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Author(s): Marshall McLuhan

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## *Effects of the Improvements of Communication Media*

THE advantage of having a tightly woven thesis to present to you is that it can be used in the introductory paper as a rug to be yanked violently from under my feet. If caution leads Professor Easterbrook "to remain, at least for the time being, in the informational camp," it is obvious that only a total absence of caution would lead me, a professor of English, to venture before the leaders in the field of economic history in the role assigned to me today.

I stand open to the rebuff described in the story of the two goats who were feasting on a junk heap behind a Hollywood studio. One of them, having come upon an old print of the film of *Gone With the Wind* was chomping enthusiastically. He signalled to his companion to come on over and sample his find. The other goat did so, and chewed meditatively for a bit, when the first one said, "How did you like it?" And the second one said, "As a matter of fact, I liked the book better." Just which of these is the media-goat and which the information-goat admits, as Sir Thomas Browne put it, "of a wide solution."

In managerial study of the role of the decision maker today, it is often pointed out that it is difficult under conditions of speeded information flow for anybody to exercise delegated authority. The habits and patterns of delegated authority, with its hierarchy of separate and subordinated functions and jurisdictions, belong quite naturally under the conditions and speeds of written communication.<sup>1</sup> But if within such a structure of written communication there occurs a notable speed-up of information movement, such as takes place with the telephone, the exercise of delegated authority becomes quite unworkable.<sup>2</sup>

In an unpublished paper called "New Directions for Organizational Practice,"<sup>3</sup> Professor B. J. Muller-Thym of the Massachusetts Institute of Technology discusses the recent recognition that

pyramidal organizational structures, with many layers of supervision, and with functional division by specialty, simply did not work. . . . But in these re-

<sup>1</sup> Peter F. Drucker, *Landmarks of Tomorrow* (New York, Harpers, 1959), p. 96.

<sup>2</sup> H. A. Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951), p. 188.

<sup>3</sup> Paper prepared for ASME Report: *Ten Year Progress in Management, 1950-1960*.

search organizations where work actually got done, when one studied them he found that whatever the organization chart prescribed, groups of researchers with different competences as required by the problem in hand were working together, cutting across organizational lines; that they were establishing most of their own design criteria for the work as well as their intended patterns of association; . . .

The older, many-layered, highly functionalized organizations were characterized by the separation of thinking from doing; thinking was generally allocated to the top rather than the bottom of the pyramid and to "staff" as against "line" components. Whatever the wishes of the company about the decentralized exercise of authority, authority inexorably gravitated toward the top of the structure. There was created a numerous middle management class, spread over an indefinite number of supervisory layers whose actual roles, as many work studies showed, was predominately the passing of information through the system.

Professor Muller-Thym then footnotes:

It was for this reason that the authors of a now famous article predicted the disappearance of middle managers as an industrial class. The ability to handle the total information for a business system completely, rapidly, and with random access has been made possible by computer technology at the very moment when middle management, because of its size and clumsiness, can no longer perform this task.<sup>4</sup>

The advent of a new medium often reveals the lineaments and assumptions, as it were, of an old medium. The hypertrophy of written messages, which has been dubbed "Parkinson's law" by its author, would appear to be caused not by paper-shuffling and the typewriter, but by the effort of the typewriter to keep pace with the acceleration of information movement created by the telephone and electronic media. Telephone in hand, the decision maker can exercise only the authority of knowledge, not delegated authority. In managerial terms, it would seem that the decision maker who must deal with globally gathered information, moved at electronic speeds, is impelled to acquire a more interrelated and overall type of knowledge concerning the operations in which he is involved. The new media, in management that is to say, have been directly responsible for the rise of management training centers. The demand increases daily for an ever more liberally educated specialist capable of effective action in ever more decentralized operations.

<sup>4</sup> Cf., H. J. Leavitt and T. L. Whisler, "Management in the 1970's," *Harvard Business Review*, XXXVI (Nov.-Dec. 1958), 41-8.

Much the same pattern of development has occurred, we are told, as a result of the operation of the telephone upon the traditional role of the "call girl." Since the telephone has become a normal feature of our environment, the old red light district has disappeared. Centralism has given way to decentralized operation, as in management, and with the same consequences for the personnel involved. That is to say, the call girl must be, if not cultured, at least at home in a variety of social roles, in contrast to the highly specialized character of her pre-telephonic and localized predecessor. This bizarre instance of social change resulting from great information speed-up, I venture to present in order to illustrate my basic suggestion: that it is the formal characteristics of the medium, recurring in a variety of material situations, and not any particular "message," which constitutes the efficacy of its historical action.

Hjalmar Schacht, in his *Account Settled*,<sup>5</sup> cites the testimony of Albert Speer, German armaments minister in 1942, given at the Nüremberg trials as follows:

The telephone, the teleprinter and the wireless made it possible for orders from the highest levels to be given direct to the lowest levels, where, on account of the absolute authority behind them, they were carried out uncritically; or brought it about that numerous offices and command centres were directly connected with the supreme leadership from which they received sinister orders without any intermediary. . . . To the outside observer this governmental apparatus may have resembled the apparently chaotic confusion of lines at a telephone exchange, but like the latter it could be controlled and operated from one central source.

Like Parkinson in his indignant moral judgment concerning the operation of technology in office administration, Schacht draws moral conclusions from the operation of the telephone, telegraph, radio and teletype, which are quite irrelevant. What Parkinson and Schacht are both saying is that new technical media for managing information, when used for the older ends established by older media, result in utter confusion and disorganization.

A striking example of this occurs in Oscar Handlin's essay on John Dewey.<sup>6</sup> He points out how John Dewey in the later nineteenth century was baffled by the past-orientation even of vocational training in American high schools. It is the natural bias of print culture to be past-

<sup>5</sup> Hjalmar Schacht, *Account Settled* (London, 1949), p. 240.

<sup>6</sup> Oscar Handlin, "John Dewey's Challenge to Education," *Harpers* (New York, 1959), p. 22.

oriented, and above all to be consumer-oriented. Whether with vocational handicrafts or the fine arts, the consumer bias aroused a good deal of comment, not only from John Dewey but from composers and painters and poets, as well as from areas of scientific research. The European, and even the Englishman, when print was new, had a great backlog of oral culture and preprint attitudes which the Gutenberg technology could not entirely obliterate.

We on this continent, on the contrary, had little enough of such preprint backlog, and out of necessity shaped our patterns of association, and our legal, political, and educational establishments on what we did have, namely, the latest European technology: the printing press. Whereas in Europe the printing press had to contend with august and solemn institutions, long established on pre-Gutenberg technology, the range and density of such organizations was in North America almost insignificant. The penetrative powers of the Gutenberg technology, irresistible under any conditions, became the means of forming the very ground plan and the superstructure of social and business institutions.

Concerning the concept of the penetrative powers of the price-system, R. F. Neill, in his "An Exploratory Survey of Industrial Galaxies in Canadian Economic Development," states:<sup>7</sup>

The term "price-system" can be understood in an "Innisian" sense to mean simply industrialization, economic growth, an economy, or an impersonal force seeking to spread its domination. If we adopt this quasi-poetical use of the term, then the penetrative power of the price-system will depend, not only on the economic efficiency of existing means of communication, but also on the ability of the industrial centre to produce more efficient means of communication. Here there is an interaction in which the extension of markets through the use of more efficient means of communication leads to further division of labor. Further division of labor creates both greater surpluses in production in general and the means of improving the communication system. Greater surplus production, in turn, creates pressures to improve communication in order to further extend the market.

Neill here shows a grasp of Innis which is rare indeed, but Innis in turn had a grasp of causal relationships between media and all levels of social structure from education to industry which would have been invaluable to John Dewey. I would like to enumerate briefly some of the penetrative powers of the Gutenberg technology, even if they are

<sup>7</sup> R. F. Neill, *An Exploratory Survey of Industrial Galaxies in Canadian Economic Development* (unpublished M.A. dissertation, University of Toronto, 1960), p. VII.

no more than hypotheses or arguments. I have dealt at much greater length with these themes in two essays, "Print and Social Change," and "The Effect of the Printed Book on Language in the Sixteenth Century."<sup>8</sup>

The mechanization of the ancient handicraft of the scribe was effected by segmental arresting of the movements of the scribe in the form of movable types. The principle of segmentation has since been applied to almost all handicrafts. Until very recently the assembly line of movable types which formed the basis of print technology had been the unchallenged basis of western industry. Both producer and consumer functions have long depended on the pre-condition of print technology.

Today we are faced on all hands with the obsolescence of the assembly line pattern of industry due to the advent of the non-sequential and instantaneous patterns of electric automation. I do not presume for a moment to explain to this audience matters which it understands far better than I. Purely in media terms, however, the exactly synchronized information flow of an electric circuit can perform many operations at the same instant, which under the conditions of mechanized handicraft or of assembly line were necessarily sequential and one at a time.

The penetrative powers of the new electric technology, as they invade every level of thought and action, have the power to impose their own assumptions, as it were. I have already alluded to the changed patterns of decision making which resulted from the telephone. I will now attempt by a brief enumeration of the patterns of decision making which resulted from Gutenberg technology to convey some idea of the "penetrative powers" of movable types. Most obviously it was the product of the Gutenberg assembly line which appeared to possess in a high degree the qualities of uniformity and repeatability. Since handicraft products do not possess these qualities, it was natural that uniform and repeatable products should make possible new relations between producers and consumers. The message of the uniform commodity is that "this is the same for all men," thus releasing a wave of competitive drive. For among unique products there may be hierarchy but not competition.

In terms of the printed book and the printed page, uniformity and repeatability gave to the political ruler a new instrument of centralism

<sup>8</sup> H. M. McLuhan, "Print and Social Change," *Printing Progress* (Cincinnati, 1959), pp. 81-112, and "The Influence of the Printed Book on Language in the Sixteenth Century," from *Explorations in Communication*, edited by Edmund Carpenter and Marshall McLuhan (Boston: Beacon Press, 1960), 125-35.

and homogeneity. By means of print the ruler could extend uniform patterns of information and power to the boundaries of his people's vernacular tongue. Uniformity and repeatability gave him the means of mobilizing eventually the entire manpower of his kingdom. Effective mobilization would appear to depend, whether in economic or in military spheres, upon the reduction to homogeneity of an entire population by means of the printed word. What W. W. Rostow calls "the takeoff" occurs in no country that he mentions without this prior homogenization of a people. Whether in the electronic age takeoff can occur in backward or semi-literate areas without long processing by Gutenberg technology remains to be seen.

Another feature of the penetrative powers of print technology, in addition to uniformity and repeatability, is the complimentary of individualism and nationalism. Print makes possible solitary effort and private initiative in a very high degree, everything in fact which David Riesman celebrates in *The Lonely Crowd* as "inner direction." He too seems to treat as a moral failure our tendency to abandon inner direction in the electronic age. But would it not be better to consider where this habit came from in the first place, in the interests of prediction and control? Harold Innis frequently alluded to the close connection between print and nationalism, and Carleton Hayes in *The Historical Evolution of Modern Nationalism*<sup>9</sup> is unable to find any symptoms of it before the Renaissance.

I venture to suggest that all of the reasons for nationalism are included in the penetrative powers of Gutenberg technology. Not only does print vividly discover national boundaries, but the print market was itself defined by such boundaries, at least for early printers and publishers. Perhaps also the ability to *see* one's mother tongue in uniform and repeatable technological dress creates in the individual reader a feeling of unity and power that he shares with all other readers of that tongue. Quite different sentiments are felt by preliterate or semi-literate populations. The type of visualizing fostered by high intensity print technology is quite natural and habitual to highly literate populations, putting them at great disadvantage in a nuclear age, since nuclear structures are *non-visualizable*. That is to say, nuclear structures, whether sub-atomic or in the form of mass-audiences for radio and TV, are, in their instantaneous speed modalities, not capable of comprehension in visual modes, except a la Walt Disney science shorts.

<sup>9</sup> Carleton Hayes, *The Historical Evolution of Modern Nationalism* (London: Macmillan, 1931).

As much as nationalism and individualism, perspective, both psychic and physical, is immediately the child of print technology. Perspective, with arbitrarily fixed point of view and its vanishing point, is natural to the reader of uniform lines of repeatable type. It is not natural at all in our nuclear age when information does not move exclusively in such patterns any more. And Georg von Békésy, in his *Experiments in Hearing*,<sup>10</sup> finds it necessary to criticize the perspective techniques in scientific research, as compared with the mosaic techniques needed in field theory and non-visualizable problems.

This is a possible point at which to introduce a comment on Easterbrook's allusion to the difference between information and media approaches to problems today. The information theory approach, based on statics, is probably self-liquidating by virtue of the electric speeds available to it. It seems to me involuntarily and unnecessarily limited by a "content" concept. Wherever one meets the "content" concept, it is reasonably certain that there has been insufficient structural analysis. Phonetic writing and printing, for example, have content only in the sense that they "contain" another medium, namely, speech. But since the origin of writing, the simultaneous presence of the medium of speech, albeit in low definition, has fostered this habit of dichotomy and content-postulating, which in fact obscures major components in the situations with which we must deal. In the same way, content-postulates seem to have caused game theory to falter to a stop prematurely. I mention this only because I wish to stress how the subliminal legacy of print can have strange effects in the highest scientific quarters of the post-print age. In spite of all this, information theory is able to reveal in the person and the paper of Richard Meier that "the degree of substitutability of one resource for another increases when either the stock of knowledge or the flow of communications increases."<sup>11</sup>

Up till now I have attempted merely to indicate in a general way how the penetrative powers of the Gutenberg technology, as of electronic technology, create new patterns of awareness and of human association. Let me tie in my remarks so far with Professor Robinson's paper. It was surely no accident that the Greek revival in design and styling suited so well the needs and tastes of early industrial England. As Robinson puts it:<sup>12</sup>

<sup>10</sup> Georg Von Békésy, *Experiments in Hearing* (New York: McGraw-Hill, 1960), pp. 3-6.

<sup>11</sup> Richard L. Meier, "Information, Resource Use and Economic Growth"; paper read at the Ann Arbor Conference on Natural Resources and Economic Growth, 1959.

<sup>12</sup> Dwight E. Robinson, "The Styling and Transmission of Fashions Historically Considered." Economic History Association, 1960.

Where Wedgwood would have found it utterly impracticable to have assembled or trained in England a staff of highly skilled modellers and free-hand craftsmen capable of working in the sophisticated manner demanded by the Rococo taste, his homespun Staffordshire workmen were as well if not better fitted to the reproduction of simulated antique designs, especially when the work-benches of New Etruria were fortified by the mechanical devices that English ingenuity under the prodding of his practical genius could provide.

Robinson in effect is observing that industrial England, poor in traditional craftsmanship, was rich in the new segmental technology of mechanical lineality. It was precisely this Greek design which Ruskin spent much of his time attacking because of its servility and mechanism. Ruskin became an ardent sponsor of pre-Gutenberg technology, which he called Gothic; only here, he thought, could freedom and spontaneity for the human spirit be found.<sup>13</sup> While the eighteenth century was inspired to make Hellenistic conservatories, Ruskin exhorted his age to discover freedom via the Gothic hencoop.

Let me in manipulating the mosaic of this paper now return to print as staple or natural resource. I have at least pointed out the power of print to penetrate with its patterns all levels of institutional organization and of human awareness. In so changing the modes of human association, print unleashed many new powers in existing situations and resources, but perhaps most important of all, print altered the ratio among the human senses, giving extremely high definition to visual awareness and to visual powers of organizing resources. I would suggest that the penetrative powers of any structure of technology do lie precisely here: namely, that the ratio among sight and sound, and touch and motion, offer precisely that place to stand which Archimedes asked for: "Give me a place to stand, and I will move the world." The media offer exactly such a place to stand, for they are extensions of our senses, if need be into outer space. This is the major fact concealed from us while we concern ourselves with "content." Meier, in the paper already referred to, notes:

We are forced to conclude that natural resources have an informational aspect, in addition to the bulk and utility features mentioned earlier.

But if media as extensions of our senses offer ready access to our inmost lives, putting the lever of Archimedes in the hands of bureaucrat and entrepreneur alike, natural resources can also be seen as media

<sup>13</sup> John Ruskin, *The Stones of Venice*; 1851-53. Vol. 1, chap. 6 is on Gothic architecture and man.

of communication. Richard Dorson, in his *American Folklore*, points out:<sup>14</sup>

The yeasty oral traditions of the American Negro took form in the plantation culture of the Old South. Northern freedmen who settled in free states before emancipation possess none of this folklore. The Negro song and narrative lore of the West Indies, Brazil, and Surinam, heavy in African elements, shows little correspondence with that of southern colored folk. Southern slave lore developed along its own lines under the particular conditions of the cotton plantation economy. Cotton cultivation from Georgia to Texas, with the growing of rice on the Carolina and Georgia coast, sugar cane in Louisiana, and tobacco in Virginia and Kentucky, molded the southern slaves into homogeneity. After the importation of African slaves ceased in 1808, the Negro community in the United States grew entirely from its own procreation.

The homogeneity achieved in so spectacular a form by the Gutenberg staple, as it were, is nicely paralleled (but in low definition) by the penetrative powers of the cotton plantation economy. Homogeneity of patterns of human association are strikingly apparent consequences of staples, it would seem, whether they be the bulky bale or the resonating radio. Our current alarm about togetherness and conformity may well be the anxiety of a homogeneous literary culture being invaded by an alien homogeneity—a collision of galaxies.

To bring these penetrative powers and patterns back to a directly staple context, let me use the words of K. Buckley in his recent essay:<sup>15</sup> that Innis “used the staple approach to correlate a wide range of political and social developments, and to explain the character of major institutions within Canada.”

The penetrative powers of a medium or a staple to impose its patterns and assumptions are in sharp conflict with the concept of social and economic influence and causation which characterize the Gutenberg galaxy. The Gutenberg galaxy, or technology, favors all forms of segmental, fragmental statics rather than dynamic and organic forms. As we move well beyond the first century of the electronic era, we have discovered that our practice can be years ahead of our thought.<sup>16</sup> For more than a century much of our information in the West has moved in the new configurations evoked by electronic speeds. We have

<sup>14</sup> Richard M. Dorson, *American Folklore* (Chicago: University of Chicago Press, 1959), p. 168.

<sup>15</sup> K. Buckley, “The Role of Staple Industries in Canada’s Economic Development,” *THE JOURNAL OF ECONOMIC HISTORY*, XVII (Dec. 1958), p. 442.

<sup>16</sup> Edward H. Lichfield, “Notes on a General Theory of Administration,” *Administrative Science Quarterly*, Vol. 1, No. 1 (June 1956).

begun to feel at many levels a consequent change of attitudes towards the temporal and spatial arrangements of our lives and institutions. Professor Cole draws attention to the trend away from static models and toward preoccupation with economic growth to a degree unknown since Adam Smith.<sup>17</sup>

Many people are terrified at the speed of information movement in our electronic time which brainwashes whole populations on the one hand, and eliminates long established roles based on highly specialized knowledge. The interpenetration of Gutenberg and the electronic galaxies is naturally very destructive at many levels. It is hard, for example, to accustom ourselves to the idea that the hot war may have transferred itself from the international scene to the national and domestic one, on the one hand; and that, on the other hand, so far as the international scene is concerned, there has been no *cold* war, but an information hot war all along. Again, it will be hard for educators to face up to a situation of electronic configuration in which civil defense becomes simply protection against media fallout, around the globe and around the clock. To put it in Meier's terms again, with the rise of information levels and speeds, war may cease to be the exchange of bulk or heavy goods, and may become an information exchange before a global public.

If adjustment (economic, social, or personal) to information movement at electronic speeds is quite impossible, we can always change our models and metaphors of organization, and escape into sheer understanding. Sequential analysis and adjustment natural to low speed information movement becomes irrelevant and useless even at telegraph speed. But as speed increases, the understanding of process in all kinds of structures and situations becomes relatively simple. We can literally escape into understanding when the patterns of process become manifest.

MARSHALL McLUHAN, *University of Toronto*

<sup>17</sup> Arthur H. Cole, *Business Enterprise in its Social Setting* (Cambridge, Mass.: Harvard University Press, 1959), 36-9.