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ABSTRACT

The viewer's perception of television pictures is different from the perception of pictures generated by other visual media. The research findings on the subject reveal that there are four major areas under which the study of television picture perception can be grouped. The "light through" as opposed to the "light on" theory suggests that structuring the television pictures as information itself, as light that reveals internal reality, will improve their aesthetic quality. The metamorphic versus the static theory suggests that structuring television pictures on the basis of continuous flow, continuous change, and transformation of time past, present, and future in the "now" will enhance the various applications of such pictures. The right versus left brain specialization theory suggests that structuring television pictures in accordance with the corresponding specialized functions of the left and the right hemispheres of the brain will have better effects on television viewers. The acoustic versus the visual spaces theory suggests that structuring television pictures in accordance with those visual and auditory stimuli that are better defined by either the left or the right hemisphere of the brain will arouse viewers' awareness of the total television message. (HOD)

THEORY AND RESEARCH ON THE PERCEPTION OF TELEVISION PICTURES

by
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INTRODUCTION

Empirical research on the composition of television pictures is disappointedly limited, compared to the broad usage and application of television (Metallinos, 1980). An important reason for this ellipsis is the slow development of television's own grammar, the language that accounts for the medium's idiosyncratic nature, analyzes its unique characterisitics, and underlines its specific features (Metallinos, 1982).

A major prerequisite inherent to the study of television's unique nature, characteristics and features, is the understanding of the neurophysiological and cognitive elements involved in the perception, and interpretation of television pictures (Metallinos, 1981). This prerequisite has not always been considered by the students of the television medium, but it is understandable. Many of the theories generated by research in television, considered the medium as a vehicle, feeding the hungry masses with all sorts of messages with cognitive-linear structure (Defleur and Ball-rokeach, 1975). Those studies generated the various theories based on the sociological effects of television pictures (Schramm and Roberts, 1971). However they have overlooked, for a long time, the other crucial part of the communication cycle, the process, which examines the ways pictures are constructed and perceived (Metallinos, 1978).

A shift from the media effects oriented research, undertaking mostly by anthropologists, sociologists and media observers, to the ones that look at television's own uniqueness and consider the neurophysiological elements in the perception of television pictures, has occurred among psychologists, neurophysiologists and visual communication scholars. Empirical studies of the perception of television pictures among people of different cultures (Deregowski, 1972, 1973), among adults (Salomon, 1978), and among children (Acker & Tiemens, 1981), have opened the path that leads towards the development of sound theories of television picture perception. The involvement of more visual communication media researches, with a broader and deeper understanding of related theories and research in other fields, is warranted. Yet one must be optimistic considering,that as small the involvement and the contribution of such researchers might have been, there are several areas in which advanced studies are able to generate such theories of television picture perception.

Henceforth, this study underlines and discusses four such theories, providing specific suggestions for practical application by the constructors and producers of television pictures.

THEORIES OF TELEVISION PICTURE PERCEPTION

A closer look at the research findings on the subject of viewer's perception and interpretation of television pictures, and one that includes such disciplines as psychology (experimental, perceptual and cognitive), neurophysiology and communication, reveals that there are four major areas under which the study of television picture perception can be grouped and examined. Each area constitutes a major theory of television picture perception generated by repeated observation tests and verification of polarized concepts located in the opposite side of the continuum. These four theories are:

1. "Light through" vs "Light on"
2. "Metamorphic" vs "Static"
3. "Right brain" vs "Left brain cognitive process"
4. "Acoustic" vs "Visual perception of space".

1. THE "LIGHT THROUGH" VS "LIGHT ON" TELEVISION PICTURE PERCEPTION THEORY.

> If we consider that the television picture - the substance by which the television picture is made - is nothing but light that provides visual information as such, our aesthetic consideration for the composition of television picture would have been better.

The television picture is made of light. It is light itself, not light reflected, as is the case with paintings, photographs and film pictures. Physically, perceptually and

aesthetically, the television picture is different. The physical energy exerted by the television picture, traveling in electromagnetic waves and reaching the human eye, is generated by a direct light source. It is like looking at a light beam head-on or at the sunlight straight through to get information. So the light is the information. Furthermore, the television picture light is generated by discontinuous points of lights which the human eye is forced to connect in order to "see" the television picture information and the brain is asked to "arrange" the unconnected dots in order to make cognitions-gestalts.

Based upon these neurophysiological properties of the television picture, speculators and researchers of the television medium have formed various concepts (constructs) pertinent to the study of television picture perception. McLuhan (1964, pp. 36-46), for example, considered the viewer's perception of the television picture as "cool" with a "low definition" requiring much "greater viewer participation" and involvement. Later on, McLuhan (1979, p. 6) named this unique property of television as "pointilism" explaining that:

> "Pointilism is a means of revealing the sculptural countours and volumes of a form by discontinuous points of light. It is the technqiue of the television image."

Peter Crown (1977, pp. 17-19), a physiological psychologist, has underlined yet another concept (construct) pertinent to the perception of the television picture, which he called "electronic fire place" often creating a "hypnotic feeling" in the viewer

which is totally unrelated to the actual content of the program. Nam June Paik, a pioneer in video art with international acclaim (Green, 1982, pp. 52-57), suggests that only the television picture is at once "information and light" and states that only the television picture is "glowing light" that is coming out, "sprouting out". In Paik's words (Green, 1982, p. 53):

> "Physically speaking it is like fire or sunshine. And the information is very strong because it is food for the brain. Therefore, together, information itself becomes a light source. The combination of light source and information is a very new element for a human being."

Herb Zettl (1978, pp. 3-8) claims that the television picture is perceived as an "internal reality". The television picture which is created by the manipulation of the electron beam can change the internal structure, the internal shape of things. Consequently, according to Zettl (1978, p. 4),: "Internal lighting no longer reflects external expressions but can, if used properly reveal internal reality." All these constructs, and perceptual concepts, constitute the so-called "Light through" vs "Light on" theory of television picture perception which warrants continuous verification and modification. Although these concepts lack repeated empirical verification, their appropriate application and consideration by the constructors of television images will enormously improve the artistic qualities of television pictures and - as a consequence - the entire television program. For example, it might well be, that the shift from the previously successful soap operas

and dramatic serials, which were utilizing mostly a theatrical approach to external or reflective television lighting techniques, to he more experimental, digital, computerized and laser beam based television programs, is in accord with our times. The blooming technology in computer games, computer based television pictures (Begley et al, 1982, pp. 44-47) allows us to speculate that the "Light through" approach to television imagery is perhaps closer to the idiosyncratic nature of television considering the strong effects it has on contemporary television viewers.

2. THE METAMORPHIC VS. STATIC TELEVISION PICTURE PERCEPTION.

> If we consider that the live television pictures are following a constant metamorphosis, rather than being unfolding and static, our aesthetic rules in constructing television pictures will improve considerably.

The element of motion is the characteristic ingredient to the media of film and television. However the different ways in which this motion creates change, distinguishes the television picture from those of the film. The television picture is the outcome of an electronic organical change, a flowing metamorphosis whereas the film picture sequence is the outcome of a mechanical, static change, flipping from one picture to another in equal divided intervals of time (Price, 1977, p. 94). A novel concept of the perception of live television pictures is that a "gradual transformation from within" is happening. As Price (1977, p. 94) describes it: "With electronic change

of an image, we watch a gradual transformation from within, as if the form on screen were growing by itself." The perception of a television sequence, in which the action is depicted and related in terms of cuts, superimpositions, chromakeys, wipes, disolves, video feedbacks, etc. (all of which are happening "now", "live") is much more metamorphic in its perceptual process than film or slide sequences. Scanning over a still picture or reading the lines in a book is a static linear, information process of the mind. Whereas looking at a creative television program all our senses take part in the process and the entire world is changing, growing, shifting and expanding. The feelings of such metamorphic transition and one's involvement are by far different, deeper and greater than the ones created by reading static and monomorphic images (Williams, 1965, pp. 33, 45, Penn, 1971, pp.

Additional concepts on the metamorphic theory of television picture perception are those of Malik (1978, pp. 9-13) who recognized the "parametric movement of the video image", Zettl (1978, pp. 3-8) who identifies the metamorphosis of the television picture as a "continuous fleeting constantly regenerating mosaic" and Toogood (1978, pp. 15-19) who sees the concept as "providing feelings of immediate spontaneity". These perceptions of television pictures await empirical investigation and verification as to the exact effects they have on viewers.

The perceptual theory that underlines the metamorphic

quality of television pictures can easily put to practice by television producers. For example, when a narrator explains past events (such as narrating a documentary or delivering the news) there is no reason which prohibits the simultaneous broadcasting of the "past event" described in one picture or portion of the TV screen, the "present event" unfolding in another part of the same television screen, and the "event becoming or projected" in yet another. Such complex and multiple time presentations are becoming more and more necessary due to the complex situations we live daily. As it is unnatural to live and experience one event at a time, so it is no longer acceptable - for television constructors - to depict life, linearly, statically, stripped from its complexities and unmetamorphorized. The constant flow and picture change we experience when we are viewing computerized television designs, digital television pictures, video synthesizer effects, etc. are due to the metamorphic nature of television. Television programs that take into consideration these concepts and apply them, enhance their chances for success.

3. THE RIGHT VS LEFT BRAIN SPECIALIZATION IN TELEVISION PICTURE PERCEPTION

> If we are to establish the compositional principles of television pictures, we must not ignore research findings stemming from the neurophysiological studies on the unique functions of the human brain.

The research findings of the unique functions of the

brain (Geschwind, 1979, pp. 180-199, Needman, 1973, Ornstein, 1973, 1972, Kimura, 1973, pp. 70-78), have helped to develop what are now known in television production research as "the field forces theory" (Metallinos and Tiemens, 1977, pp. 21-33) and "psychovidistics" (Corcoran, 1981, pp. 117-128).

What the split brain theories suggest is that the hemispheres function in special ways and have come to be named accordingly. The left hemisphere is called the major hemisphere or the "rational" one and it is specialized in verbal process, it provides detail codes with verbal description, it analyzes overtime, it notes conceptual similarities, etc. (Wolfson, 1981, p. 3). The right hemisphere is called the minor or "intuitive hemisphere" and it is specialized in spatial orientation, general observations, perceives from codes in images, it synthesizes overspace, it notes visual similarities, etc. (Wolfson, 1981, p. 3). The visual synthetic process and the spatial coordinate system of the left hemisphere are found to be poor, whereas the right hemisphere is found to be poorly designed for such activities as temporal analysis, abstract conceptualization, detailed figure detection, linguistic coding and analysis, etc.

These findings have a profound effect in the study of television composition and they have been the basis for the establishment of the field forces theory. This theory states that the confined space of the television screen is a new living space (much different from the unbounded space of the visual world) in which objects and subjects of the visual world are clarified

and intensified according to the restrictions imposed and rules dictated by this new visual field (Metallinos, 1979, pp. 205-214, Zettl, 1973, pp. 100-147, Arnheim, 1965, pp. 1-32). It is implicit, although not quite verified, as yet, that the principles of composition of the television pictures should coincide with the findings of the hemisphere specialization research. For example, the placement of people, props, sets, letters, etc. within the left or the right sides of the screen should be in accordance with the left and right brain specialization. Placing an actor - who recites a poem (verbal activity) on the right side of the screen, while the left is occupied by an illustration (visual activity) of the poem's content, seems to be more appropriate. The asymetrical functions of the brain seems to support the asymetrical placement of visual and auditory elements within the concentrated field of the television screen. Yet very little application is being found in commercial television productions in North America.

Another concept of the brain specialization theory of television picture perception is the so-called"psychovidistics", a take-off of the psycholinguistic theory of picture perception. The psychovidistics theory states, in effect, that there is a connection between media and thought, as it is found between language and thought. Therefore, television's zooms, fades, feedbacks, slow motions, dissolves, wipes, etc., are all codes that can be cognitively internalized by a receiver (Corcoran, 1981, p. 126). The psychovidistic has involved several scholars

of cognitive psychology, (Winn, 1982, pp. 3-25) the visual arts (Dondis, 1973), film (Metz, 1974, Fiske, 1979, pp. 51-57) and television (Zettl, 1978) in underlining the components of the television picture and the processes of cognition of visual images by the brain. As the film composition and aesthetics was improved by the study of semiotics, so will video. Its composition will gain by the practical application of the concepts of psychovidistics as dictated by the unique functions of the brain.

The foremost suggestion to the television producers - that stems from the left and right brain specialization in the perception of television pictures - is to consider which visual and auditory elements are most appropriate for each of the sides of the visual field, the television picture screen, and to compose accordingly.

4. THE ACOUSTIC VS VISUAL SPACE PERCEPTIONS IN TELEVISION PICTURES

> If we are to improve the aesthetic quality of television pictures, we should consider the research findings and theories stemming from the studies of visual and auditory perception.

Both sight and sound are interwoven to the television picture. However, while the former has drawn all the attention of the researchers and the constructors of television messages, the latter has barely been acknowledged. In fact, for some observers of the electronic media (Carpenter & McLuhan, 1960, pp. 65-70, McLuhan, 1974), and sound ecology researchers(Schafer, 1977), western man has paid greater emphasis to the visual

communication and visual space explanations rather than auditory communication and acoustic space explorations.

Theories of visual perception acknowledged by the television scholars and researchers centered around such important visual communication variables as image size changes and depth cues (Acker and Tiemens, 1981, pp. 340-346), image placement and credibility (McCain et al, 1977, pp. 35-46), movement and distance placement and editing (Baggaley, et al, 1980), image shape, forms, proportions, directions, etc. (Metallinos, 1981), color TV picture vs. black and white (Scanlon, 1970, 366-368) and cultural preference of color (Peherson, 1982, pp. 43-53). Compared to the vast number of visual communication factors awaiting verification, these studies are minimal. For example, the entire area of movement perception as it relates to the viewer's reaction of primary, secondary and tertiary notions of visual elements within the visual field, needs to be fully explored (Haber, 1968, pp. 102-116). Also, studies exploring the variables involved in the viewer's eye movement while watching diversified television pictures, are limited, although such studies have been conducted in the field of perceptual psychology (Sander, et al, 1978). Research dealing with variables involved in the perception of forms, shapes, patterns, designed for their appearance on the television screen are needed. Although such research is found extensively in the visual arts and design (Taylor, 1964, Arnheim, 1969, McKim, 1980), in television composition they are scarce. Although perceptual psychologists have

pioneered research in the area of perception of objects in space (Haber, 1968, pp. 435-531), we, in the field of television staging techniques have failed to relate them to TV composition. Important theories in television composition will not be established without our knowledge and application of the findings of visual perception psychologists.

Theories of auditory perception which have been acknowledged by television sound researchers, have been centered on such important variables as: impact of audio in preparing instructional material in education (Dworkin & Holden, 1959, pp. 383-385), preferences of stereophonic over monophonic music, in general (Morgan & Lindsley,1966, pp. 133-143), preferences of multi-media channel presentation (Hartman, 1961, pp. 24-39), effects of stereophonic vs monophonic television sound (Kaller, 1980, pp. 184-203), and acoustic and visual spaces, differences and dichotomies (Nevitt, 1980-81, pp. 9-42).

Obviously, we need to explore and relate the theoretical concepts and research findings of auditory perception scholars to television picture composition. While, for example, the area of acoustic vs visual perceptual factors are well defined, and dealt with by psychologists (Murch, 1973, pp. 154-165); their application to the harmonic balance of visual and auditory elements of television pictures has not been explored by television composition researchers. Those two spaces seem to be found in the opposite side of the perceptual spectrum (Nevitt, 1980-81, pp. 24-42). Yet we tend to overlook this dichotomy when we structure television programs. The area of left vs.

right brain perception of sounds, as it relates to television audio set-up techniques (for maximum sound reception of television messages) has not been explored (Kimura, 1967, pp. 163-178). In the area of organization of auditory perceptions (Murch, 1973, pp. 154-165), with such specific variables as "pitch perception", "loudness", "tonal quality of sounds", etc., as they relate to television picture sound combinations (Zettl, 1977, pp. 348-379), should be examined closely if we are to establish the rules of television composition.

In psychology and neurophysiology, theories and research in visual and auditory perception variables are well advanced. In visual communication media, and particularly television, such theories and research are still lacking. What one can suggest to the producers of television pictures is that even the placement of visual and auditory materials (within the concentrated space of the television screen) in accordance with the specialization of the acoustic and visual spaces, will enhance enormously the overall aesthetic quality of the television message.

SUMMARY AND CONCLUSIONS

The arguments explored in this study centered on the developed theories and research in the perception of television pictures, and their practical application by television producers. Four such theories were examined as follows:

1. The "Light-Through" as opposed to "Light-on" theory of television picture perception; it suggests that structuring the television pictures as information itself, as light that reveals internal reality, sprouting out towards the viewer, will improve their aesthetic quality.
2. The "Metamorphic" as opposed to "Static" theory of television picture perception; it suggests that structuring television pictures on the basis of continuous flow, continuous change and transformation of time past, present and future in "the now" will enhance the various applications of such pictures.
3. The "Right" vs "Left brain specialization" in television picture perception theory; it suggests that structuring television pictures in accordance with the corresponding preferences - dictated by the specialized functions of the left and the right hemispheres - will have better effect on television viewers.

4. The "Acoustic" vs "Visual Spaces" perception in television pictures theory; it suggests that structuring television pictures in accordance with those visual and auditory stimuli that are better defined by either the left or the right hemisphere of the brain, will arouse viewers' awareness of the total television message.

It is clearly indicated by the arguments put forward in this study that:

1. The lack of empirical research in television picture has handicapped the development of strong theories in the field.
2. The development of research and theory building in the perception of television pictures is greatly dependent on the understanding of neurophysiological and physiological processes involved in the perception of television pictures.
3. Such a development should always coincide with the technological advancements of the visual communication media, but this is seldom the case.
4. The strength of the theories of television picture perception lies not only on the multiplicity of visual and auditory factors explored, and verified, but also on the television researchers' willingness to acknowledge, familiarize and understand similar research in related fields.

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