

Understanding Media

The Extensions of Man

Marshall McLuhan

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**The Medium
Is the
Message**

- 1 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.
- 7 In terms of the ways in which the machine

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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.

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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

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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

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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

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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

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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 misbegotten 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 studying *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-

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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 assimilated 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).

2 Media Hot and Cold

“The rise of the waltz,” explained Curt Sachs in the *World History of the Dance*, “was a result of that longing for truth, simplicity, closeness to nature, and primitivism, which the last two-thirds of the eighteenth century fulfilled.” In the century of jazz we are likely to overlook the emergence of the waltz as a hot and explosive human expression that broke through the formal feudal barriers of courtly and choral dance styles.

There is a basic principle that distinguishes a hot medium like radio from a cool one like the telephone, or a hot medium like the movie from a cool one like TV. A hot medium is one that extends one single sense in “high definition.” High definition is the state of being well filled with data. A photograph is, visually, “high definition.” A cartoon is “low definition,” simply because very little visual information is provided. Telephone is a cool medium, or one of low definition, because

the car is given a meager amount of information. And speech is a cool medium of low definition, because so little is given and so much has to be filled in by the listener. On the other hand, hot media do not leave so much to be filled in or completed by the audience. Hot media are, therefore, low in participation, and cool media are high in participation or completion by the audience. Naturally, therefore, a hot medium like radio has very different effects on the user from a cool medium like the telephone.

A cool medium like hieroglyphic or ideogrammic written characters has very different effects from the hot and explosive medium of the phonetic alphabet. The alphabet, when pushed to a high degree of abstract visual intensity, became typography. The printed word with its specialist intensity burst the bonds of medieval corporate guilds and monasteries, creating extreme individualist patterns of enterprise and monopoly. But the typical reversal occurred when extremes of monopoly brought back the corporation, with its impersonal empire over many lives. The hotting-up of the medium of writing to repeatable print intensity led to nationalism and the religious wars of the sixteenth century. The heavy and unwieldy media, such as stone, are time binders. Used for writing, they are very cool indeed, and serve to unify the ages; whereas paper is a hot medium that serves to unify spaces horizontally, both in political and entertainment empires.

Any hot medium allows of less participation than a cool one, as a lecture makes for less participation than a seminar, and a book for less than dialogue. With print many earlier forms were excluded from life and art, and many were given strange new intensity. But our own time is crowded with examples of the principle that the hot form excludes, and the cool one includes. When ballerinas began to dance on their toes a century ago, it was felt that the art of the ballet had acquired a new "spirituality." With this new intensity, male figures were excluded from ballet. The role of women had also become fragmented with the advent of industrial specialism and the explosion of home functions into laundries, bakeries, and hospitals on the periphery of the community. Intensity or high definition engenders specialism and

fragmentation in living as in entertainment, which explains why any intense experience must be "forgotten," "censored," and reduced to a very cool state before it can be "learned" or assimilated. The Freudian "censor" is less of a moral function than an indispensable condition of learning. Were we to accept fully and directly every shock to our various structures of awareness, we would soon be nervous wrecks, doing double-takes and pressing panic buttons every minute. The "censor" protects our central system of values, as it does our physical nervous system by simply cooling off the onset of experience a great deal. For many people, this cooling system brings on a lifelong state of psychic *rigor mortis*, or of somnambulism, particularly observable in periods of new technology.

An example of the disruptive impact of a hot technology succeeding a cool one is given by Robert Theobald in *The Rich and the Poor*. When Australian natives were given steel axes by the missionaries, their culture, based on the stone axe, collapsed. The stone axe had not only been scarce but had always been a basic status symbol of male importance. The missionaries provided quantities of sharp steel axes and gave them to women and children. The men had even to borrow these from the women, causing a collapse of male dignity. A tribal and feudal hierarchy of traditional kind collapses quickly when it meets any hot medium of the mechanical, uniform, and repetitive kind. The medium of money or wheel or writing, or any other form of specialist speed-up of exchange and information, will serve to fragment a tribal structure. Similarly, a very much greater speed-up, such as occurs with electricity, may serve to restore a tribal pattern of intense involvement such as took place with the introduction of radio in Europe, and is now tending to happen as a result of TV in America. Specialist technologies detribalize. The nonspecialist electric technology retribalizes. The process of upset resulting from a new distribution of skills is accompanied by much culture lag in which people feel compelled to look at new situations as if they were old ones, and come up with ideas of "population explosion" in an age of implosion. Newton, in an age of clocks, managed to present the physical universe in the image of a clock.

But poets like Blake were far ahead of Newton in their response to the challenge of the clock. Blake spoke of the need to be delivered "from single vision and Newton's sleep," knowing very well that Newton's response to the challenge of the new mechanism was itself merely a mechanical repetition of the challenge. Blake saw Newton and Locke and others as hypnotized Narcissus types quite unable to meet the challenge of mechanism. W. B. Yeats gave the full Blakean version of Newton and Locke in a famous epigram:

Locke sank into a swoon;
The garden died;
God took the spinning jenny
Out of his side.

Yeats presents Locke, the philosopher of mechanical and lineal associationism, as hypnotized by his own image. The "garden," or unified consciousness, ended. Eighteenth-century man got an extension of himself in the form of the spinning machine that Yeats endows with its full sexual significance. Woman, herself, is thus seen as a technological extension of man's being.

Blake's counterstrategy for his age was to meet mechanism with organic myth. Today, deep in the electric age, organic myth is itself a simple and automatic response capable of mathematical formulation and expression, without any of the imaginative perception of Blake about it. Had he encountered the electric age, Blake would not have met its challenge with a mere repetition of electric form. For myth is the instant vision of a complex process that ordinarily extends over a long period. Myth is contraction or implosion of any process, and the instant speed of electricity confers the mythic dimension on ordinary industrial and social action today. We *live* mythically but continue to think fragmentarily and on single planes.

Scholars today are acutely aware of a discrepancy between their ways of treating subjects and the subject itself. Scriptural scholars of both the Old and New Testaments frequently say that while their treatment must be linear, the subject is not. The subject treats of the relations between God and man, and between

God and the world, and of the relations between man and his neighbor—all these subsist together, and act and react upon one another at the same time. The Hebrew and Eastern mode of thought tackles problem and resolution, at the outset of a discussion, in a way typical of oral societies in general. The entire message is then traced and retraced, again and again, on the rounds of a concentric spiral with seeming redundancy. One can stop anywhere after the first few sentences and have the full message, if one is prepared to “dig” it. This kind of plan seems to have inspired Frank Lloyd Wright in designing the Guggenheim Art Gallery on a spiral, concentric basis. It is a redundant form inevitable to the electric age, in which the concentric pattern is imposed by the instant quality, and overlay in depth, of electric speed. But the concentric with its endless intersection of planes is necessary for insight. In fact, it is the technique of insight, and as such is necessary for media study, since no medium has its meaning or existence alone, but only in constant interplay with other media.

The new electric structuring and configuring of life more and more encounters the old lineal and fragmentary procedures and tools of analysis from the mechanical age. More and more we turn from the content of messages to study total effect. Kenneth Boulding put this matter in *The Image* by saying, “The meaning of a message is the change which it produces in the image.” Concern with *effect* rather than *meaning* is a basic change of our electric time, for effect involves the total situation, and not a single level of information movement. Strangely, there is recognition of this matter of effect rather than information in the British idea of libel: “The greater the truth, the greater the libel.”

The effect of electric technology had at first been anxiety. Now it appears to create boredom. We have been through the three stages of alarm, resistance, and exhaustion that occur in every disease or stress of life, whether individual or collective. At least, our exhausted slump after the first encounter with the electric has inclined us to expect new problems. However, backward countries that have experienced little permeation with our own mechanical and specialist culture are much better able to con-

front and to understand electric technology. Not only have backward and nonindustrial cultures no specialist habits to overcome in their encounter with electromagnetism, but they have still much of their traditional oral culture that has the total, unified "field" character of our new electromagnetism. Our old industrialized areas, having eroded their oral traditions automatically, are in the position of having to rediscover them in order to cope with the electric age.

In terms of the theme of media hot and cold, backward countries are cool, and we are hot. The "city slicker" is hot, and the rustic is cool. But in terms of the reversal of procedures and values in the electric age, the past mechanical time was hot, and we of the TV age are cool. The waltz was a hot, fast mechanical dance suited to the industrial time in its moods of pomp and circumstance. In contrast, the Twist is a cool, involved and chatty form of improvised gesture. The jazz of the period of the hot new media of movie and radio was hot jazz. Yet jazz of itself tends to be a casual dialogue form of dance quite lacking in the repetitive and mechanical forms of the waltz. Cool jazz came in quite naturally after the first impact of radio and movie had been absorbed.

In the special Russian issue of *Life* magazine for September 13, 1963, it is mentioned in Russian restaurants and night clubs, "though the Charleston is tolerated, the Twist is taboo." All this is to say that a country in the process of industrialization is inclined to regard hot jazz as consistent with its developing programs. The cool and involved form of the Twist, on the other hand, would strike such a culture at once as retrograde and incompatible with its new mechanical stress. The Charleston, with its aspect of a mechanical doll agitated by strings, appears in Russia as an *avant-garde* form. We, on the other hand, find the *avant-garde* in the cool and the primitive, with its promise of depth involvement and integral expression.

The "hard" sell and the "hot" line become mere comedy in the TV age, and the death of all the salesmen at one stroke of the TV axe has turned the hot American culture into a cool one that is quite unacquainted with itself. America, in fact, would seem to

be living through the reverse process that Margaret Mead described in *Time* magazine (September 4, 1954): "There are too many complaints about society having to move too fast to keep up with the machine. There is great advantage in moving fast if you move completely, if social, educational, and recreational changes keep pace. You must change the whole pattern at once and the whole group together—and the people themselves must decide to move."

Margaret Mead is thinking here of change as uniform speed-up of motion or a uniform hotting-up of temperatures in backward societies. We are certainly coming within conceivable range of a world automatically controlled to the point where we could say, "Six hours less radio in Indonesia next week or there will be a great falling off in literary attention." Or, "We can program twenty more hours of TV in South Africa next week to cool down the tribal temperature raised by radio last week. Whole cultures could now be programmed to keep their emotional climate stable in the same way that we have begun to know something about maintaining equilibrium in the commercial economies of the world.

In the merely personal and private sphere we are often reminded of how changes of tone and attitude are demanded of different times and seasons in order to keep situations in hand. British clubmen, for the sake of companionship and amiability, have long excluded the hot topics of religion and politics from mention inside the highly participational club. In the same vein, W. H. Auden wrote, ". . . this season the man of goodwill will wear his heart up his sleeve, not on it. . . . the honest manly style is today suited only to Iago" (Introduction to John Betjeman's *Slick But Not Streamlined*). In the Renaissance, as print technology hotted up the social *milieu* to a very high point, the gentleman and the courtier (Hamlet—Mercutio style) adopted, in contrast, the casual and cool nonchalance of the playful and superior being. The Iago allusion of Auden reminds us that Iago was the *alter ego* and assistant of the intensely earnest and very non-nonchalant General Othello. In imitation of the earnest and forthright general, Iago hotted up his own image and wore his

heart on his sleeve, until General Othello read him loud and clear as "honest Iago," a man after his own grimly earnest heart.

Throughout *The City in History*, Lewis Mumford favors the cool or casually structured towns over the hot and intensely filled-in cities. The great period of Athens, he feels, was one during which most of the democratic habits of village life and participation still obtained. Then burst forth the full variety of human expression and exploration such as was later impossible in highly developed urban centers. For the highly developed situation is, by definition, low in opportunities of participation, and rigorous in its demands of specialist fragmentation from those who would control it. For example, what is known as "job enlargement" today in business and in management consists in allowing the employee more freedom to discover and define his function. Likewise, in reading a detective story the reader participates as co-author simply because so much has been left out of the narrative. The open-mesh silk stocking is far more sensuous than the smooth nylon, just because the eye must act as hand in filling in and completing the image, exactly as in the mosaic of the TV image.

Douglas Cater in *The Fourth Branch of Government* tells how the men of the Washington press bureaus delighted to complete or fill in the blank of Calvin Coolidge's personality. Because he was so like a mere cartoon, they felt the urge to complete his image for him and his public. It is instructive that the press applied the word "cool" to Cal. In the very sense of a cool medium, Calvin Coolidge was so lacking in any articulation of data in his public image that there was only one word for him. He was real cool. In the hot 1920s, the hot press medium found Cal very cool and rejoiced in his lack of image, since it compelled the participation of the press in filling in an image of him for the public. By contrast, F.D.R. was a hot press agent, himself a rival of the newspaper medium and one who delighted in scoring off the press on the rival hot medium of radio. Quite in contrast, Jack Paar ran a cool show for the cool TV medium, and became a rival for the patrons of the night spots and their allies in the gossip columns. Jack Paar's war with the gossip columnists was a weird example of clash between a hot and cold medium such as had

occurred with the "scandal of the rigged TV quiz shows." The rivalry between the hot press and radio media, on one hand, and TV on the other, for the hot ad buck, served to confuse and to overheat the issues in the affair that pointlessly involved Charles van Doren.

An Associated Press story from Santa Monica, California, August 9, 1962, reported how

Nearly 100 traffic violators watched a police traffic accident film today to atone for their violations. Two had to be treated for nausea and shock. . . .

Viewers were offered a \$5.00 reduction in fines if they agreed to see the movie, *Signal 30*, made by Ohio State police.

It showed twisted wreckage and mangled bodies and recorded the screams of accident victims.

Whether the hot film medium using hot content would cool off the hot drivers is a moot point. But it does concern any understanding of media. The effect of hot media treatment cannot include much empathy or participation at any time. In this connection an insurance ad that featured Dad in an iron lung surrounded by a joyful family group did more to strike terror into the reader than all the warning wisdom in the world. It is a question that arises in connection with capital punishment. Is a severe penalty the best deterrent to serious crime? With regard to the bomb and the cold war, is the threat of massive retaliation the most effective means to peace? Is it not evident in every human situation that is pushed to a point of saturation that some precipitation occurs? When all the available resources and energies have been played up in an organism or in any structure there is some kind of reversal of pattern. The spectacle of brutality used as deterrent can brutalize. Brutality used in sports may humanize under some conditions, at least. But with regard to the bomb and retaliation as deterrent, it is obvious that numbness is the result of any prolonged terror, a fact that was discovered when the fallout shelter program was broached. The price of eternal vigilance is indifference.

Nevertheless, it makes all the difference whether a hot medium is used in a hot or a cool culture. The hot radio medium

used in cool or nonliterate cultures has a violent effect, quite unlike its effect, say in England or America, where radio is felt as entertainment. A cool or low literacy culture cannot accept hot media like movies or radio as entertainment. They are, at least, as radically upsetting for them as the cool TV medium has proved to be for our high literacy world.

And as for the cool war and the hot bomb scare, the cultural strategy that is desperately needed is humor and play. It is play that cools off the hot situations of actual life by miming them. Competitive sports between Russia and the West will hardly serve that purpose of relaxation. Such sports are inflammatory, it is plain. And what we consider entertainment or fun in our media inevitably appears as violent political agitation to a cool culture.

One way to spot the basic difference between hot and cold media uses is to compare and contrast a broadcast of a symphony performance with a broadcast of a symphony rehearsal. Two of the finest shows ever released by the CBC were of Glenn Gould's procedure in recording piano recitals, and Igor Stravinsky's rehearsing the Toronto symphony in some of his new work. A cool medium like TV, when really used, demands this involvement in process. The neat tight package is suited to hot media, like radio and gramophone. Francis Bacon never tired of contrasting hot and cool prose. Writing in "methods" or complete packages, he contrasted with writing in aphorisms, or single observations such as "Revenge is a kind of wild justice." The passive consumer wants packages, but those, he suggested, who are concerned in pursuing knowledge and in seeking causes will resort to aphorisms, just because they are incomplete and require participation in depth.

The principle that distinguishes hot and cold media is perfectly embodied in the folk wisdom: "Men seldom make passes at girls who wear glasses." Glasses intensify the outward-going vision, and fill in the feminine image exceedingly, Marion the Librarian notwithstanding. Dark glasses, on the other hand, create the inscrutable and inaccessible image that invites a great deal of participation and completion.

Again, in a visual and highly literate culture, when we meet a person for the first time his visual appearance dims out the sound

of the name, so that in self-defense we add: "How do you spell your name?" Whereas, in an ear culture, the *sound* of a man's name is the overwhelming fact, as Joyce knew when he said in *Finnegans Wake*, "Who gave you that numb?" For the name of a man is a numbing blow from which he never recovers.

Another vantage point from which to test the difference between hot and cold media is the practical joke. The hot literary medium excludes the practical and participant aspect of the joke so completely that Constance Rourke, in her *American Humor*, considers it as no joke at all. To literary people, the practical joke with its total physical involvement is as distasteful as the pun that derails us from the smooth and uniform progress that is typographic order. Indeed, to the literary person who is quite unaware of the intensely abstract nature of the typographic medium, it is the grosser and participant forms of art that seem "hot," and the abstract and intensely literary form that seems "cool." "You may perceive, Madam," said Dr. Johnson, with a pugilistic smile, "that I am well-bred to a degree of needless scrupulosity." And Dr. Johnson was right in supposing that "well-bred" had come to mean a white-shirted stress on attire that rivaled the rigor of the printed page. "Comfort" consists in abandoning a visual arrangement in favor of one that permits casual participation of the senses, a state that is excluded when any one sense, but especially the visual sense, is hotted up to the point of dominant command of a situation.

On the other hand, in experiments in which all outer sensation is withdrawn, the subject begins a furious fill-in or completion of senses that is sheer hallucination. So the hotting-up of one sense tends to effect hypnosis, and the cooling of all senses tends to result in hallucination.

4
**The Gadget
Lover**
*Narcissus as
Narcosis*

The Greek myth of Narcissus is directly concerned with a fact of human experience, as the word *Narcissus* indicates. It is from the Greek word *narcosis*, or numbness. The youth Narcissus mistook his own reflection in the water for another person. This extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. The nymph Echo tried to win his love with fragments of his own speech, but in vain. He was numb. He had adapted to his extension of himself and had become a closed system.

Now the point of this myth is the fact that men at once become fascinated by any extension of themselves in any material other than themselves. There have been cynics who insisted that men fall deepest in love with women who give them back their own image. Be that as it may, the wisdom of the Narcissus myth does not convey any idea that Narcissus fell

in love with anything he regarded as himself. Obviously he would have had very different feelings about the image had he known it was an extension or repetition of himself. It is, perhaps, indicative of the bias of our, intensely technological and, therefore, narcotic culture that we have long interpreted the Narcissus story to mean that he fell in love with himself, that he imagined the reflection to be Narcissus!

Physiologically there are abundant reasons for an extension of ourselves involving us in a state of numbness. Medical researchers like Hans Selye and Adolphe Jonas hold that all extensions of ourselves, in sickness or in health, are attempts to maintain equilibrium. Any extension of ourselves they regard as "autoamputation," and they find that the autoamputative power or strategy is resorted to by the body when the perceptual power cannot locate or avoid the cause of irritation. Our language has many expressions that indicate this self-amputation that is imposed by various pressures. We speak of "wanting to jump out of my skin" or of "going out of my mind," being "driven batty" or "flipping my lid." And we often create artificial situations that rival the irritations and stresses of real life under controlled conditions of sport and play.

While it was no part of the intention of Jonas and Selye to provide an explanation of human invention and technology, they have given us a theory of disease (discomfort) that goes far to explain why man is impelled to extend various parts of his body by a kind of autoamputation. In the physical stress of superstimulation of various kinds, the central nervous system acts to protect itself by a strategy of amputation or isolation of the offending organ, sense, or function. Thus, the stimulus to new invention is the stress of acceleration of pace and increase of load. For example, in the case of the wheel as an extension of the foot, the pressure of new burdens resulting from the acceleration of exchange by written and monetary media was the immediate occasion of the extension or "amputation" of this function from our bodies. The wheel as a counter-irritant to increased burdens, in turn, brings about a new intensity of action by its amplification of a separate or isolated function (the feet in rotation). Such

amplification is bearable by the nervous system only through numbness or blocking of perception. This is the sense of the Narcissus myth. The young man's image is a self-amputation or extension induced by irritating pressures. As counter-irritant, the image produces a generalized numbness or shock that declines recognition. Self-amputation forbids self-recognition.

The principle of self-amputation as an immediate relief of strain on the central nervous system applies very readily to the origin of the media of communication from speech to computer.

Physiologically, the central nervous system, that electric network that coordinates the various media of our senses, plays the chief role. Whatever threatens its function must be contained, localized, or cut off, even to the total removal of the offending organ. The function of the body, as a group of sustaining and protective organs for the central nervous system, is to act as buffers against sudden variations of stimulus in the physical and social environment. Sudden social failure or shame is a shock that some may "take to heart" or that may cause muscular disturbance in general, signaling for the person to withdraw from the threatening situation.

Therapy, whether physical or social, is a counter-irritant that aids in that equilibrium of the physical organs which protect the central nervous system. Whereas pleasure is a counter-irritant (e.g., sports, entertainment, and alcohol), comfort is the removal of irritants. Both pleasure and comfort are strategies of equilibrium for the central nervous system.

With the arrival of electric technology, man extended, or set outside himself, a live model of the central nervous system itself. To the degree that this is so, it is a development that suggests a desperate and suicidal autoamputation, as if the central nervous system could no longer depend on the physical organs to be protective buffers against the slings and arrows of outrageous mechanism. It could well be that the successive mechanizations of the various physical organs since the invention of printing have made too violent and superstimulated a social experience for the central nervous system to endure.

In relation to that only too plausible cause of such develop-

ment, we can return to the Narcissus theme. For if Narcissus is numbed by his self-amputated image, there is a very good reason for the numbness. There is a close parallel of response between the patterns of physical and psychic trauma or shock. A person suddenly deprived of loved ones and a person who drops a few feet unexpectedly will both register shock. Both the loss of family and a physical fall are extreme instances of amputations of the self. Shock induces a generalized numbness or an increased threshold to all types of perception. The victim seems immune to pain or sense.

Battle shock created by violent noise has been adapted for dental use in the device known as *audiac*. The patient puts on headphones and turns a dial raising the noise level to the point that he feels no pain from the drill. The selection of a *single* sense for intense stimulus, or of a single extended, isolated, or "amputated" sense in technology, is in part the reason for the numbing effect that technology as such has on its makers and users. For the central nervous system rallies a response of general numbness to the challenge of specialized irritation.

The person who falls suddenly experiences immunity to all pain or sensory stimuli because the central nervous system has to be protected from any intense thrust of sensation. Only gradually does he regain normal sensitivity to sights and sounds, at which time he may begin to tremble and perspire and to react as he would have done if the central nervous system had been prepared in advance for the fall that occurred unexpectedly.

Depending on which sense or faculty is extended technologically, or "autoamputated," the "closure" or equilibrium-seeking among the other senses is fairly predictable. It is with the senses as it is with color. Sensation is always 100 per cent, and a color is always 100 per cent color. But the ratio among the components in the sensation or the color can differ infinitely. Yet if sound, for example, is intensified, touch and taste and sight are affected at once. The effect of radio on literate or visual man was to reawaken his tribal memories, and the effect of sound added to motion pictures was to diminish the role of mime, tactility, and kinesthesia. Similarly, when nomadic man turned to sedentary and specialist

ways, the senses specialized too. The development of writing and the visual organization of life made possible the discovery of individualism, introspection and so on.

Any invention or technology is an extension or self-amputation of our physical bodies, and such extension also demands new ratios or new equilibriums among the other organs and extensions of the body. There is, for example, no way of refusing to comply with the new sense ratios or sense "closure" evoked by the TV image. But the effect of the entry of the TV image will vary from culture to culture in accordance with the existing sense ratios in each culture. In audile-tactile Europe TV has intensified the visual sense, spurring them toward American styles of packaging and dressing. In America, the intensely visual culture, TV has opened the doors of audile-tactile perception to the non-visual world of spoken languages and food and the plastic arts. As an extension and expediter of the sense life, any medium at once affects the entire field of the senses, as the Psalmist explained long ago in the 115th Psalm:

Their idols are silver and gold,
The work of men's hands.
They have mouths, but they speak not;
Eyes they have, but they see not;
They have ears, but they hear not;
Noses have they, but they smell not;
They have hands, but they handle not;
Feet have they, but they walk not;
Neither speak they through their throat.
They that make them shall be like unto them;
Yea, every one that trusteth in them.

The concept of "idol" for the Hebrew Psalmist is much like that of Narcissus for the Greek mythmaker. And the Psalmist insists that the *beholding* of idols, or the use of technology, conforms men to them. "They that make them shall be like unto them." This is a simple fact of sense "closure." The poet Blake developed the Psalmist's ideas into an entire theory of communication and social change. It is in his long poem of *Jerusalem* that he explains why men have become what they have beheld.

46/*Understanding Media*

What they have, says Blake, is "the spectre of the Reasoning Power in Man" that has become fragmented and "separated from Imagination and enclosing itself as in steel." Blake, in a word, sees man as fragmented by his technologies. But he insists that these technologies are self-amputations of our own organs. When so amputated, each organ becomes a closed system of great new intensity that hurls man into "martyrdoms and wars." Moreover, Blake announces as his theme in *Jerusalem* the organs of perception:

If Perceptive Organs vary, Objects of Perception seem to vary:

If Perceptive Organs close, their Objects seem to close also.

To behold, use or perceive any extension of ourselves in technological form is necessarily to embrace it. To listen to radio or to read the printed page is to accept these extensions of ourselves into our personal system and to undergo the "closure" or displacement of perception that follows automatically. It is this continuous embrace of our own technology in daily use that puts us in the Narcissus role of subliminal awareness and numbness in relation to these images of ourselves. By continuously embracing technologies, we relate ourselves to them as servomechanisms. That is why we must, to use them at all, serve these objects, these extensions of ourselves, as gods or minor religions. An Indian is the servo-mechanism of his canoe, as the cowboy of his horse or the executive of his clock.

Physiologically, man in the normal use of technology (or his variously extended body) is perpetually modified by it and in turn finds ever new ways of modifying his technology. Man becomes, as it were, the sex organs of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new forms. The machine world reciprocates man's love by expediting his wishes and desires, namely, in providing him with wealth. One of the merits of motivation research has been the revelation of man's sex relation to the motorcar.

Socially, it is the accumulation of group pressures and irritations that prompt invention and innovation as counter-irritants.

War and the fear of war have always been considered the main incentives to technological extension of our bodies. Indeed, Lewis Mumford, in his *The City in History*, considers the walled city itself an extension of our skins, as much as housing and clothing. More even than the preparation for war, the aftermath of invasion is a rich technological period; because the subject culture has to adjust all its sense ratios to accommodate the impact of the invading culture. It is from such intensive hybrid exchange and strife of ideas and forms that the greatest social energies are released, and from which arise the greatest technologies. Buckminster Fuller estimates that since 1910 the governments of the world have spent 3½ trillion dollars on airplanes. That is 62 times the existing gold supply of the world.

The principle of numbness comes into play with electric technology, as with any other. We have to numb our central nervous system when it is extended and exposed, or we will die. Thus the age of anxiety and of electric media is also the age of the unconscious and of apathy. But it is strikingly the age of consciousness of the unconscious, in addition. With our central nervous system strategically numbed, the tasks of conscious awareness and order are transferred to the physical life of man, so that for the first time he has become aware of technology as an extension of his physical body. Apparently this could not have happened before the electric age gave us the means of instant, total field-awareness. With such awareness, the subliminal life, private and social, has been hoicked up into full view, with the result that we have "social consciousness" presented to us as a cause of guilt-feelings. Existentialism offers a philosophy of structures, rather than categories, and of total social involvement instead of the bourgeois spirit of individual separateness or points of view. In the electric age we wear all mankind as our skin.