Understanding Media

THE EXTENSIONS OF MAN

Critical Edition

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1 The Medium Is the Message

In a culture like ours, long accustomed to splitting and dividing all things as a means of control, it is sometimes a bit of a shock to be reminded that, in operational and practical fact, the medium is the message. This is merely to say that the personal and social consequences of any medium—that is, of any extension of ourselves—result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology. Thus, with automation, for example, the new patterns of human association tend to eliminate jobs, it is true. That is the negative result. Positively, automation creates roles for people, which is to say depth of involvement in their work and human association that our preceding mechanical technology had destroyed. Many people would be disposed to say that it was not the machine, but what one did with the machine, that was its meaning or message.

In terms of the ways in which the machine

altered our relations to one another and to ourselves, it mattered not in the least whether it turned out cornflakes or Cadillacs. The restructuring of human work and association was shaped by the technique of fragmentation that is the essence of machine technology. The essence of automation technology is the opposite. It is integral and decentralist in depth, just as the machine was fragmentary, centralist, and superficial in its patterning of human relationships.

The instance of the electric light may prove illuminating in this connection. The electric light is pure information. It is a medium without a message, as it were, unless it is used to spell out some verbal ad or name. This fact, characteristic of all media, means that the "content" of any medium is always another medium. The content of writing is speech, just as the written word is the content of print, and print is the content of the telegraph. If it is asked, "What is the content of speech?," it is necessary to say, "It is an actual process of thought, which is in itself nonverbal." An abstract painting represents direct manifestation of creative thought processes as they might appear in computer designs. What we are considering here, however, are the psychic and social consequences of the designs or patterns as they amplify or accelerate existing processes. For the "message" of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs. The railway did not introduce movement or transportation or wheel or road into human society, but it accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure. This happened whether the railway functioned in a tropical or a northern environment, and is quite independent of the freight or content of the railway medium. The airplane, on the other hand, by accelerating the rate of transportation, tends to dissolve the railway form of city, politics, and association, quite independently of what the airplane is used for.

Let us return to the electric light. Whether the light is being used for brain surgery or night baseball is a matter of indifference.

It could be argued that these activities are in some way the "content" of the electric light, since they could not exist without the electric light. This fact merely underlines the point that "the medium is the message" because it is the medium that shapes and controls the scale and form of human association and action. The content or uses of such media are as diverse as they are ineffectual in shaping the form of human association. Indeed, it is only too typical that the "content" of any medium blinds us to the character of the medium. It is only today that industries have become aware of the various kinds of business in which they are engaged. When IBM discovered that it was not in the business of making office equipment or business machines, but that it was in the business of processing information, then it began to navigate with clear vision. The General Electric Company makes a considerable portion of its profits from electric light bulbs and lighting systems. It has not yet discovered that, quite as much as A.T.& T., it is in the business of moving information.

The electric light escapes attention as a communication medium just because it has no "content." And this makes it an invaluable instance of how people fail to study media at all. For it is not till the electric light is used to spell out some brand name that it is noticed as a medium. Then it is not the light but the "content" (or what is really another medium) that is noticed. The message of the electric light is like the message of electric power in industry, totally radical, pervasive, and decentralized. For electric light and power are separate from their uses, yet they eliminate time and space factors in human association exactly as do radio, telegraph, telephone, and TV, creating involvement in depth.

A fairly complete handbook for studying the extensions of man could be made up from selections from Shakespeare. Some might quibble about whether or not he was referring to TV in these familiar lines from *Romeo and Juliet:*

> But soft! what light through yonder window breaks?
> It speaks, and yet says nothing.

In *Othello,* which, as much as *King Lear,* is concerned with the torment of people transformed by illusions, there are these

lines that bespeak Shakespeare's intuition of the transforming powers of new media:

> Is there not charms
> By which the property of youth and maidhood
> May be abus'd? Have you not read Roderigo,
> Of some such thing?

In Shakespeare's *Troilus and Cressida,* which is almost completely devoted to both a psychic and social study of communication, Shakespeare states his awareness that true social and political navigation depend upon anticipating the consequences of innovation:

> The providence that's in a watchful state
> Knows almost every grain of Plutus' gold,
> Finds bottom in the uncomprehensive deeps,
> Keeps place with thought, and almost like the gods
> Does thoughts unveil in their dumb cradles.

The increasing awareness of the action of media, quite independently of their "content" or programming, was indicated in the annoyed and anonymous stanza:

> In modern thought, (if not in fact)
> Nothing is that doesn't act,
> So that is reckoned wisdom which
> Describes the scratch but not the itch.

The same kind of total, configurational awareness that reveals why the medium is socially the message has occurred in the most recent and radical medical theories. In his *Stress of Life,* Hans Selye tells of the dismay of a research colleague on hearing of Selye's theory:

> When he saw me thus launched on yet another enraptured description of what I had observed in animals treated with this or that impure, toxic material, he looked at me with desperately sad eyes and said in obvious despair: "But Selye, try to realize what you are doing before it is too late! You have now decided to spend your entire life studying the pharmacology of dirt!"
>
> (Hans Selye, *The Stress of Life*)

As Selye deals with the total environmental situation in his "stress" theory of disease, so the latest approach to media study considers not only the "content" but the medium and the cultural matrix within which the particular medium operates. The older unawareness of the psychic and social effects of media can be illustrated from almost any of the conventional pronouncements.

In accepting an honorary degree from the University of Notre Dame a few years ago, General David Sarnoff made this statement: "We are too prone to make technological instruments the scapegoats for the sins of those who wield them. The products of modern science are not in themselves good or bad; it is the way they are used that determines their value." That is the voice of the current somnambulism. Suppose we were to say, "Apple pie is in itself neither good nor bad; it is the way it is used that determines its value." Or, "The smallpox virus is in itself neither good nor bad; it is the way it is used that determines its value." Again, "Firearms are in themselves neither good nor bad; it is the way they are used that determines their value." That is, if the slugs reach the right people firearms are good. If the TV tube fires the right ammunition at the right people it is good. I am not being perverse. There is simply nothing in the Sarnoff statement that will bear scrutiny, for it ignores the nature of the medium, of any and all media, in the true Narcissus style of one hypnotized by the amputation and extension of his own being in a new technical form. General Sarnoff went on to explain his attitude to the technology of print, saying that it was true that print caused much trash to circulate, but it had also disseminated the Bible and the thoughts of seers and philosophers. It has never occurred to General Sarnoff that any technology could do anything but *add* itself on to what we already are.

Such economists as Robert Theobald, W. W. Rostow, and John Kenneth Galbraith have been explaining for years how it is that "classical economics" cannot explain change or growth. And the paradox of mechanization is that although it is itself the cause of maximal growth and change, the principle of mechanization excludes the very possibility of growth or the understanding of change. For mechanization is achieved by fragmentation of any

process and by putting the fragmented parts in a series. Yet, as David Hume showed in the eighteenth century, there is no principle of causality in a mere sequence. That one thing follows another accounts for nothing. Nothing follows from following, except change. So the greatest of all reversals occurred with electricity, that ended sequence by making things instant. With instant speed the causes of things began to emerge to awareness again, as they had not done with things in sequence and in concatenation accordingly. Instead of asking which came first, the chicken or the egg, it suddenly seemed that a chicken was an egg's idea for getting more eggs.

Just before an airplane breaks the sound barrier, sound waves become visible on the wings of the plane. The sudden visibility of sound just as sound ends is an apt instance of that great pattern of being that reveals new and opposite forms just as the earlier forms reach their peak performance. Mechanization was never so vividly fragmented or sequential as in the birth of the movies, the moment that translated us beyond mechanism into the world of growth and organic interrelation. The movie, by sheer speeding up the mechanical, carried us from the world of sequence and connections into the world of creative configuration and structure. The message of the movie medium is that of transition from lineal connections to configurations. It is the transition that produced the now quite correct observation: "If it works, it's obsolete." When electric speed further takes over from mechanical movie sequences, then the lines of force in structures and in media become loud and clear. We return to the inclusive form of the icon.

To a highly literate and mechanized culture the movie appeared as a world of triumphant illusions and dreams that money could buy. It was at this moment of the movie that cubism occurred, and it has been described by E. H. Gombrich (*Art and Illusion*) as "the most radical attempt to stamp out ambiguity and to enforce one reading of the picture—that of a man-made construction, a colored canvas." For cubism substitutes all facets of an object simultaneously for the "point of view" or facet of perspective illusion. Instead of the specialized illusion of the third

dimension on canvas, cubism sets up an interplay of planes and contradiction or dramatic conflict of patterns, lights, textures that "drives home the message" by involvement. This is held by many to be an exercise in painting, not in illusion.

In other words, cubism, by giving the inside and outside, the top, bottom, back, and front and the rest, in two dimensions, drops the illusion of perspective in favor of instant sensory awareness of the whole. Cubism, by seizing on instant total awareness, suddenly announced that *the medium is the message.* Is it not evident that the moment that sequence yields to the simultaneous, one is in the world of the structure and of configuration? Is that not what has happened in physics as in painting, poetry, and in communication? Specialized segments of attention have shifted to total field, and we can now say, "The medium is the message" quite naturally. Before the electric speed and total field, it was not obvious that the medium is the message. The message, it seemed, was the "content," as people used to ask what a painting was *about.* Yet they never thought to ask what a melody was about, nor what a house or a dress was about. In such matters, people retained some sense of the whole pattern, of form and function as a unity. But in the electric age this integral idea of structure and configuration has become so prevalent that educational theory has taken up the matter. Instead of working with specialized "problems" in arithmetic, the structural approach now follows the linea of force in the field of number and has small children meditating about number theory and "sets."

Cardinal Newman said of Napoleon, "He understood the grammar of gunpowder." Napoleon had paid some attention to other media as well, especially the semaphore telegraph that gave him a great advantage over his enemies. He is on record for saying that "Three hostile newspapers are more to be feared than a thousand bayonets."

Alexis de Tocqueville was the first to master the grammar of print and typography. He was thus able to read off the message of coming change in France and America as if he were reading aloud from a text that had been handed to him. In fact, the nineteenth century in France and in America was just such an

open book to de Tocqueville because he had learned the grammar of print. So he, also, knew when that grammar did not apply. He was asked why he did not write a book on England, since he knew and admired England. He replied:

> One would have to have an unusual degree of philosophical folly to believe oneself able to judge England in six months. A year always seemed to me too short a time in which to appreciate the United States properly, and it is much easier to acquire clear and precise notions about the American Union than about Great Britain. In America all laws derive in a sense from the same line of thought. The whole of society, so to speak, is founded upon a single fact; everything springs from a simple principle. One could compare America to a forest pierced by a multitude of straight roads all converging on the same point. One has only to find the center and everything is revealed at a glance. But in England the paths run criss-cross, and it is only by travelling down each one of them that one can build up a picture of the whole.

De Tocqueville, in earlier work on the French Revolution, had explained how it was the printed word that, achieving cultural saturation in the eighteenth century, had homogenized the French nation. Frenchmen were the same kind of people from north to south. The typographic principles of uniformity, continuity, and lineality had overlaid the complexities of ancient feudal and oral society. The Revolution was carried out by the new literati and lawyers.

In England, however, such was the power of the ancient oral traditions of common law, backed by the medieval institution of Parliament, that no uniformity or continuity of the new visual print culture could take complete hold. The result was that the most important event in English history has never taken place; namely, the English Revolution on the lines of the French Revolution. The American Revolution had no medieval legal institutions to discard or to root out, apart from monarchy. And many have held that the American Presidency has become very much more personal and monarchical than any European monarch ever could be.

De Tocqueville's contrast between England and America

is clearly based on the fact of typography and of print culture creating uniformity and continuity. England, he says, has rejected this principle and clung to the dynamic or oral common-law tradition. Hence the discontinuity and unpredictable quality of English culture. The grammar of print cannot help to construe the message of oral and nonwritten culture and institutions. The English aristocracy was properly classified as barbarian by Matthew Arnold because its power and status had nothing to do with literacy or with the cultural forms of typography. Said the Duke of Gloucester to Edward Gibbon upon the publication of his *Decline and Fall:* "Another damned fat book, eh, Mr. Gibbon? Scribble, scribble, scribble, eh, Mr. Gibbon?" De Tocqueville was a highly literate aristocrat who was quite able to be detached from the values and assumptions of typography. That is why he alone understood the grammar of typography. And it is only on those terms, standing aside from any structure or medium, that its principles and lines of force can be discerned. For any medium has the power of imposing its own assumption on the unwary. Prediction and control consist in avoiding this subliminal state of Narcissus trance. But the greatest aid to this end is simply in knowing that the spell can occur immediately upon contact, as in the first bars of a melody.

A Passage to India by E. M. Forster is a dramatic study of the inability of oral and intuitive oriental culture to meet with the rational, visual European patterns of experience. "Rational," of course, has for the West long meant "uniform and continuous and sequential." In other words, we have confused reason with literacy, and rationalism with a single technology. Thus in the electric age man seems to the conventional West to become irrational. In Forster's novel the moment of truth and dislocation from the typographic trance of the West comes in the Marabar Caves. Adela Quested's reasoning powers cannot cope with the total inclusive field of resonance that is India. After the Caves: "Life went on as usual, but had no consequences, that is to say, sounds did not echo nor thought develop. Everything seemed cut off at its root and therefore infected with illusion."

A Passage to India (the phrase is from Whitman, who saw

America headed Eastward) is a parable of Western man in the electric age, and is only incidentally related to Europe or the Orient. The ultimate conflict between sight and sound, between written and oral kinds of perception and organization of existence is upon us. Since understanding stops action, as Nietzsche observed, we can moderate the fierceness of this conflict by understanding the media that extend us and raise these wars within and without us.

Detribalization by literacy and its traumatic effects on tribal man is the theme of a book by the psychiatrist J. C. Carothers, *The African Mind in Health and Disease* (World Health Organization, Geneva, 1953). Much of his material appeared in an article in *Psychiatry* magazine, November, 1959: "The Culture, Psychiatry, and the Written Word." Again, it is electric speed that has revealed the lines of force operating from Western technology in the remotest areas of bush, savannah, and desert. One example is the Bedouin with his battery radio on board the camel. Submerging natives with floods of concepts for which nothing has prepared them is the normal action of all of our technology. But with electric media Western man himself experiences exactly the same inundation as the remote native. We are no more prepared to encounter radio and TV in our literate milieu than the native of Ghana is able to cope with the literacy that takes him out of his collective tribal world and beaches him in individual isolation. We are as numb in our new electric world as the native involved in our literate and mechanical culture.

Electric speed mingles the cultures of prehistory with the dregs of industrial marketeers, the nonliterate with the semiliterate and the postliterate. Mental breakdown of varying degrees is the very common result of uprooting and inundation with new information and endless new patterns of information. Wyndham Lewis made this a theme of his group of novels called *The Human Age*. The first of these, *The Childermass*, is concerned precisely with accelerated media change as a kind of massacre of the innocents. In our own world as we become more aware of the effects of technology on psychic formation and manifestation, we are losing all confidence in our right to assign guilt. Ancient pre-

historic societies regard violent crime as pathetic. The killer is regarded as we do a cancer victim. "How terrible it must be to feel like that," they say. J. M. Synge took up this idea very effectively in his *Playboy of the Western World.*

If the criminal appears as a nonconformist who is unable to meet the demand of technology that we behave in uniform and continuous patterns, literate man is quite inclined to see others who cannot conform as somewhat pathetic. Especially the child, the cripple, the woman, and the colored person appear in a world of visual and typographic technology as victims of injustice. On the other hand, in a culture that assigns roles instead of jobs to people—the dwarf, the skew, the child create their own spaces. They are not expected to fit into some uniform and repeatable niche that is not their size anyway. Consider the phrase "It's a man's world." As a quantitative observation endlessly repeated from within a homogenized culture, this phrase refers to the men in such a culture who have to be homogenized Dagwoods in order to belong at all. It is in our I.Q. testing that we have produced the greatest flood of misbegottten standards. Unaware of our typographic cultural bias, our testers assume that uniform and continuous habits are a sign of intelligence, thus eliminating the ear man and the tactile man.

C. P. Snow, reviewing a book of A. L. Rowse (*The New York Times Book Review*, December 24, 1961) on *Appeasement* and the road to Munich, describes the top level of British brains and experience in the 1930s. "Their I.Q.'s were much higher than usual among political bosses. Why were they such a disaster?" The view of Rowse, Snow approves: "They would not listen to warnings because they did not wish to hear." Being anti-Red made it impossible for them to read the message of Hitler. But their failure was as nothing compared to our present one. The American stake in literacy as a technology or uniformity applied to every level of education, government, industry, and social life is totally threatened by the electric technology. The threat of Stalin or Hitler was external. The electric technology is within the gates, and we are numb, deaf, blind, and mute about its encounter with the Gutenberg technology, on and through which

the American way of life was formed. It is, however, no time to suggest strategies when the threat has not even been acknowledged to exist. I am in the position of Louis Pasteur telling doctors that their greatest enemy was quite invisible, and quite unrecognized by them. Our conventional response to all media, namely that it is how they are used that counts, is the numb stance of the technological idiot. For the "content" of a medium is like the juicy piece of meat carried by the burglar to distract the watchdog of the mind. The effect of the medium is made strong and intense just because it is given another medium as "content." The content of a movie is a novel or a play or an opera. The effect of the movie form is not related to its program content. The "content" of writing or print is speech, but the reader is almost entirely unaware either of print or of speech.

Arnold Toynbee is innocent of any understanding of media as they have shaped history, but he is full of examples that the student of media can use. At one moment he can seriously suggest that adult education, such as the Workers Educational Association in Britain, is a useful counterforce to the popular press. Toynbee considers that although all of the oriental societies have in our time accepted the industrial technology and its political consequences: "On the cultural plane, however, there is no uniform corresponding tendency." (Somervell, I. 267) This is like the voice of the literate man, floundering in a milieu of ads, who boasts, "Personally, I pay no attention to ads." The spiritual and cultural reservations that the oriental peoples may have toward our technology will avail them not at all. The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without any resistance. The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception.

The operation of the money medium in seventeenth-century Japan had effects not unlike the operation of typography in the West. The penetration of the money economy, wrote G. B. Sansom (in *Japan,* Cresset Press, London, 1931) "caused a slow but

irresistible revolution, culminating in the breakdown of feudal government and the resumption of intercourse with foreign countries after more than two hundred years of seclusion." Money has reorganized the sense life of peoples just because it is an *extension* of our sense lives. This change does not depend upon approval or disapproval of those living in the society.

Arnold Toynbee made one approach to the transforming power of media in his concept of "etherialization," which he holds to be the principle of progressive simplification and efficiency in any organization or technology. Typically, he is ignoring the *effect* of the challenge of these forms upon the response of our senses. He imagines that it is the response of our opinions that is relevant to the effect of media and technology in society, a "point of view" that is plainly the result of the typographic spell. For the man in a literate and homogenized society ceases to be sensitive to the diverse and discontinuous life of forms. He acquires the illusion of the third dimension and the "private point of view" as part of his Narcissus fixation, and is quite shut off from Blake's awareness or that of the Psalmist, that we become what we behold.

Today when we want to get our bearings in our own culture, and have need to stand aside from the bias and pressure exerted by any technical form of human expression, we have only to visit a society where that particular form has not been felt, or a historical period in which it was unknown. Professor Wilbur Schramm made such a tactical move in stydying *Television in the Lives of Our Children.* He found areas where TV had not penetrated at all and ran some tests. Since he had made no study of the peculiar nature of the TV image, his tests were of "content" preferences, viewing time, and vocabulary counts. In a word, his approach to the problem was a literary one, albeit unconsciously so. Consequently, he had nothing to report. Had his methods been employed in 1500 A.D. to discover the effects of the printed book in the lives of children or adults, he could have found out nothing of the changes in human and social psychology resulting from typography. Print created individualism and nation-

alism in the sixteenth century. Program and "content" analysis offer no clues to the magic of these media or to their subliminal charge.

Leonard Doob, in his report *Communication in Africa,* tells of one African who took great pains to listen each evening to the BBC news, even though he could understand nothing of it. Just to be in the presence of those sounds at 7 P.M. each day was important for him. His attitude to speech was like ours to melody—the resonant intonation was meaning enough. In the seventeenth century our ancestors still shared this native's attitude to the forms of media, as is plain in the following sentiment of the Frenchman Bernard Lam expressed in *The Art of Speaking* (London, 1696):

> 'Tis an effect of the Wisdom of God, who created Man to be happy, that whatever is useful to his conversation (way of life) is agreeable to him . . . because all victual that conduces to nourishment is relishable, whereas other things that cannot be assimulated and be turned into our substance are insipid. A Discourse cannot be pleasant to the Hearer that is not easie to the Speaker; nor can it be easily pronounced unless it be heard with delight.

Here is an equilibrium theory of human diet and expression such as even now we are only striving to work out again for media after centuries of fragmentation and specialism.

Pope Pius XII was deeply concerned that there be serious study of the media today. On February 17, 1950, he said:

> It is not an exaggeration to say that the future of modern society and the stability of its inner life depend in large part on the maintenance of an equilibrium between the strength of the techniques of communication and the capacity of the individual's own reaction.

Failure in this respect has for centuries been typical and total for mankind. Subliminal and docile acceptance of media impact has made them prisons without walls for their human users. As A. J. Liebling remarked in his book *The Press,* a man is not free if he cannot see where he is going, even if he has a gun to help him get there. For each of the media is also a powerful weapon

with which to clobber other media and other groups. The result is that the present age has been one of multiple civil wars that are not limited to the world of art and entertainment. In *War and Human Progress,* Professor J. U. Nef declared: "The total wars of our time have been the result of a series of intellectual mistakes . . ."

If the formative power in the media are the media themselves, that raises a host of large matters that can only be mentioned here, although they deserve volumes. Namely, that technological media are staples or natural resources, exactly as are coal and cotton and oil. Anybody will concede that society whose economy is dependent upon one or two major staples like cotton, or grain, or lumber, or fish, or cattle is going to have some obvious social patterns of organization as a result. Stress on a few major staples creates extreme instability in the economy but great endurance in the population. The pathos and humor of the American South are embedded in such an economy of limited staples. For a society configured by reliance on a few commodities accepts them as a social bond quite as much as the metropolis does the press. Cotton and oil, like radio and TV, become "fixed charges" on the entire psychic life of the community. And this pervasive fact creates the unique cultural flavor of any society. It pays through the nose and all its other senses for each staple that shapes its life.

That our human senses, of which all media are extensions, are also fixed charges on our personal energies, and that they also configure the awareness and experience of each one of us, may be perceived in another connection mentioned by the psychologist C. G. Jung:

> Every Roman was surrounded by slaves. The slave and his psychology flooded ancient Italy, and every Roman became inwardly, and of course unwittingly, a slave. Because living constantly in the atmosphere of slaves, he became infected through the unconscious with their psychology. No one can shield himself from such an influence (*Contributions to Analytical Psychology,* London, 1928).

16
The Print
How to Dig It

The art of making pictorial statements in a precise and repeatable form is one that we have long taken for granted in the West. But it is usually forgotten that without prints and blueprints, without maps and geometry, the world of modern sciences and technologies would hardly exist.

In the time of Ferdinand and Isabella and other maritime monarchs, maps were top-secret, like new electronic discoveries today. When the captains returned from their voyages, every effort was made by the officers of the crown to obtain both originals and copies of the maps made during the voyage. The result was a lucrative black-market trade, and secret maps were widely sold. The sort of maps in question had nothing in common with those of later design, being in fact more like diaries of different adventures and experiences. For the later perception of space as uniform and continuous was unknown to the medieval cartographer,

whose efforts resembled modern nonobjective art. The shock of the new Renaissance space is still felt by natives who encounter it today for the first time. Prince Modupe tells in his autobiography, *I Was a Savage*, how he had learned to read maps at school, and how he had taken back home to his village a map of a river his father had traveled for years as a trader.

> . . . my father thought the whole idea was absurd. He refused to identify the stream he had crossed at Bomako, where it is no deeper, he said, than a man is high, with the great widespread waters of the vast Niger delta. Distances as measured in miles had no meaning for him. . . . Maps are liars, he told me briefly. From his tone of voice I could tell that I had offended him in some way not known to me at the time. The things that hurt one do not show on a map. The truth of a place is in the joy and the hurt that come from it. I had best not put my trust in anything as inadequate as a map, he counseled. . . . I understand now, although I did not at the time, that my airy and easy sweep of map-traced staggering distances belittled the journeys he had measured on tired feet. With my big map-talk, I had effaced the magnitude of his cargo-laden, heat-weighted treks.

All the words in the world cannot describe an object like a bucket, although it is possible to tell in a few words how to *make* a bucket. This inadequacy of words to convey visual information about objects was an effectual block to the development of the Greek and Roman sciences. Pliny the Elder reported the inability of the Greek and Latin botanists to devise a means of transmitting information about plants and flowers:

> Hence it is that other writers have confined themselves to a verbal description of the plants; indeed some of them have not so much as described them even, but have contented themselves for the most part with a bare recital of their names . . .

We are confronted here once more with that basic function of media—to store and to expedite information. Plainly, to store is to expedite, since what is stored is also more accessible than what has to be gathered. The fact that visual information about flowers and plants cannot be stored verbally also points to the fact that

science in the Western world has long been dependent on the visual factor. Nor is this surprising in a literate culture based on the technology of the alphabet, one that reduces even spoken language to a visual mode. As electricity has created multiple non-visual means of storing and retrieving information, not only culture but science also has shifted its entire base and character. For the educator, as well as the philosopher, exact knowledge of what this shift means for learning and the mental process is not necessary.

Well before Gutenberg's development of printing from movable types, a great deal of printing on paper by woodcut had been done. Perhaps the most popular form of this kind of block printing of text and image had been in the form of the *Biblia Pauperum,* or Bibles of the Poor. Printers in this woodcut sense preceded typographic printers, though by just how long a period it is not easy to establish, because these cheap and popular prints, despised by the learned, were not preserved any more than are the comic books of today. The great law of bibliography comes into play in this matter of the printing that precedes Gutenberg: "The more there were, the fewer there are." It applies to many items besides printed matter—to the postage stamp and to the early forms of radio receiving sets.

Medieval and Renaissance man experienced little of the separation and specialty among the arts that developed later. The manuscript and the earlier printed books were read aloud, and poetry was sung or intoned. Oratory, music, literature, and drawing were closely related. Above all, the world of the illuminated manuscript was one in which lettering itself was given plastic stress to an almost sculptural degree. In a study of the art of Andrea Mantegna, the illuminator of manuscripts, Millard Meiss mentions that, amidst the flowery and leafy margins of the page, Mantegna's letters "rise like monuments, stony, stable and finely cut. . . . Palpably soled and weighty, they stand boldly before the colored ground, upon which they often throw a shadow. . . ."

The same feeling for the letters of the alphabet as engraved icons has returned in our own day in the graphic arts and in advertising display. Perhaps the reader will have encountered the

sense of this coming change in Rimbaud's sonnet on the vowels, or in some of Braque's paintings. But ordinary newspaper headline style tends to push letters toward the iconic form, a form that is very near to auditory resonance, as it is also to tactile and sculptural quality.

Perhaps the supreme quality of the print is one that is lost on us, since it has so casual and obvious an existence. It is simply that it is a pictorial statement that can be repeated precisely and indefinitely—at least as long as the printing surface lasts. Repeatability is the core of the mechanical principle that has dominated our world, especially since the Gutenberg technology. The message of the print and of typography is primarily that of repeatability. With typography, the principle of movable type introduced the means of mechanizing any handicraft by the process of segmenting and fragmenting an integral action. What had begun with the alphabet as a separation of the multiple gestures and sights and sounds in the spoken word, reached a new level of intensity, first with the woodcut and then with typography. The alphabet left the visual component as supreme in the word, reducing all other sensuous facts of the spoken word to this form. This helps to explain why the woodcut, and even the photograph, were so eagerly welcomed in a literate world. These forms provide a world of inclusive gesture and dramatic posture that necessarily is omitted in the written word.

The print was eagerly seized upon as a means of imparting information, as well as an incentive to piety and meditation. In 1472 the *Art of War* by Volturius was printed at Verona, with many woodcuts to explain the machinery of war. But the uses of the woodcut as an aid to contemplation in Books of Hours, Emblems, and Shepherds' Calendars continued for two hundred years on a large scale.

It is relevant to consider that the old prints and woodcuts, like the modern comic strip and comic book, provide very little data about any particular moment in time, or aspect in space, of an object. The viewer, or reader, is compelled to participate in completing and interpreting the few hints provided by the bounding lines. Not unlike the character of the woodcut and the car-

toon is the TV image, with its very low degree of data about objects, and the resulting high degree of participation by the viewer in order to complete what is only hinted at in the mosaic mesh of dots. Since the advent of TV, the comic book has gone into a decline.

It is, perhaps, obvious enough that if a cool medium involves the viewer a great deal, a hot medium will not. It may contradict popular ideas to say that typography as a hot medium involves the reader much less than did manuscript, or to point out that the comic book and TV as cool media involve the user, as maker and participant, a great deal.

After the exhaustion of the Graeco-Roman pools of slave labor, the West had to technologize more intensively than the ancient world had done. In the same way the American farmer, confronted with new tasks and opportunities, and at the same time with a great shortage of human assistance, was goaded into a frenzy of creation of labor-saving devices. It would seem that the logic of success in this matter is the ultimate retirement of the work force from the scene of toil. In a word, automation. If this, however, has been the motive behind all of our human technologies, it does not follow that we are prepared to accept the consequences. It helps to get one's bearings to see the process at work in remote times when work meant specialist servitude, and leisure alone meant a life of human dignity and involvement of the whole man.

The print in its clumsy woodcut-phase reveals a major aspect of language; namely, that words cannot bear sharp definition in daily use. When Descartes surveyed the philosophical scene at the beginning of the seventeenth century, he was appalled at the confusion of tongues and began to strive toward a reduction of philosophy to precise mathematical form. This striving for an irrelevant precision served only to exclude from philosophy most of the questions of philosophy; and that great kingdom of philosophy was soon parceled out into the wide range of uncommunicating sciences and specialties we know today. Intensity of stress on visual blueprinting and precision is an explosive force that fragments the world of power and knowledge alike. The in-

creasing precision and quantity of visual information transformed the print into a three-dimensional world of perspective and fixed point of view. Hieronymus Bosch, by means of paintings that interfused medieval forms in Renaissance space, told what it felt like to live straddled between the two worlds of the old and the new during this revolution. Simultaneously, Bosch provided the older kind of plastic, tactile image but placed it in the intense new visual perspective. He gave at once the older medieval idea of unique, discontinuous space, superimposed on the new idea of uniform, connected space. This he did with earnest nightmare intensity.

Lewis Carroll took the nineteenth century into a dream world that was as startling as that of Bosch, but built on reverse principles. *Alice in Wonderland* offers as norm that continuous time and space that had created consternation in the Renaissance. Pervading this uniform Euclidean world of familiar space-and-time, Carroll drove a fantasia of discontinuous space-and-time that anticipated Kafka, Joyce, and Eliot. Carroll, the mathematical contemporary of Clerk Maxwell, was quite *avant-garde* enough to know about the non-Euclidean geometries coming into vogue in his time. He gave the confident Victorians a playful foretaste of Einsteinian time-and-space in *Alice in Wonderland.* Bosch had provided his era a foretaste of the new continuous time-and-space of uniform perspective. Bosch looked ahead to the modern world with horror, as Shakespeare did in *King Lear*, and as Pope did in *The Dunciad.* But Lewis Carroll greeted the electronic age of space-time with a cheer.

Nigerians studying at American universities are sometimes asked to identify spatial relations. Confronted with objects in sunshine, they are often unable to indicate in which direction shadows will fall, for this involves casting into three-dimensional perspective. Thus sun, objects, and observer are experienced separately and regarded as independent of one another. For medieval man, as for the native, space was not homogeneous and did not *contain* objects. Each thing made its own space, as it still does for the native (and equally for the modern physicist). Of course this does not mean that native artists do not relate things.

They often contrive the most complicated, sophisticated configurations. Neither artist nor observer has the slightest trouble recognizing and interpreting the pattern, but only when it is a traditional one. If you begin to modify it, or translate it into another medium (three dimensions, for instance), the native fails to recognize it.

An anthropological film showed a Melanesian carver cutting out a decorated drum with such skill, coordination, and ease that the audience several times broke into applause—it became a song, a ballet. But when the anthropologist asked the tribe to build crates to ship these carvings in, they struggled unsuccessfully for three days to make two planks intersect at a 90-degree angle, then gave up in frustration. They couldn't crate what they had created.

In the low definition world of the medieval woodcut, each object created its own space, and there was no rational connected space into which it must fit. As the retinal impression is intensified, objects cease to cohere in a space of their own making, and, instead, become "contained" in a uniform, continuous, and "rational" space. Relativity theory in 1905 announced the dissolution of uniform Newtonian space as an illusion or fiction, however useful. Einstein pronounced the doom of continuous or "rational" space, and the way was made clear for Picasso and the Marx brothers and *MAD*.

18 The Printed Word

Architect of Nationalism

"You may perceive, Madam," said Dr. Johnson with a pugilistic smile, "that I am well-bred to a degree of needless scrupulosity." Whatever the degree of conformity the Doctor had achieved with the new stress of his time on white-shirted tidiness, he was quite aware of the growing social demand for visual presentability.

Printing from movable types was the first mechanization of a complex handicraft, and became the archetype of all subsequent mechanization. From Rabelais and More to Mill and Morris, the typographic explosion extended the minds and voices of men to reconstitute the human dialogue on a world scale that has bridged the ages. For if seen merely as a store of information, or as a new means of speedy retrieval of knowledge, typography ended parochialism and tribalism, psychically and socially, both in space and in time. Indeed the first two centuries of printing from

movable types were motivated much more by the desire to see ancient and medieval books than by the need to read and write new ones. Until 1700 much more than 50 per cent of all printed books were ancient or medieval. Not only antiquity but also the Middle Ages were given to the first reading public of the printed word. And the medieval texts were by far the most popular.

Like any other extension of man, typography had psychic and social consequences that suddenly shifted previous boundaries and patterns of culture. In bringing the ancient and medieval worlds into fusion—or, as some would say, confusion—the printed book created a third world, the modern world, which now encounters a new electric technology or a new extension of man. Electric means of moving of information are altering our typographic culture as sharply as print modified medieval manuscript and scholastic culture.

Beatrice Warde has recently described in *Alphabet* an electric display of letters painted by light. It was a Norman McLaren movie advertisement of which she asks

> Do you wonder that I was late for the theatre that night, when I tell you that I saw two club-footed Egyptian A's . . . walking off arm-in-arm with the unmistakable swagger of a music-hall comedy-team? I saw base-serifs pulled together as if by ballet shoes, so that the letters tripped off literally *sur les pointes* . . . after forty centuries of the *necessarily static* Alphabet, I saw what its members could do in the fourth dimension of Time, "flux," movement. You may well say that I was electrified.

Nothing could be farther from typographic culture with its "place for everything and everything in its place."

Mrs. Warde has spent her life in the study of typography and she shows sure tact in her startled response to letters that are not printed by types but painted by light. It may be that the explosion that began with phonetic letters (the "dragon's teeth" sowed by King Cadmus) will reverse into "implosion" under the impulse of the instant speed of electricity. The alphabet (and its extension into typography) made possible the spread of the power that is knowledge, and shattered the bonds of tribal man, thus ex-

ploding him into agglomeration of individuals. Electric writing and speed pour upon him, instantaneously and continuously, the concerns of all other men. He becomes tribal once more. The human family becomes one tribe again.

Any student of the social history of the printed book is likely to be puzzled by the lack of understanding of the psychic and social effects of printing. In five centuries explicit comment and awareness of the effects of print on human sensibility are very scarce. But the same observation can be made about all the extensions of man, whether it be clothing or the computer. An extension appears to be an amplification of an organ, a sense or a function, that inspires the central nervous system to a self-protective gesture of numbing of the extended area, at least so far as direct inspection and awareness are concerned. Indirect comment on the effects of the printed book is available in abundance in the work of Rabelais, Cervantes, Montaigne, Swift, Pope, and Joyce. They used typography to create new art forms.

Psychically the printed book, an extension of the visual faculty, intensified perspective and the fixed point of view. Associated with the visual stress on point of view and the vanishing point that provides the illusion of perspective there comes another illusion that space is visual, uniform and continuous. The linearity precision and uniformity of the arrangement of movable types are inseparable from these great cultural forms and innovations of Renaissance experience. The new intensity of visual stress and private point of view in the first century of printing were united to the means of self-expression made possible by the typographic extension of man.

Socially, the typographic extension of man brought in nationalism, industrialism, mass markets, and universal literacy and education. For print presented an image of repeatable precision that inspired totally new forms of extending social energies. Print released great psychic and social energies in the Renaissance, as today in Japan or Russia, by breaking the individual out of the traditional group while providing a model of how to add individual to individual in massive agglomeration of power. The same spirit of private enterprise that emboldened authors and artists

to cultivate self-expression led other men to create giant corporations, both military and commercial.

Perhaps the most significant of the gifts of typography to man is that of detachment and noninvolvement—the power to act without reacting. Science since the Renaissance has exalted this gift which has become an embarrassment in the electric age, in which all people are involved in all others at all times. The very word "disinterested," expressing the loftiest detachment and ethical integrity of typographic man, has in the past decade been increasingly used to mean: "He couldn't care less." The same integrity indicated by the term "disinterested" as a mark of the scientific and scholarly temper of a literate and enlightened society is now increasingly repudiated as "specialization" and fragmentation of knowledge and sensibility. The fragmenting and analytic power of the printed word in our psychic lives gave us that "dissociation of sensibility" which in the arts and literature since Cézanne and since Baudelaire has been a top priority for elimination in every program of reform in taste and knowledge. In the "implosion" of the electric age the separation of thought and feeling has come to seem as strange as the departmentalization of knowledge in schools and universities. Yet it was precisely the power to separate thought and feeling, to be able to act without reacting, that split literate man out of the tribal world of close family bonds in private and and social life.

Typography was no more an addition to the scribal art than the motorcar was an addition to the horse. Printing had its "horseless carriage" phase of being misconceived and misapplied during its first decades, when it was not uncommon for the purchaser of a printed book to take it to a scribe to have it copied and illustrated. Even in the early eighteenth century a "textbook" was still defined as a "Classick Author written very wide by the Students, to give room for an Interpretation dictated by the Master, &c., to be inserted in the Interlines" (O.E.D.). Before printing, much of the time in school and college classrooms was spent in making such texts. The classroom tended to be a *scriptorium* with a commentary. The student was an editor-publisher. By the same token the book market was a secondhand market of

relatively scarce items. Printing changed learning and marketing processes alike. The book was the first teaching machine and also the first mass-produced commodity. In amplifying and extending the written word, typography revealed and greatly extended the structure of writing. Today, with the cinema and the electric speed-up of information movement, the formal structure of the printed word, as of mechanism in general, stands forth like a branch washed up on the beach. A new medium is never an addition to an old one, nor does it leave the old one in peace. It never ceases to oppress the older media until it finds new shapes and positions for them. Manuscript culture had sustained an oral procedure in education that was called "scholasticism" at its higher levels; but by putting the same text in front of any given number of students or readers print ended the scholastic regime of oral disputation very quickly. Print provided a vast new memory for past writings that made a personal memory inadequate.

Margaret Mead has reported that when she brought several copies of the same book to a Pacific island there was great excitement. The natives had seen books, but only one copy of each, which they had assumed to be unique. Their astonishment at the identical character of several books was a natural response to what is after all the most magical and potent aspect of print and mass production. It involves a principle of extension by homogenization that is the key to understanding Western power. The open society is open by virtue of a uniform typographic educational processing that permits indefinite expansion of any group by additive means. The printed book based on typographic uniformity and repeatability in the visual order was the first teaching machine, just as typography was the first mechanization of a handicraft. Yet in spite of the extreme fragmentation or specialization of human action necessary to achieve the printed word, the printed book represents a rich composite of previous cultural inventions. The total effort embodied in the illustrated book in print offers a striking example of the variety of separate acts of invention that are requisite to bring about a new technological result.

The psychic and social consequences of print included an extension of its fissile and uniform character to the gradual homogenization of diverse regions with the resulting amplification of power, energy, and aggression that we associate with new nationalisms. Psychically, the visual extension and amplification of the individual by print had many effects. Perhaps as striking as any other is the one mentioned by Mr. E. M. Forster, who, when discussing some Renaissance types, suggested that "the printing press, then only a century old, had been mistaken for an engine of immortality, and men had hastened to commit to it deeds and passions for the benefit of future ages." People began to act as though immortality were inherent in the magic repeatability and extensions of print.

Another significant aspect of the uniformity and repeatability of the printed page was the pressure it exerted toward "correct" spelling, syntax, and pronunciation. Even more notable were the effects of print in separating poetry from song, and prose from oratory, and popular from educated speech. In the matter of poetry it turned out that, as poetry could be read without being heard, musical instruments could also be played without accompanying any verses. Music veered from the spoken word, to converge again with Bartók and Schoenberg.

With typography the process of separation (or explosion) of functions went on swiftly at all levels and in all spheres; nowhere was this matter observed and commented on with more bitterness than in the plays of Shakespeare. Especially in *King Lear*, Shakespeare provided an image or model of the process of quantification and fragmentation as it entered the world of politics and of family life. Lear at the very opening of the play presents "our darker purpose" as a plan of delegation of powers and duties:

> Only we shall retain
> The name, and all th' addition to a King;
> The sway, revenue, execution of the rest,
> Beloved sons, be yours: which to confirm,
> This coronet part between you.

This act of fragmentation and delegation blasts Lear, his kingdom, and his family. Yet to divide and rule was the dominant

new idea of the organization of power in the Renaissance. "Our darker purpose" refers to Machiavelli himself, who had developed an individualist and quantitative idea of power that struck more fear in that time than Marx in ours. Print, then, challenged the corporate patterns of medieval organization as much as electricity now challenges our fragmented individualism.

The uniformity and repeatability of print permeated the Renaissance with the idea of time and space as continuous measurable quantities. The immediate effect of this idea was to desacralize the world of nature and the world of power alike. The new technique of control of physical processes by segmentation and fragmentation separated God and Nature as much as Man and Nature, or man and man. Shock at this departure from traditional vision and inclusive awareness was often directed toward the figure of Machiavelli, who had merely spelled out the new quantitative and neutral or scientific ideas of force as applied to the manipulation of kingdoms.

Shakespeare's entire work is taken up with the themes of the new delimitations of power, both kingly and private. No greater horror could be imagined in his time than the spectacle of Richard II, the sacral king, undergoing the indignities of imprisonment and denudation of his sacred prerogatives. It is in *Troilus and Cressida*, however, that the new cults of fissile, irresponsible power, public and private, are paraded as a cynical charade of atomistic competition:

> Take the instant way;
> For honour travels in a strait so narrow
> Where one but goes abreast: keep, then, the path;
> For emulation hath a thousand sons
> That one by one pursue: if you give way,
> Or hedge aside from the direct forthright,
> Like to an enter'd tide they all rush by
> And leave you hindmost . . .
>
> (III, iii)

The image of society as segmented into a homogeneous mass of quantified appetites shadows Shakespeare's vision in the later plays.

Of the many unforeseen consequences of typography, the

emergence of nationalism is, perhaps, the most familiar. Political unification of populations by means of vernacular and language groupings was unthinkable before printing turned each vernacular into an extensive mass medium. The tribe, an extended form of a family of blood relatives, is exploded by print, and is replaced by an association of men homogeneously trained to be individuals. Nationalism itself came as an intense new visual image of group destiny and status, and depended on a speed of information movement unknown before printing. Today nationalism as an image still depends on the press but has all the electric media against it. In business, as in politics, the effect of even jet-plane speeds is to render the older national groupings of social organization quite unworkable. In the Renaissance it was the speed of print and the ensuing market and commercial developments that made nationalism (which is continuity and competition in homogeneous space) as natural as it was new. By the same token, the heterogeneities and noncompetitive discontinuities of medieval guilds and family organization had become a great nuisance as speed-up of information by print called for more fragmentation and uniformity of function. The Benvenuto Cellinis, the goldsmith-cum-painter-cum-sculptor-cum-writer-cum-condottiere, became obsolete.

Once a new technology comes into a social milieu it cannot cease to permeate that milieu until every institution is saturated. Typography has permeated every phase of the arts and sciences in the past five hundred years. It would be easy to document the processes by which the principles of continuity, uniformity, and repeatability have become the basis of calculus and of marketing, as of industrial production, entertainment, and science. It will be enough to point out that repeatability conferred on the printed book the strangely novel character of a uniformly priced commodity opening the door to price systems. The printed book had in addition the quality of portability and accessibility that had been lacking in the manuscript.

Directly associated with these expansive qualities was the revolution in expression. Under manuscript conditions the role of being an author was a vague and uncertain one, like that of a minstrel. Hence, self-expression was of little interest. Typography,

however, created a medium in which it was possible to speak out loud and bold to the world itself, just as it was possible to circumnavigate the world of books previously locked up in a pluralistic world of monastic cells. Boldness of type created boldness of expression.

Uniformity reached also into areas of speech and writing, leading to a single tone and attitude to reader and subject spread throughout an entire composition. The "man of letters" was born. Extended to the spoken word, this literate *equitone* enabled literate people to maintain a single "high tone" in discourse that was quite devastating, and enabled nineteenth-century prose writers to assume moral qualities that few would now care to simulate. Permeation of the colloquial language with literate uniform qualities has flattened out educated speech till it is a very reasonable acoustic facsimile of the uniform and continuous visual effects of typography. From this technological effect follows the further fact that the humor, slang, and dramatic vigor of American-English speech are monopolies of the semi-literate.

These typographical matters for many people are charged with controversial values. Yet in any approach to understanding print it is necessary to stand aside from the form in question if its typical pressure and life are to be observed. Those who panic now about the threat of the newer media and about the revolution we are forging, vaster in scope than that of Gutenberg, are obviously lacking in cool visual detachment and gratitude for that most potent gift bestowed on Western man by literacy and typography: his power to act without reaction or involvement. It is this kind of specialization by dissociation that has created Western power and efficiency. Without this dissociation of action from feeling and emotion people are hampered and hesitant. Print taught men to say, "Damn the torpedoes. Full steam ahead!"