

The Vacuous Vision: The TV Medium

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The observed effects of television have been in marked contrast to common-sense expectations. Common sense dictated that it had to be the greatest medium ever for educating masses of people. The evidence rapidly accumulated to prove it was nothing of the sort. In educational TV, we had "the scandal of non-significant differences." Even master-teachers could not make television an educator better than the run-of-the-mill teacher in the usual unmotivated slipshod classroom setting. Political issues disappeared from politics as television was enthusiastically espoused as *the* means to raise the level of political consciousness in the electorate. Knowledge about world affairs, and even interest in knowing, declined as television became the major source of news and current affairs. Even advertisers learned that thirty seconds was a long time in which to say everything worthwhile saying about a product, *on* television.

One would have thought that these discrepancies would have triggered major scientific enquiries. They did nothing of the sort. Scientific enquiries remained locked into the same paradigm of enquiry. They continued to ask the same two questions of television: "Do the programs change the viewer?" If so, "Does this change parallel the amount of viewing that is done?" If changes were observed and if these could, unambiguously, be ascribed to the amount of viewing, or to the amount of viewing of certain types of programs, then grounds would exist for identifying television viewing as a *cause* of the changes. These questions assumed the very matter that was under challenge, namely, whether learning was taking place while watching television programs.

The implicit assumption was that the human perceptual system could adequately process whatever was within its sensory limits, allowing only for upper and lower limits to the complexity of sensation or strength of signal. With this assumption, there was no occasion to question what was happening when the viewer was actually watching television. The answer was obvious: unless the viewer was interrupted by other people, by technical faults in the TV set or other outside events, he or she was simply processing information, visual and auditory. The processes involved could only be the same as watching a film.

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McLuhan challenged that assumption. His challenge was welcomed by the advertising professions because they knew perfectly well that television was not at all like the other media they had used. The researchers ignored him because he seemed to be saying nothing that challenged their implicit assumption about the human perceptual system. On their assumption, what he had to say about television was simply wrong-headed and ridiculous. How could television be characterized as "cool" when, with the addition of visuals to the radio signals it required more processing work, and hence generated more heat? How could television be characterized as "low definition and participatory" when it undeniably offered more sensory information than any preceding medium? How could the medium possibly be the message when the medium only told us what sensory organs were being engaged? However, it is only when McLuhan's challenge is accepted that the findings about non-learning from television begin to make sense.

We were led to accept this challenge in the course of a study that involved the future of cable television in Australia. After a very considerable attempt to make sense of published research results, we felt—in desperation—we had to ask "*What actually takes place when a person sits down and looks at a functioning television screen?*" Not, mind you, what does the viewer do after viewing but *what is happening in the act of viewing itself.*

This was, of course, prompted by our own observations of our children watching television, and by a certain amount of self-observation. These observations lent a great deal of credence to Pawley's remark that, "It is in this way, watching while not really watching, listening whilst not really listening, that the individual citizen uses television."¹

When a person watches a functioning television screen, he or she is looking at a *radiant light signal constantly changing at either fifty or sixty half-frames per second.*²

¹ Martin Pawley, *The Private Future: Causes and Consequences of Community Collapse in the West* (London: Thames and Hudson, 1973), p. 73.

² Different countries use slightly different technologies.

We suggest that the human perceptual system never evolved to deal with this sort of sensory input.

The human perceptual system evolved to deal with *ambient* light, not *radiant* light. When radiant light reflects off the surfaces on which it impinges, the resulting ambient light provides *information* about the environment that has those sorts of surfaces. Radiant light can convey a lot of information to a scientist aided by a spectrometer, but it conveys precious little information to the human perceptual system. The only two activities at all like viewing the radiant luminous screen of television that would have been prevalent during the evolution of the perceptual system would be star-gazing and staring into the fire. There may be more examples, but the point remains that there was nothing in radiant light that required the evolution of the very complex analytical capabilities that the human perceptual system has for dealing with ambient light.

Confronted with radiant light, the natural response of the human nervous system is just to stare or maybe squint. In his classical study of "the senses considered as perceptual systems," James Gibson³ contrasts this with the highly complex system of analysis that is triggered when the human perceptual system encounters the information-rich ambient light. Schachtel makes the same point: "Compared with active and objectifying allocentric perception of form and structure, the *perception of color and light* does not require an active and selective attitude. They impinge upon the eye which does not have to seek them out attentively but *reacts* to their impact."⁴

We further suggest that the human perceptual system did not evolve to cope with the mechanical repetition of stimuli involved in the television signal of fifty or sixty half-frames per second and its myriad of ever-changing dots. Regardless of the particular subject matter on the screen, this is a property of the screen. Viewers typically adjust their distance from the screen to allow for full vision of the screen with minimal eye movement. In so lining up and distancing the screen so that its image will fall exactly on the fovea of their eyes, the viewers maximize the influence of radiant light and color. "This is the first level at which TV accommodates to, or encourages immobility, or inactivity. The very fact that both children and adults do observe this pre-

viewing ritual gives rise to the suspicion that there are rewards to be gained."⁵

The viewer of television is seeing faces and other objects, but we suggest that the rhythmic change of the perceptual ground formed by the screen is, with the radiant character of the signal, setting the level of response. On the basis of the evidence we could find, *habituation* is created to the signals coming from the set. "The organism appears to learn not to respond or not to transmit sensory information which has been without significance or consequence in the past . . . and the less complex and more rhythmic the stimulus, the more rapid and complete the habituation."⁶ In other words, changes in the signal that correspond to changes in objects being depicted fail to elicit changes in response that are normally displayed in the absence of such a rhythmically changing background. This does not appear to be a function of the primary visual cortex but rather an habituation phenomenon associated with the more non-specific parietal and frontal areas of the brain. While "man's [*sic*] visual system has more than a million channels, capable of transmitting instantly 10⁷ bits of information to the brain . . . the brain has the capacity for receiving only twenty-seven bits of information per second. These are the raw statistics of communication within the human anatomy. They lead Sir John Eccles, the Nobel Prize-winning physiologist, to believe that the most important frontier of brain research involves the study of inhibition—our capacity to censor stimuli in order to prevent overload."⁷

Given the nature of the television signal, we can begin to see why for good adaptive (in the sense of "protective") reasons, stimuli from the set are still received, *reacted* to as stimuli and some minimal processing of information is done. But further processing, such as one finds with the inputs of radio, print and film, appears to be inhibited. Our starting point in taking another look at television had been the evidence that it did not and apparently could not readily communicate in ways for which it seemed so obviously fitted. The existing neurophysiological data on habituation together with this lead to an almost inescapable conclusion: TELE TURNS YOU OFF. There seemed little doubt about what happened; the doubts appeared to be about how, where and why it happened.

In our search to answer some of these questions, the data led us to the left hemisphere of the frontal cortex and in particular the *left angular*

³James J. Gibson, *The Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966).

⁴Ernest G. Schachtel, *Metamorphosis* (New York: Basic Books, 1959), p. 107.

⁵Fred and Merrelyn Emery, *A Choice of Futures* (Leiden: Matinus Nijhoff, 1976), p. 75.

⁶*Ibid.*, p. 79.

⁷Douglass Cater and Richard Adler, *Television as a Social Force* (New York: Praeger, 1975), p. 6.

gyrus, that area where all types of sensations are integrated to determine a *common meaning*.⁸ Confirmation of the importance of this area is to be found in the recent *Scientific American* symposium on the Brain (September, 1979). "The angular gyrus is thought to mediate between visual and auditory forms of information. These functional specializations have been detected only on the left side of the brain: the corresponding areas of the right hemisphere do not have the same linguistic competence."⁹ Specialized areas and pathways involved in particular aspects of the comprehension and production of language, that distinctively human competence, have also been identified. Functional degradation of these areas and pathways results in language difficulties and distortions. This has importance for the developmental consequences of watching television, particularly by children, and we return to this below. More generally, our emphasis upon the importance of the left hemisphere as the locus of analytical conscious and purposeful behavior appears to have been confirmed.

We then explored what habituation of a visual stimulus might mean in terms of the observable response of the human nervous system, including the power of control that the left hemisphere appears to hold over the system in general. Luria has pointed to the effects of habituating signals, "If we measure the activity of the brain it means that fast (beta) waves are replaced by slow synchronous waves: the production of a phasic state (1973). This state is dominated by alpha waves, representing a blank visual field."¹⁰ Alpha waves have no function . . . as electroencephalographers know; in nearly all persons alpha waves are only present when the eyes are closed and no information of a visual nature is being processed."¹¹ "Cells, when idle, tend to synchronize."¹² We know now that periods of alpha are possible when the eyes are open¹³ which only tends to confirm that it is idleness *per se*, not the absence of stimulation that produces alpha rhythm. They are a sign not of a simple uni-determinant function but of a complex pattern of micro- and macro-behaviors which center about the lack of *intention* or *directed attention*.

⁸ Emery and Emery, pp. 75-78.

⁹ Norman Geschwind, "Specializations of the Human Brain," *Scientific American* 241 (September 1979): 161.

¹⁰ Emery and Emery, pp. 82-83.

¹¹ Olof Lippold, *The Origin of the Alpha Rhythm* (London: Longmans, 1973), p. 21.

¹² *Ibid.*

¹³ T.B. Mulholland, "The Concept of Attention and the Electroencephalographic Alpha Rhythm," in *Attention in Neurophysiology* (London: Butterworths, 1969), p. 100.

In the setting of the conditions under which significantly continuous alpha occurs, we can include lack of eye movement, fixation, lack of definition ("for most individuals a slightly defocussed picture . . . is compatible with the presence of alpha,"¹⁴ general conditions of macro or bodily relaxation, i.e., a *syndrome of idleness, inactivity*.

"No organized thought is possible in these [phasic] states and . . . selective associations are replaced by non-selective associations deprived of their purposeful character. It is possible that much of the peculiar logic of dreams can be explained by these physiological facts."¹⁵ Data on habituation make it clear that a visual stimulus can turn off the orienting, arousal, attention response, distract rather than analyze, evoke old brain mythical rather than evoke time-oriented logical thinking. That is, it turns you off reality (primary reality—Pawley) and off time—"the essential ingredient for purposeful or ideal seeking behaviour."¹⁶

Thus far we had worked logically from the available neurophysiological data to arrive at the following hypotheses; those that seemed to best explain the behavioral effects of television, the peculiar phenomena of viewing behavior and the degree of non-learning and the short-term memory deficit that has been found to accompany TV viewing. Our hypotheses regarding the essential nature of television as a medium, a repetitive, radiant light signal, are:

- (a) That the constant, repetitive visual stimulus fixates the viewer and causes habituation of response. The prefrontal and association areas of the cortex are effectively dominated by the signal, the screen.
- (b) The left cortical hemisphere—the center of visual *and* analytical, calculating processes—is effectively reduced in its functioning to tracking changes on the TV screen. Therefore—
- (c) Provided the viewers continue to watch, they are unlikely to reflect on what they are doing, what they are viewing. That is, they will be aware but *not* aware of their awareness. Put another way, *TV viewing is goal-seeking but purposeless*. Its end is in its immediate consumption. Switching from one program to another is not a choice between means but a conditioning to one consummatory behavior rather than another.

¹⁴ Lippold, p. 7.

¹⁵ A.R. Luria, "The Frontal Lobes and the Regulation of Behavior," in K.H. Pribram and A.R. Luria (eds.), *Psychophysiology of the Frontal Lobes* (New York: Academic Press, 1973), p. 5.

¹⁶ Pawley, pp. 82-83.

(d) The immediate consumption of TV is inherently rewarding; it is an irrational reward that has no in-built stop signals. People can be seduced from purposeful behavior in such a way that they are unable to become aware of the deficit.

(e) The power and control exerted by the television signal have far-reaching and cyclic effects on the total system of the individual.

During our study, we were sent a copy of a paper by Herbert E. Krugman, reporting the results of studying the brain wave patterns of a woman while watching TV and while reading a magazine. His findings provided a clear demonstration of the habituation to television signals. Within 30 seconds of viewing the TV, his subject had developed a "characteristic mode of response" which in terms of the dominance of slow rather than fast wave activity was totally different from the response to print. Krugman concluded that "the basic electrical response of the brain is clearly to the media and not to content difference."¹⁷ As Krugman had tested his subject over three totally different types of TV content, it was clear that the brain had indeed switched off from any analytical processing of the messages.

The significance of this finding is that it undermines those sorts of explanations that would attribute the switching off behavior to a socially conditioned process. Explanations of social conditioning have been further undermined by another experiment by Mulholland.¹⁸ "Ten kids were asked to watch their favorite television programs. Our assumption was that since these programs were their favorite shows, the kids would be involved in them and we'd find there'd be an oscillation between alpha slow-wave activity and beta. The prediction was that they would go back and forth. But they didn't do that. They just sat back. They stayed almost all the time in alpha. This meant that while they were watching they were not reacting, not orienting, not focussing, just spaced-out." A socially conditioned process of "relaxing with television" or switching off "during the boring bits" could, theoretically, be de-conditioned. A naturally evolved limitation of the perceptual system such as we have suggested would require a re-design of the medium itself. No amount of effort put into changing the ratio of violent to "pro-social" content, for instance, would change what appears

¹⁷ Herbert E. Krugman, "Electroencephalographic Aspects of Low Involvement: Implications for the McLuhan Hypothesis" (New York: American Association for Public Opinion, 1970), p. 14.

¹⁸ Described by Dr. Erik Peper in Jerry Mander, *Four Arguments for the Elimination of Television* (New York: William Morrow, 1978), pp. 209-210.

to be the fundamental reaction of the human nervous system to the medium.

Heartened by Krugman's demonstration of our basic hypotheses, we attempted to follow these through in terms of the inevitable reactions from the rest of the nervous system to this prolonged idleness of the frontal neo-cortex. These deductions, along with a fully documented and elaborate description of the basic hypotheses presented above, are to be found in *A Choice of Futures*. Briefly, they encompass the following:

1. Prolonged television viewing produces the same results as perceptual and sensory deprivation.
2. It is likely that lower structures such as the Reticular Activating System (which plays a major role in the sleep/wakefulness cycle) are directly affected also by habituation to a constant repetitive visual stimulus.
3. Color TV may introduce a new dimension to the argument insofar as color is predominantly received and processed in the right hemisphere rather than the left. (The natural response to color, as to radiant light, is passive and autocentric, not analytical.)
4. The old brain, that part which we share more closely with other mammals and lower order species, and that part which is tied more directly to emotional concerns, will be released from direct control of the higher centers during viewing with some quite predictable consequences for the viewer.

Without going into detail, it is possible to see how such a whole system change in activity can have widespread changes in the behavior of the individual as a whole. Dreaming, a biological necessity (even for those who claim not to be able to remember their dreams) is almost certainly affected by the balance of activity of new and old brain structures. Impulsivity and aggression after viewing, long expected to be a result of programmed violence, may well turn out to be an inevitable result of *viewing per se*.

Most recent analyses of learning by children who view such educational programs as *Sesame Street* show gains only in the area of "knowledge of," not "knowledge about," the difference between recognition and recall and a critical distinction for the development of skills and intelligent, purposeful behavior.¹⁹ We may be further depriving already educationally disadvantaged children by

¹⁹ Harvey Lesser, *Television and the Pre-School Child* (New York: Academic Press, 1977).

encouraging them to believe that they *learn* from TV. We may be putting at risk even the advantaged of our children if neural pathways essential to the development of spoken and written language and critical thought are not being fully developed. Gwen Dunn believed in her study that "children had learnt from television to ignore the human voice."²⁰

Adult viewers also have been shown to be confused, manipulated and deceived by their belief that TV news and documentaries can provide a well-informed or indeed adequate basis for playing a participatory role in democratic society.²¹ On the contrary, evidence points to television's role as a dissociative medium—more likely to produce isolation and withdrawal from community or societal concern (activity). The motivation derived from watching television is only to watch more television. *The Plug-In Drug!*²²

To summarize all this, we can perhaps do no better than the recent (1978) Australian Senate Standing Committee on Education and the Arts who inquired into the impact of television on the development and learning behavior of children. This Committee said, "If this hypothesis [that described above] were to be substantiated empirically, then it would help to explain many of the phenomena described by witnesses in relation to the effects of television on the development and learning behaviour of children. For example, if the medium has the effect of inducing a state of passivity or mental torpor in a child which can last for some hours after viewing, then this would explain the lack of concentration and creativity that many teachers have observed in their pupils in the classroom."²³ On the basis of such evidence, the Senate Committee then went on to recommend "that priority be given to the testing of the Emery's hypothesis concerning the neurophysiological effects of television."²⁴ To the best of our knowledge and despite our best efforts, *this has not been done* (although *A Choice of Futures* has been around since 1975, and much data has accumulated since then).

²⁰ Gwen Dunn, *The Box in the Corner* (London: Macmillan, 1977), p. 85.

²¹ M.J. Robinson, "American Political Legitimacy in an Era of Electronic Journalism; Reflections on the Evening News," in Cater and Adler; Thomas E. Patterson and Robert D. McClure, *The Unseeing Eye: The Myth of Television Power in National Elections* (New York: G.P. Putnam's Sons, 1976), especially pp. 129-130.

²² Marie Winn, *The Plug-In Drug* (New York: Viking, 1977).

²³ Senate Standing Committee on Education and the Arts, *Children and Television* (Canberra: Australian Government Printing Service, 1978), p. 47.

²⁴ *Ibid.*, p. 49.

But without further repetitions of the Krugman and the Mulholland studies, and perhaps variations of these designed to test the neurophysiological differences between film and television, it is unlikely that progress will be made in this area of knowledge. Neurophysiologists and others intimately concerned with this field of knowledge appear not able to tear themselves away from narrow disciplinary questions to contemplate that television viewing is a worthy object of study and one that may have repercussions for our culture, its assumptions, and its organization. The history of the status and the non-testing of our hypothesis in our own country (despite the recommendation of the Senate Committee) is a story in its own right and we cannot go into that here. Until such studies emerge, we still hold that the hypotheses and discussion published in *A Choice of Futures* offer the most comprehensive explanation of television phenomena in general that is available. Yet our hypotheses seem but a short step beyond the analysis made in 1935 by one of the most perceptive analysts of radio and film:

Proud of our inventions—photography, the phonograph, film, radio—we praise the educational virtues of direct experience. We believe in travelling, and use pictures and movies in the schools. But as we render man's image of his world immensely more complete and accurate than it was in the past, we also restrict the realm of the spoken and the written word and thereby the realm of thinking. The more perfect our means of direct experience, the more easily we are caught by the dangerous illusion that perceiving is tantamount to knowing and understanding.

Television is a new, hard test of our wisdom. If we succeed in mastering the new medium it will enrich us. But it can also put our mind to sleep. We must not forget that in the past the inability to transport immediate experience and to convey it to others made the use of language necessary and thus compelled the human mind to develop concepts. For in order to describe things one must draw the general from the specific; one must select, compare, think. When communication can be achieved by pointing with the finger, however, the mouth grows silent, the writing hand stops, and the mind shrinks.²⁵

²⁵ Rudolf Arnheim, *Film as Art* (London: Faber, 1958), p. 161.