A PRACTICALLY REAL FANTASY

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American culture is one that relies on the notion that "seeing is believing". This idea is in nearly every aspect of conversation, eg. "see eye to eye" or " I see what you are saying", and according to Alan Dundes, social scientist, sight is first in the list of the five senses (Spradley, 15). People rely on the sense of sight to perceive the world around them. The other senses support what a person sees by enhancing the visual. So, logically what people see is what they believe to be true - a reality. On a philosophical level, however, reality is not so clearly defined. While there is a practical reality that people must assume in order to perform basic tasks of survival, the question of reality is not that basic. Every time an issue is looked upon from a different perspective, or every time an artist picks up a paint brush, a film maker a camera, or a writer a pen, reality shifts along a contour of different belief systems. This is the philosophical searched for truth or a true reality. The artist who bases their art in a practical reality further complicates the concept of reality.

This whole idea of a creative reality vs. a practical reality needs to be examined because of the new prospects that now exist through advancements in technology. Fooling the senses, especially the sense of sight, can produce the effect of simulating a "practical" reality, and is very much technically possible. This simulation is known as virtual reality because the user can be virtually in any situation doing anything they've ever dreamt.

The virtual world is a world of computer generated, animated graphics. The user manipulates interfacing devices coupled with a computer through the senses of sight, hearing, and touch. Presently virtual reality is not very advanced. Yet, it soon will become part of society. Thus, some decisions need to be made as to what path to take with this new technology. As Larry Hickman, philosophy of technology writer, states when referring to emerging technologies:

We cannot bring up our children as though they were ignorant of technology, as though they had not been introduced from the first into the technological world. If we tried to do that, we would make total misfits of our children, and their lives would be impossible. They would then be highly vulnerable to the powers of technology. Yet, we cannot wish them to be pure technical experts making them so well fit for the technological society that they are totally devoid of what has until now been considered human (357).

In this paper, the split of personality between technology and humanity which is at the center of every virtual reality system will be examined.

What separates humans from other animals is the ability to think at a higher level of consciousness. John McDermott, philosopher and professor at Texas A&M University, says that there is a spiritual side to humans that experiences events and shapes our lives (Hickman, 152). Virtual reality appeals to this spirituality of the human conscious. Jose Ortega, Spanish philosopher, agrees with McDermott that there is a spiritual plane with whom man chooses to relate. Ortega goes on further to state that the body itself, existing with food and water, physically is not enough for man. Ortega believes that humans are always unfinished. Virtual reality helps man explore to the greatest extent this spiritual plane. A quest of many humans as they grow older and wiser is to lead a full life - to reach this metaphysical plane.

Humans differ further from other animals, also, in that they utilize things to become what they aspire. The interfacing devices used in virtual reality are in a practical reality, but the displays appeal to a higher level of consciousness. Virtual reality could possibly change what it means to be human. Although man's physical needs may stay the same, his/her spiritual needs could surpass anyone's imagination.

Virtual reality is three-dimensional computer displays that, as Howard Rheingold, virtual reality expert, states "are able to sense our needs and respond to them" (113). Virtual reality allows the user to interact with a virtual environment just like they interact with the natural environment. The user is able to walk around, look around, and use their hands to manipulate objects (Rheingold, 70). Virtual reality is, in effect, total immersion into an artificial world where you can and usually do things you never thought possible. The human-computer interface occurs through head tracking, a head-mounted display (HMD), and gesture-tracking devices to form a virtual interactive environment workstation (VIEWS) (Tello, 292).

The reason that virtual reality is so effective is that it plays off of the fascination humans have with sight. Therefore, the head-mounted display is the center attraction in virtual reality. The present day visor-like device contains stereoscopic displays. Stereoscopy is presenting different views to each eye in order to give the illusion of three dimensions. This is due to the fact that both eyes see slightly different things. Head tracking devices are also present in HMDs. Head tracking means, according to the technology writer for *The Economist*, that when "you move your head to look around, the image moves just as it would in [a 'practical'] reality: look left and it shift right, and so on" (The Unreal Thing, 107).[1]

Although the visual displays are most important, HMDs include more than just the visual display. Since the other senses intensify whatever the user sees, HMDs also include earphones for three-dimensional sound cuing. Three-dimensional sound is possible, as Rheingold points out, through "convolvotron...a specific position in acoustic space that matches the operator's position in visual space, and to locate and relocate auditory objects" (150). Gene Bylinsky, a technology columnist for *Fortune* magazine explains that the head tracking in terms of the computer occurs through an elec-

tronic device "on the headset [that] transmits the changes in the orientation of your head to the computer" (138). This helps the user navigate through virtual space by telling the computer the user's position, and then the computer updates their position in the displays of the HMD.[2]

Virtual reality allows the user to interact with their environment by moving virtual objects in virtual space. This is accomplished through the dataglove, which *The Economist* states is "the lycra glove [that] has a loop of fiberoptic cables running up and down its length, with a light-emitting diode at one end and a photo-transistor (which converts light into an electrical signal) at the other" (The Unreal Thing, 107). This electrical signal is picked up by the computer which draws a cartoon-like glove within the user's field of view. Just as the HMD has a magnetic tracking device, so does the dataglove that tracks the user's position and orientation in the virtual world, and transmits it to a computer reference (Tello, 288). The ability to move around in cyberspace is as easy as lifting a finger. Most systems have adopted the point your finger and fly paradigm where you point your finger in the position you want to travel (Rheingold, 187).

In virtual space seeing may not be so convincing, since the visual displays are cartoon-like. However, when the sense of touch is added to the virtual world, virtual objects become "practical". The sensation of touch in virtual reality is only possible now through datagloves which do not give fingertip distinctions, or control sticks which give a feeling of surface through a distance. A more sophisticated system developing is a tactile-feedback system that is like feeling the force of two magnets being pulled together or apart, or the force of gravity on the objects giving them weight (Tello, 290). All of these devices were developed in order to attempt to simulate a practical reality. The art of virtual reality is to fool the user into believing that the sights, sounds, and sensations experienced are part of practical reality.

Without the momentum of the personal computer, it is doubtful that any virtual spaces would exist. Personal computers enable the user to be able to operate the computer even if they do not understand how to program it (Rheingold, 71). The key contribution computers made to the evolution of virtual reality is the power of processing information and their memory capability. This processing capability is part of the Intelligence Amplification Theory. Rheingold points out that "the machine does the calculation and remembering and searching of data bases...while the human being does the strategy, evaluation, planning, and fetching information in context" (38). This is much different from Artificial Intelligence which strives to program a computer to think and act human. The next step in virtual reality is to transmit the sensation of touch over a distance by the use of telecommunications (Rheingold, 18). This concept sort of gives new meaning to "reach out and touch someone".

The use of transmitting virtual reality over a distance grew out of flight simulators, and that is to use interfaces between virtual environments and remote robots (telerobotics) (Rheingold, 112). Telerobotics operates on the bases of telepresence - the ability to come out of the body manipulating a robot twenty feet away or in the next country. There are specific dangers in creating an interface to powerful machines that will do things to the world before we have decided what exactly it is we ought to be doing to the world. To the surgeons, teleoperated robots could be a miraculous aid to alleviating human suffering. To those who turn forests into plywood, semiautonomous megadozers are ideal for turning the biosphere into money. To those who wish to spew shrapnel into the bodies of other human beings without risking harm to themselves, teleoperated gunships are the way to go (Rheingold, 271). The virtues and terrors of virtual reality often seen to depend on who does what to whom. Telerobotics is a danger that needs to be restricted because in the wrong hands, it is a destructive power. So, who is to decide who can use it and who cannot use it. However, more importantly, what does this dependence on machinery say about the future of humanity? Rheingold asks, if the human-computer interface couples so tightly with "our information machines and our bodily sensations, will our communication devices be regarded as separate objects, or will they become part of us" (353)? If people plug into their virtual reality systems more and more, than this new appendage of interfacing devices would ultimately create a new practical reality.

The impact that these deceives have over society needs to be examined because advancing computer technologies will make simulations more like a practical reality. When people can no longer distinguish them from nonsimulated practical realities, the world is in for major changes (Rheingold, 388). The concept of humanity could quite possibly change altogether. Human contact suffers in virtual space since the basic set-up is for a single human. However, it is true that the information from one virtual reality system can be sent over a telecommunication line to another system, including the sensation of touch. Once again, the practical reality shifts. If people can include others in their virtual world, then hasn't the original society living in practical reality shifted to live in the new practical reality of virtual reality? Sending the sensation of touch over distance has led to the concept of virtual sex. Virtual sex is accomplished by using a data suit, a full-body version of the data glove. Imagine what something like this would do for the phone sex industry.

Virtual reality developers not only have to decide what technologies to create, but also what it is they are becoming because they are on the brink of having the power of creating any experience they desire (Rheingold, 386). The addiction of some people, the programmers, to create a practical reality out of a fantasy or an artistic statement is viewed by Fred Ritchin, photojournalist expert, as a "god complex" because these individuals are seeking to create something out of nothing, giving birth to uncontrollable monsters (76). When simulations become more and more real, the danger lies in that people will accept what they see as a practical reality; therefore, teaching people things that may not be so (Rheingold, 45). This can lead to virtual brainwashing, a communication of lies and deceit. The truth behind virtual

reality, according to Esther Dyson, Computer/Business writer, is that "we don't experience reality anyway, we just receive light waves and soundwaves that our brain interprets as real. Thus, if a computer can send signals to mimic those sent by real objects, the result will be indistinguishable from the real thing [a practical reality]" (204). So, on a philosophical level, the search for what is true progresses, and this confirms Ortega's claim that man is always unfinished.

It may even be becoming a game computer programmers play with the public. One programmer, Alvay Ray Smith of Pixar, wants to find out how far he can go away from an accepted reality and still have people follow him (Ritchin, 76). This is a real danger for the public because those in control of the virtual environments can take advantage of its enhanced capability to deceive the public camouflaging it as truth (Ritchin, 142). The public's conditioned response to sit back and absorb things they see as real makes them susceptible to virtual reality, but more significantly, the distorted "truths" that come out of it.

The real challenge of the future of virtual reality will be how humanity can reap the benefits of it, but avoid the above-mentioned dangers. The benefits include commercial uses for virtual reality which are now surfacing. This new technology is used by fields ranging from engineers and architects to doctors and many other professions (Ritchin, 72). Education is one field of interest. By going into the nucleus of an atom or by walking around on the moon, abstract ideas become concrete (Rheingold, 24). In Japan, systems are being developed to help those physically disabled. The field of medicine also is developing systems so that young surgeons can operate on virtual patients before the actual person, sort of an operation simulation. Virtual Reality also is helping develop new cancer procedures. The doctors operate on a virtual patient and line up the laser treatment before the real patient even enters the hospital. Then the lasers zap the tumor on the real patient, and miss vital organs of the body (Bylinsky, 190). Architects are using virtual reality to inspect their building before the first brick has been laid. With virtual reality branching out into all walks of life, it is crucial to study the implications of all this.

Virtual reality needs to be thought about now in the infancy of this new technology because as Ritchin points out "fifteen years from now the true Michealangelos and Leonardos of the medium will come about to blow us all away" (Ritchin, 80). Society needs to become aware that there is a difference between appreciating art and taking it literally. However, the creators of virtual reality want the users to take it literally. Isn't that the purpose of simulating practical realities? If the users of virtual reality continue to take in what they see as "real", then the philosophical implications outweigh any social problems or technological prospects. The key to understanding virtual reality is that it is someone's fantasy—a practically real fantasy, which is why it is so hard to distinguish between the two.

WORKS CITED

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ENDNOTES

1. A problem with these display systems is that normally our eyes converge on one part of the whole field of view. Stereoscopic displays, unless specifically designed to do so, won't converge (Rheingold, 281), causing the user to feel sick. Eye tracking fixes this problem of convergence. This helps the computer determine on what portion of the display the eye is focusing. Another development that eye tracking could lead to is the ability to move virtual objects by using the viewer's focused attention.
2. Virtual reality systems have a lag problem which stems from the images not being drawn as quickly as the user moves through virtual space. This problem could take years to fix due to the computations needed to get the graphics to change quickly enough to simulate what people see in practical reality. Rheingold admits this would mean that "you are dealing with a few tens of three-dimensional images per second... at the rate of two billion bytes per second" (33). Two solutions are being researched.

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[Editor's note: This article on computer technologies provides the critical thiunking community with wide opportunity for discussion. We welcome responses and further studies.]

1492: CONQUEST IN CONTEXT

On Friday, November 20, 1992, the Institute for Critical Thinking will co-sponsor, with Monclair State's Department of Fine Arts, the Montclair Art Museum, and the New Jersey Council for the Humanities, a symposium entitled "1492: Conquest in Context; Spain's Cultures and the New World." Open to the public, the day-long event will be held at the Montclair Art Museum. It will emphasize the visual arts and culminate in a gallery tour and reception. In the morning, the program will focus on the Old World, with presenters speaking on various aspects of Spain as a crossroad of many diverse artistic cultures in the age of exploration. In the afternoon, attention will be given to the New World and the encounter between Native American and European cultures. Throughout the program, participants will be asked to construct inquiry questions for discussion groups that will follow both the morning and afternoon programs, as well as at the college in subsequent sessions. For further information, contact Dr. Susi Colin or Dr. Elizabeth del Alamo, Montclair State, (201) 893-7295.