

## **Understanding McLuhan**

### An explanation McLuhan's Thoughts Regarding the Effects of Technology on Perception

Marshal McLuhan's observations about technology are particularly pertinent to engineers and designers if they are to grasp the broader implications of the designs they create. They may also provide a clue as to where creativity might be effectively employed next. McLuhan presents his ideas in *The Gutenberg Galaxy* and *Understanding Media*. While enjoyable and provocative reading, they are difficult to assimilate because of the sheer density of new ideas presented. This paper summarizes his ideas as I currently understand them. An outline provides an overview and structure, which is then expanded in order to explain these ideas by means of illustrative examples.

- 1. Every culture has a preferred mix of sensory usage.**
- 2. Each creation of man (a media or technology) extends a sense or other aspect of man's body.**
- 3. Each new technology changes the culture's relative mix of sensory preferences.**
- 4. These sensory changes are more fundamental and extensive than the actual content of the media, thus McLuhan's expression: "THE MEDIUM IS THE MESSAGE"**
- 5. Each change in technology and in turn, in human capability, involves a tradeoff. Some things are lost as others are gained.**
- 6. These tradeoffs tend to promote or discourage the connection between man and his environment.**
- 7. Technologies characterized by high resolution ("Hot Media") tend to encourage disconnection with the environment, while ones with low resolution ("Cool Media") tend to promote connection.**
- 8. Mechanical technologies tend to be "hot" while electronic ones tend to be "cool."**
- 9. These effects of media on man's nervous system tend to be invisible except in times of rapid change.**
- 10. Art records the perceptual state of its culture and provides an early warning system for changes that are about to occur.**

### **1. Every culture has a preferred mix of sensory usage.**

Every human is endowed with a variety of senses that may be used to perceive reality (visual, auditory, tactile, kinesthetic, olfactory, etc.). At any given moment, an individual relies on these senses in different proportions. We may think of these proportions in terms of sensory ratios. To take an extreme example, a blind person relies much more on auditory and tactile information than the sighted person. Furthermore, these senses are developed to a much higher degree of sensitivity than is normal for the sighted person.

Less obvious, but equally true is the fact that every culture provides all its members with a preferred sensory mix. That is, some cultures place more value on sight, others on hearing or even smell. Westerners place more value on visual information. So-called primitive people tend to trust their hearing more. For example, if a noisy group of people indicates something is obviously happening near by, we might say to a friend, "Lets go see what we can hear." An Eskimo would say, "Lets go hear what we can see." These statements appear silly when we scrutinize them, but each clearly indicates the preferred sensory mode.

### **2. Each creation of man (a media or a technology) extends an aspect of man's body.**

A hammer is a tool that extends the human hand. Glasses extend the eyes. Clothing is an extension of the skin that allows us to operate comfortably in a wider temperature range. McLuhan uses the word media as a term that includes all of man's technology, tools, and cultural inventions. In this usage, language, books, watches, and cars are all media. Each extends part of our body: vocal cords, eyes and memory, biological clocks, and legs and feet.

### **3. Each new technology changes the culture's relative mix of sensory preferences.**

When a culture adopts a new technology, each member's sensory ratio is irreversibly altered. When we wear clothing, our skin is cut off from the tactile and temperature information we could normally be learning from our environment. Our perception automatically relies more on our remaining visual and auditory senses. Because our body is now isolated from all this information, we are also less distractible. This allows us to easily accomplish tasks that require concentration, like numerical problem solving. Clothing saves 40% of the energy required for staying warm—energy that can then be allocated for other uses in our body like walking and talking.

### **4. The resulting effects of these changes are more fundamental and pervasive than the actual content of the media, thus the expression: "THE MEDIUM IS THE MESSAGE."**

Continuing this example, clothing appears to be a simple technology, but its impact on our existence is profound. It completely alters both our body and our culture. It makes little difference whether the clothing we put on is a business suit or jeans and a sweater. In other words, the basic effect occurs no matter what the "content" of the media is. Cars change us no matter where they take us, books change us whether they contain literature or trash, and television changes us irrespective of the quality of the programing. In McLuhan's words, "the real message of a medium is the change in scale, pace or pattern which it introduces into human affairs."

### **5. Each change in human capability involves a tradeoff. Some things are lost as others are gained.**

None of these effects are neutral. Nothing is simply added on, leaving everything else unchanged. Technological change isn't a take it or leave it proposition. It isn't possible to select just the good parts of an innovation and ignore the rest. Each change is total and

irreversible. Each new change tends to modify the abilities of the entire culture. Shoes allow us to walk further and faster, but they also involve a loss. In a delightful autobiography by Forest Carter entitled *The Education of Little Tree* I found the following passage describing the first pair of moccasins made for him by his Grandmother:

When she had finished, she soaked the moccasins in water and I put them on wet and walked them dry, back and forth across the floor, until they fitted soft and giving, light as air.

I could feel something more, as Granma said I would. Mon-o-lah, the earth mother, came to me through my moccasins. I could feel her push and swell here, and sway and give there...and the roots that veined through her body and the life of her water-blood, deep inside her. She was warm and springy and bounced me on her breast, as Granma said she would.

We can see from this quote that moccasins have a different effect than shoes. The wearer of shoes is cut off from more environmental information than is the wearer of moccasins. And this loss involves more than just the tactile information that comes through the soles of the feet. Moccasins are quiet. They encourage a greater auditory involvement with the environment. The wearer of shoes can pave the ground in order to walk even faster (and noisier) and feel no remorse. The wearer of moccasins would have never invented concrete pavement in the first place.

**6. These tradeoffs tend either to promote or discourage the connection between man and his environment.**

As we can see from this example, shoes reduce the awareness of a person to his surroundings. Likewise, clothing makes us more independent of the environment, that is, it tends to cut us off from information that surrounds us. This situation is even more complicated than these simple examples suggest.

McLuhan spends a lot of time talking about books, as they constitute one of the most radical technologies that man has ever invented (*The Gutenberg Galaxy*). Books are major disconnectors, both in use and function. In use, deciphering books requires tremendous concentration. Literacy requires downplay the importance of every other source of sensory input. As an example, missionaries the world over found that they were unable to teach natives to read unless they dressed them in Western clothing. In function, books store knowledge, and become the source of information that might be gathered in other ways. We tend to trust what we read even more than information learned first hand. Books become the authority; in fact, books create 'author'-ity. They also create private points of view, and the whole concept of authorship and individual thought. We can read about ideas in private, and we can express private ideas. Books create individuality, which is the supreme disconnector of man from fellow man.

**7. Technologies characterized by high resolution ("Hot Media") tend to encourage disconnection, while ones with low resolution ("Cool Media") tend to connect man with his environment.**

"Hot" media is the term McLuhan uses for media which tend to disconnect man from nature. Hot Media are characterized by having high resolution while "Cool" Media are characterized by low resolution. Hot or high resolution means that the information contained in the media is complete and explicit. The viewer is not required to bring much information or imagination in order to interpret it; everything is controlled and provided. Books are hot, as in 'hot off the press.' A book of poetry on the other hand, is relatively cool—especially if it needs to be read aloud. High quality photographs are hot. Newspaper wire photos require a great deal of deciphering on the part of the viewer, and are therefore cool.

Jazz provides a means to remember and understand the word “cool.” To play jazz, or to appreciate it, requires being “with it”, “being there”, “open to the vibrations”, being “cool.” The player must be totally aware of what all the other players are doing, and how the audience is reacting. There are no definite rules to follow; the interpretation must be improvised by the artist.

McLuhan’s word play tends to get in the way here—the expressions “Hot” and “Cool” are particularly awkward. Earlier in this century “hot” meant involved, “cool” meant detached or distant. Since the sixties when McLuhan wrote, being involved is increasingly swinging back to this earlier “hot.” The meaning of high and low resolution is clear. Unfortunately, the anthropologist Edward Hall uses the expressions low context (high resolution) and high context (low resolution) to convey the same concept.

## **8. Mechanical technologies tend to be “hot” while electronic ones tend to be “cool.”**

McLuhan made another important observation about technology, namely that mechanical technologies tend to be high resolution or hot whereas electronic technologies tend to be low resolution or cool. Thus mechanical technologies tend to promote disconnection from the environment whereas electronic ones tend to connect. To take the book again as an example, we see that it is a mechanically duplicated product that is mass-produced one at a time, one after the other, over and over again in an infinitely repeatable way. In this it is just like the individual words that make up the book, and for that matter, the individual type that is sequenced one after the other, over and over again in a linear discrete way. Alphanumeric print representing our relatively linear western languages lends itself to depicting a very logical, uniform, mechanical world divorced from the reader. The detached observer created by books made modern science possible. It encourages reductive thinking, that is understanding things by breaking them down into smaller and smaller units. Interchangeable type led directly to the invention of differential calculus, which describes reality mathematically in terms of increasingly small bits of information repeated one at a time, one after the other, over and over.

McLuhan suggests that electronic products tend to be cool and more involving. For example telephones are relatively low resolution: they require great involvement with the speaker on the other end of the phone, imagining all the missing visual contextual clues that are so useful in comprehending spoken language. McLuhan also has much to say about the poor signal contained in television and how this necessitates much more interpretation and greater involvement on the part of the viewer.

## **9. The effects of media on man tend to be invisible except in times of rapid change.**

A medium is something that surrounds us. By definition, media tend to be so obvious that we are unaware of their existence, let alone their effect on our nervous system. McLuhan suggests that if fish were trying to discover the nature of their universe, it would take a long time for the fish turned scientist to discover water. He points out that new technology changes everyone whether or not he is personally involved. For the past twenty years my family lived without television. We may have missed the content, but it still impacted our lives.

When change becomes radical and fast, we can become personally aware of the changes to our nervous system caused by new technologies. For example, three recent ones, personal computers, fax machines and portable telephones, have all radically changed our perception of time. I clearly remember how thrilled I was with the ease of use of my first Macintosh 128 computer, and how quickly I became frustrated by how “slow” it was. Then again, the relief I felt when I upgraded to a 512, only to feel it rapidly slip away. Ditto with the Mac II. Our awareness of time is now measured in nanoseconds. We are increasingly frustrated by any pause in our life. They all seem to ‘waste time.’

## **10. Art records the perceptual state of its culture, and provides an early warning system for changes to come.**

Until recently, art provided the only record of how different cultures and societies from around the world perceived reality. It was only in the nineteenth century that technological devices capable of recording this information in other ways have become available. The art of previous times should be of particular interest to anyone interested in the effects of technology on changing life.

Artists are particularly sensitive to their perceptions; in fact, it is their job. For this reason art also provides an early warning system for changes which are underway in their culture. In 1977 my four-year-old son saw *Star Wars*. He immediately became comfortable with the idea of talking to machines. By the time he grew up cars and photocopying machines were talking to him just as he expected them to. Furthermore, he isn't at all surprised that they are as obnoxious as C3PO.

To give one fascinating example of art as an early indicator of what is to come, consider the connection between perspective and the development of print. Brunelleschi invented perspective around 1413, just a few years before Gutenberg invented the printing press. In terms of their effect on man's nervous system they are similar inventions. Perspective requires an individual to become fixed in space, close one eye and to stare in one direction, i.e., have a fixed point of view at a particular instant in time. It also requires ignoring information in the peripheral vision in order to avoid distortion. These requirements are exactly the same as the viewpoints fostered and necessitated by books. Authors do the same thing, and record their unique viewpoint with similar linearity.

Perspective also anticipated developments in math and science. Prior to perspective painting, the zero was only used as a placeholder. By creating vanishing points, that is, the concept of infinity converging on a point (on zero), perspective drawing fostered the invention of calculus. And in creating a uniform space at a fixed time, it created the mental framework necessary for 'objective' science. It is important to remember that science *was* drawing until alternate viewing and recording devices became available. All of the initial scientific instruments (telescopes, microscopes) required skillful observation and drawing. It was only in the last century that photography replaced draftsmanship as the accurate recorder of reality. Indeed, the camera freed artists to explore other, more personal, aspects of perception. The result was a series of aesthetic inventions (impressionism, fauvism, cubism, etc.) that anticipated the contemporary work of scientists like Einstein and Heisenberg.