which still exists in some state-controlled systems, the problems of investment for production, in any broadcasting system, are severe.

Thus within the broadcasting model there was this deep contradiction, of centralized transmission and privatized reception. One economic response was licensing. Another, less direct, was commercial sponsorship and then supportive advertising. But the crisis of production control and financing has been endemic in broadcasting precisely because of the social and technical model that was adopted and that has become so deeply established. The problem is masked, rather than solved, by the fact that as a transmitting technology—its function largely limited to relay and commentary on other events—some balance could be struck; a limited revenue could finance this limited service. But many of the creative possibilities of television have been frustrated precisely by this apparent solution, and this has far more than local effects on producers and on the balance of programs. When there has been such heavy investment in a particular model of social communications, there is a restraining complex of financial institutions, of cultural expectations, and of specific technical developments, which though it can be seen, superficially, as the effect of a technology is in fact a social complex of a new and central kind.

Hans Magnus Enzensberger

Constituents of a Theory of the Media

"If you should think this is Utopian, then I would ask you to consider why it is Utopian."
–Bertolt Brecht, Theory of Radio

With the development of the electronic media, the industry that shapes consciousness has become the pacemaker for the social and economic development of societies in the late industrial age. It infiltrates into all other sectors of production, takes over more and more directional and control functions, and determines the standard of the prevailing technology.

In lieu of normative definitions, here is an incomplete list of new developments which have emerged in the last twenty years: news satellites, color television, cable relay television, cassettes, videotape, videotape recorders, videophones, stereophony, laser techniques, electrostatic reproduction processes, electronic high-speed printing, composing and learning machines, microfiches with electronic access, printing by radio, time-sharing computers, data banks. All these new forms of media are constantly forming new connections both with each other and with older media like printing, radio, film, television, telephone, teletype, radar, and so on. They are clearly coming together to form a universal system.

The general contradiction between productive forces and productive relationships emerges most sharply, however, when they are most advanced. By contrast, protracted structural crises, as in coal mining, can be solved merely by getting rid of a backlog, that is to say, essentially they can be solved within the terms of their own system, and a revolutionary strategy that relied on them would be shortsighted.

Monopoly capitalism develops the consciousness-shaping industry more quickly and more extensively than other sectors of production; it must at the same time fetter it. A socialist media theory has to work at this contradiction, demonstrate that it cannot be solved within the given

Originally printed in the *New Left Review*, no. 64, November/December 1970, pp. 13–36. Reprinted by permission of the *New Left Review* and Verso.