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TELEPRESENCE

The prefix tele- has been overused throughout the 20th century to mean “at a distance”. Categorically, tele is the prefix for any communication medium we are so accustomed to using. The telescope was possibly the first instrument used for vision across distances. The telephone is for speaking at a distance, the television was originally (and still is) used for live vision at a distance. These instruments of telecommunication serve to transmit signals and symbols either through electrical signals or the magnification of light through a lens. A message travels from the source through a medium and is reproduced as a sign/symbol at the other end. That is, the viewer merely sees and hears the representation of objects through a limited field. Modern telecommunications replace and extend physical reality through virtualization.

Walter Benjamin notices this phenomenon in his landmark essay “The Work of Art in the Age of Mechanical Reproduction”, as he writes “Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be” (Benjamin, qtd. in Harrison & Wood 521). Benjamin goes on to define this unique presence as the object’s “aura”. Most telecommunication technologies serve to undermine this notion of aura in an object. You do not hear the genuine voice of the person speaking into the telephone, but an approximation of that voice heard from a speaker. In the telephone, this reproduction of the human voice is now the electrical murmuring of technology. Similarly, the image of Saturn seen through an astronomical telescope is not the real thing, but a modifiable reproduction (or symbol) of the night sky.

Is there anything to say about an original work of art anymore? I must travel to the Philadelphia Museum of Art to stand before ‘The Bride Stripped Bare By Her Bachelors, Even’ by Marcel Duchamp. Whole volumes have been written about the complexity of this one work of art, many scholars have stumbled to understand it’s meaning. Yet, the photographs or descriptions in books can not live up to the original’s brilliance. This phenomenon of the scale is most often exemplified by the public’s idea of how large the famous painting by Leonardo, ‘The Mona Lisa’, actually is. ‘The Mona Lisa’ may be the most reproduced image in the world, but ask anyone on the street how large the original is and they will probably guess the size incorrectly.

Most communication mediums, be it a painting or the telephone utilize two human senses: the visual and the auditory. Most reproduction techniques are familiar either with one or the other sense, or both in the case of cinema and video.

There is one form of telecommunication that can possibly be set aside from the rest: the telegraph. In his description of the *History, Theory & Construction of the "Electric Telegraph"*, Prof. Tom Perra remarks:

After the discovery of electricity, wires were stretched from one point to another and an electric current was either allowed to flow through the wires or broken by a switch called a telegraph key. The electric current was first used to make marks on a paper tape and later, it was used activate a "sounder" which made clicking sounds. The short and long times between the clicks could be decoded into letters from the alphabet (Perra 1).

The sender transmitting the message in morse code must strike the telegraph at precise intervals, these strikes travel through a wire and produce a physical response at the receiving end (similar to the action at the source). The person who strikes the telegraph is remotely producing an action at the receiving end, the person is telepresent. This is precisely what separates the telegraph from other telecommunication technologies in the 20th century. The sense of touch is the primary conduit for communication. Lev Manovich defines what he calls "teleaction" as, "representational technologies used to enable action, that is, to allow the viewer to manipulate reality through representations" (Manovich, 165). The precursor of the telephone and television was interested most in the tactile sensation over distance. There are several interactions between individuals and technology that can be labeled as telepresence.

When someone types the address <http://www.google.com> into a web browser, he has begun communicating with the servers that host Google. When anyone "surfs the web", they initiate communication from their computer to a remote server. A server is basically a computer designed to host a website. A server is designed to allow incoming and outgoing communications on a large scale, it is essentially a replacement for switchboard operators of the bygone telephone era. When anyone enters information into a form on a website, that information is stored in a database on a remote server. In effect, that user has remotely changed aspects of that server from a distance by manipulating the information in the database. This is primarily a telepresent modification of text.

A potentially more revealing act of telepresence on the Internet is found in the use of controllable webcams. Through a Java applet, a user controls a 360 degree dome closed circuit camera device. One such device can be found at the County of Yuma, Arizona's website: <http://www.yuma77.tv/webcam/index2.html>. A list of presets allows the novice to lock onto specific points of interest in the video frame: a thermometer, the traffic on Interstate 8, the marquee of the town cinema. The more experienced user can utilize sliders found alongside the horizontal and vertical axis of the video frame. These sliders will adjust the appropriate angle for the lens of the video camera. If more than one online participant wants to control the webcam, they are placed in a queue.

The controllable webcam is a robotic extension of the user's touch. The user now has a physical extension beyond immediate reality via electrical conduit and robotic prosthesis. Some webcams feature microphones, allowing for the integration and virtual replacement-extension of three human senses. This level of controllable surveillance is considered to be a suitable replacement for actual reality. Controllable webcams can also be utilized to anticipate the conditions of a scene before arrival. This method of predilection was once thought impossible (or relatively primitive through the use of maps), a portal to another place and time often fantasized in science fiction.

The telepresent control of robotic devices via real-time video feed presents an interesting tear in the fabric of traditional space-time relationships. Paul Virilio details this phenomenon in his essay "The Vision Machine":

The three tenses of decisive action, past, present and future, have been surreptitiously replaced by two tenses, real time and delayed time, the future have disappeared meanwhile in computer programming, and on the other hand, in the corruption of this so-called 'real' time which simultaneously contains both a bit of the present and a bit of the immediate future (Virilio, 66).

The sociocultural sense of time is completely eroded by the transmission of real time video over distance. This puncture in the metaphysical concepts of space-time is fundamentally altering our concepts of what Virilio calls the "actual-virtual". Distance is completely erased, making the reach of humanity seemingly infinite. Suddenly the interest lies not in the actual thing, but in the representation of the actual. Benjamin's aura of physical objects is replaced by a reproduction that is becoming all too real.

An adventure into the high tech of remote controllable robotics leads us to NASA's Mars Exploration Rover Mission.

Sent from the scientists and engineers on Earth, the command sequence tells the rover what targets to go to and what science experiments to perform on Mars. The rover is expected to move over a given distance, precisely position itself with respect to a target, and deploy its instruments to take close-up pictures and analyze the minerals or elements of rocks and soil (NASA).

Telepresence allows scientists to reach beyond the confines of Earth's atmosphere. This is particularly significant from previous examples since the environment under investigation is completely foreign to human reality. Geologists must rely on the synthetic instruments on the robotic rover to ascertain the composition of rocks and minerals on the surface of Mars. There is a strict dependence on the technological confines of the robotic instrumentation. This research at such an astronomical distance can be interrupted by events of cosmic proportions, such as Mars' orbit taking the planet behind the Sun. This amount of electromagnetic radiation will sever communications for an interval with the Mars Orbiter, and in turn, the rovers. "The

rovers can only transmit direct-to-Earth for at most three hours a day due to power and thermal limitations, even though Earth may be in view much longer” (NASA). Even though communication between scientists on Earth and the rovers occurs at substantially long intervals, the rovers travel and analyze scientific data over vast distances. Real-time influence is not necessary for telepresence to occur.

One example of a telepresent art piece is found in Rafael Lozano-Hemmer’s ‘Vectorial Elevation’, a public arts project for the Zocalo Square in Mexico City during the Millennium Celebrations from December 26, 1999 until January 7, 2000 (Dewdney & Ride, 195). This massive light display utilized eighteen searchlights that were positioned on rooftops around the perimeter of the square. Through an online graphical interface, users could position the lights according to a design they fashioned. “These ‘fingers of light’ made designs that ranged from grids to cathedral-like domes over the city square and which appeared to change with the fluidity of a choreographed performance” (Dewdney & Ride, 197). The lights were controlled by a user who created the designs via website featuring a 3D Java graphical interface. The user could view the proposed design from any point in the city square from the 3-D representation found in the Java applet. In an interview, Hemmer remarks about how the viewers in the square reacted to the physical actions of the online participants:

The physical response to the way you react with the work affects your perception in an active way. Your body reacts to it and to an extent that is exactly what is happening in ‘Vectorial Elevation’. When you are standing under the canopy of light, the entire field of view overhead is in motion. You feel a sense of motion, you feel a sense of displacement or dynamism, and those feelings are active so there is nothing passive about just contemplating.

The online participants actions invigorate the inhabitants of the city square remotely. It is through this process of telepresence that we can seemingly retain, if not amplify Benjamin’s “aura” of objects, that is, the movements of the mouse cursor are amplified and projected through the movement of the 18 searchlights in the city square. This relationship of the actual-virtual is systemically altering the relationships between the individual identity and the social network of the body politic. No longer must a political demonstration be limited to a protest in the city square. Online protesters of the future will hijack the electronic billboards in Times Square remotely, electronically rallying the public who are physically inhabiting the space.

Virilio once wrote, “Just when we were apparently procuring the means to see further and better the unseen of the universe, we were about to lose what little power we had of imagining it” (Virilio 4). The real time alteration of physical objects over a distance reveals a growing disconnect between human perception and the actual nature of things. Benjamin’s aura of objects is totally diminished as reality suddenly becomes limited to the modifiable signs and symbols in the graphical user interface. Telepresence is the predilection of a future where most human interaction occurs over a digital divide. It has already occurred within the 20th century, where representational technologies striving for realism (photography and cinema) have replaced human interest over the actual physical reality. Perhaps Virilio is correct when he asserts “our society were sinking into the darkness of a voluntary blindness, its will to the digital power finally contaminating the horizon of sight as well as knowledge” (Virilio 76).

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