

Virtual Reality and Electronic Highs

fighter plane costing upwards of one hundred million dollars to some apple-cheeked hayseed so he can learn to fly it? If you spend the cost of one plane on simulation, and thereby prevent even one

Looking like a cross between a tai chi master, a Navy frogman and the Terminator, a man harnessed to electronic leads and fitted with a piece of headgear slowly turns and gestures. The pointing hand and the ballet of sign language, combined with an air of intense concentration, give the unmistakable impression that the person is far, far away from the brightly lit Bay Area laboratory in which he stands. You might also say that he seems as if he was in another world.

And you would be right. Before you stands a true astronaut of inner space, a researcher who is in the process of going where few have gone before. But look quickly; what is today the visionary dream of the techie few will very soon be reality for the rest of us. Virtual Reality, that is.

Is it mechanistic multi-media masturbation or a doorway swinging open on the flower-strewn fields of the romantic imagination? A tool for discovery and navigation in new esthetic domains, or the final trivializing of the drive to be mindlessly entertained? These are the questions that I asked myself one morning recently as I drove toward a rendezvous with one of the mavens of Virtual Reality, the redoubtable Eric Gullichsen, then of Autodesk, currently a free agent. For, as I was to learn later that day, not even Virtual Reality is immune to corporate change and upheaval. Gullichsen and his associate Patrice Gelband are now virtual guns for hire. The status of Autodesk's future commitment to R & D of Virtual Reality undecided.

Corporate intrigues aside, worlds are being created by such pioneers in the Virtual Reality field as Jaron Lanier and the Autodesk special design team Gullichsen headed. It was logical that Autodesk should be a leader in the Virtual Reality field; their Auto/Cad software has based much of its appeal on the idea that the user can actually "walk around" in a high-resolution three-dimensional simulation of two-dimensional blueprints. Pursuit of this idea grew naturally into the idea of computer-generated worlds. And Lanier and VTL, his corporation, have been the persistent leaders in the field of body and hand imagining in Virtual Reality. The magical gloves and body stockings that are the keys to entry into Virtual Reality remain Lanier's speciality.

What is Virtual Reality? It is a technology currently under development by NASA and private companies in the Bay Area and on the East Coast. It began with the modest intent of simulating the experience of flying high-performance fighter aircraft under combat conditions. Think of it this way: You are the Defense Department. Would you turn over a

crash, you are saving a lot of money and possibly even human lives. And one hundred million dollars buys a lot of simulation.

What I saw at Autodesk was considerably more modest than the classified government efforts. Gullichsen estimated that the whole Virtual Reality apparatus could be recreated for around \$50,000. Chicken feed in the world of high tech R & D. The fifth-floor lab was a sparsely furnished office approximately fifteen by twenty feet with a humongous high-resolution color monitor, and a quite ordinary computer work station. Introduced around, I was asked if I had any questions. Figuring I had done my homework, I suggested we cut to the chase.

The glove, wonderfully redolent with all the associations that are carried by black silk gloves everywhere, was slipped onto my hand. I had found it difficult to visualize the motion sensors that I knew were stitched onto the back of the gloves on top of each flex point. They appeared to be small blue beads. The whole thing fitted smoothly. I was asked to close and open my hand while the software sensed and entered the flex values of my particular hand. Next came the helmet, looking like a fancy, overweight scuba mask. Once on, it put a Sony Watchman color mini-screen about an inch from the eye; a slight discontinuity between the screens created the impression of three-dimensional space.

Once everything was in place I could see the fuzzy, but colored and recognizable outlines of a cartoon version of an office. Hovering in space in front of me was what appeared to be a foreshortened spaghetti fork. This, I was told, was the virtual image of the glove I was wearing. Sure enough, wiggle thumb, left-most tong of spaghetti fork wiggles. No Roger Rabbit appeared, but as I pondered the mechanics of the glove, I burst noiselessly and effortlessly through a wall and into a burnt sienna space that seemed to, and probably did, extend to infinity. Eric explained about pointing. I had been pointing without realizing it. Pointing is how you get around in Virtual Reality, or cyberspace, as the true believers call it. When you point at something you move toward it. When you open your hand the motion ceases. It is that simple. The eye goes where the finger points, and the image of your gloved hand comes along and can be used to "pick up," by intersecting, objects in the Virtual Reality. After a few moments, the lag time in the refreshing of the images, the weightlessness, the newly insubstantial nature of the objects and the newfound nature of my

or On Becoming Virtual Octopi
by Terence McKenna
illustration by Lenore Lasher

right index finger were all familiar enough to me that I could slowly make my way around the office without moving through walls and objects or taking off through the ceiling or the floor.

In short I got it. Talking with Eric and his associate mathematician Patrice Gelband, I had the eerie feeling that this might be what it would have been like to stop by the Wright brothers bicycle shop to shoot the shit with Wilber and Orville about the latest ideas concerning lift ratios of air foils. These folks are onto something. They know it, and I will wager that soon the whole world will know it. We are on the brink of another leap in evolution, folks.

From fighter simulations to simulations of architectural models that you can literally "fly the client into" it is only a short step, and from a 3-D blueprint of an imaginary office to the simulation of the Taj Mahal on a moonlight-flooded summer night is only a slightly longer step—in Virtual Reality.

If all this sounds too far-out to be true, or like a rehash of Philip K. Dick's novel *A God Named Jones*, then that is just the universe's way of telling you that you haven't been keeping up. Remember the feelies in Aldous Huxley's science fiction dystopia *Brave New World*? Everyone went to the feelies and held onto a knob on each side of the velvet cushioned seat and was conveyed away to the latest risqué and ribald fantasy that the schlock meisters of future pop culture had prepared for public consumption. Of course we have had the operational equivalent of the feelies since at least the introduction of television. And the effect of vast narcotized masses of people hooked on a drug whose content is culturally sanctioned and institutionally controlled is certainly debatable. Some have blamed TV for the creeping shit-for-brains disease that seems to have become endemic in America. However, on one level, television, and now Virtual Reality, are nothing more than the latest instances of neotany, the carrying over into adulthood of infantile physical or behavioral characteristics. Let's face it, the world is a complicated place; if millions of people choose to retreat into an electronically reinforced state of semi-infantilism, it may end up making the total system ultimately easier to pilot into a safe harbor.

Virtual Reality is easy to denounce in the same breath with MTV and perhaps HDTV—upon which it will in some degree depend. But the fact is that Virtual Reality is more than simply further movement down a primrose path strewn with *The Price of His Toys* catalogs. It is a technology that will not only allow us to make more and better art, but potentially will dissolve the boundaries between us and allow us to see the contents of each other's minds. There is also the possibility that improved forms of communication, states of near-telepathy among participating human beings can be coaxed out of imaginative use of the technology. Because of what Virtual Reality is intrinsically, there are several ways in which it could be the basis of an entirely new kind of communication between people.

Each age takes its self-image from the animal world. The 19th century, with its obsession with the power to reshape the earth and abolish distances through the new technology of the steam engine, took as its guiding image that of the thoroughbred race horse. The early 20th century focused on speed, conquest of the air, and the integration of human beings and machines into an even more lethal symbiosis. This process found its realization in high-performance fighter aircraft; the animal image was that of the raptor, the relentless bird of prey.

Jaron Lanier is fond of saying that in Virtual Reality one can choose to be anything; a piano, for example. Fine. Having surveyed the smorgasboard of morphogenetic options offered by Mother Nature, I would choose to be a virtual octopus. Many people, once informed, would make

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the same choice. I believe that the totemic image for the future is the octopus. This is because the cephalopods, the squids and octopi, have perfected a form of communication that is both psychedelic and telepathic, a model for the communications of the future. In the not-too-distant future, men and women may shed the monkey body to become virtual octopi swimming in a silicon sea.

Consider: Nature offers the example of the octopus, a creature in which well-developed eyes and an ability to change the color, banding, and general appearance of the skin surface have favored a visual, and hence telepathic form of communication. An octopus does not communicate with small mouth noises as we do, even though water is a good medium for acoustic signaling; rather the octopus becomes its own linguistic intent. The octopus is like a naked nervous system, say rather a naked mind: The inner states, the thoughts, if you will, of the octopus are directly reflected in its outward appearance. It is as though the octopus were wearing its mind on its exterior. This is in fact the case. The octopus literally dances its thoughts through expression of a series of color changes and position changes that require no linguistic conventions for understanding as do our words and sentences. In the world of the octo-



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pus, to behold is to understand. Octopi have a large repertoire of color changes, dots, blushes and traveling bars that move across their surfaces, this ability in combination with the soft bodied physique of the creature allows it to be obscure and reveal its linguistic intent simply by rapidly folding and unfolding different parts of the body. The octopus does not transmit its linguistic intent; it *becomes* its linguistic intent. The mind and the body of the octopus are the same and are equally visible. This means that the octopus wears its language like a kind of second skin: it appears to be and becomes what it seeks to mean. There is very little loss of definition or signal strength among communicating octopi. Indeed, their well known use of "ink" clouds to conceal themselves may indicate that this is the only way that they can have anything like a private thought. The ink cloud may be a kind of correction fluid for voluble octopi who have mis-spoken themselves.

Like the octopus, our destiny is to become what we think, to have our thoughts become our bodies and our bodies become our thoughts. This is the essence of a more perfect Logos, a Logos not heard, but beheld. Virtual Reality can help here; electronics can change vocal utterance into visually beheld color output in the Virtual Reality. This output can then be manipulated, by tools still uncreated, tools to be found in the tool kit of the Virtual Reality hacker/mechanic soon to be. This means that a three-dimensional syntax, one that is seen, not heard, becomes possible as an experience of Virtual Reality. What is the point of being able to see one's voice, even in Virtual Reality, you may ask. The point is that others will be able to see it as well. The ambiguity of invisible meanings which attend audio speech is replaced by the unambiguous topology of meanings beheld. At last we will truly *see* what we mean. And we will see what others mean too, for cyberspace will be a dimension where anything that can be imagined can be made to seem real.

When we are in the act of seeing what is meant, the communicator and the one communicated with become as one. In other words, the visible languages possible in Virtual Reality will overcome the subject-object dualism as well as the self-other dualism.

In trying to imagine the futures onto which these doors open, let us not forget that culture and language were the first virtual realities. A child is born into a world of unspeakable wonder. Each part of the world is seen to glow with animate mystery and the beckoning light of the unknown. But quickly our parents and our siblings provide us with words. At first

these are nouns; that shimmering pattern of sound and iridescence is a "bird," that cool, silky, undulating surface is "water." As young children we respond to our cultural programming and quickly replace mysterious things and feelings with culturally validated and familiar words. We literally tile over reality with a mosaic of interconnected words. Later, as we grow in ability and understanding, the culture in which we find ourselves provides conventionalized relationships for us to model. Lover, father, investor, property owner. Each role has its own rules and its own conventions. These roles too tile over and replace the amorphous wonder of simply being alive. As we learn our lines and the blocking that goes with them, we move out of the inchoate realm of the pre-verbal child and into the realm of the first Virtual Reality, the Virtual Reality of culture. Many of us never realize that this domain is virtual, and instead we assume that we are discovering the true nature of the real world.

Musing on this in a recent interview, Jaron Lanier observed: "I think Virtual Reality will have an effect of enhancing and, in a sense, completing the culture. My view is that our culture has been abnormally distorted by being incredibly molded by technology.... Virtual Reality, by creating a technology that's general enough to be rather like reality was before there was technology, sort of completes a cycle."

Lanier's remarks concerning the field that he helped to create have an eerie aura of unfocused prescience. He speaks in terms of a non-symbolic language, and in terms of bifocal glasses with real reality on top, yesterday's Virtual Reality on the bottom. He oscillates between the profound and the quirky. But the idea that Virtual Reality completes a cycle of neurotic behavior that is as old as our use of tools is interesting. Virtual Reality asks us to imagine a future in which there will be virtual realities within virtual realities. A man slept, and while asleep dreamed he was a butterfly. Upon awakening, the man asked himself, "Am I a man who slept and dreamed he was a butterfly, or am I a butterfly who sleeps

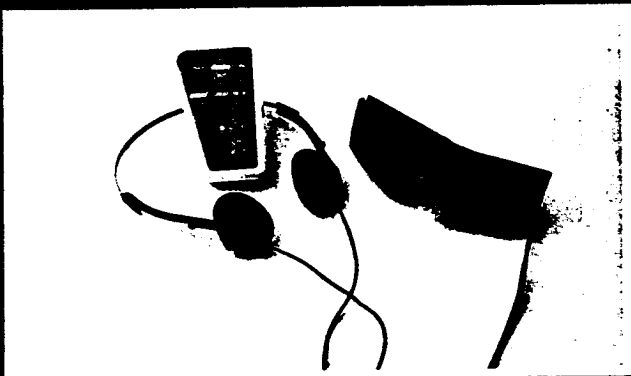
and is now dreaming he is a man?"

The promise of Virtual Reality is that in the near future we will walk the beaches and byways of twice ten thousand planets, a virtual new galaxy to explore, whose name will be Imagination. The rest of our lifetimes, our busy mind's eye is culturally destined to peer out at thousands of shimmering realities: Ankor Wat and the volcanos of Io, many of our own memories, and the memories of others who have shared this or that engineered vista or thrill.

My take on this is all different. I wish all these folks luck. I think that we can look forward to terrific pornography based on this technology, to simulations of fixing broken machinery in outer space and tidying up inside radioactive zones. Surgeons can already operate on virtual cadavers in one advanced medical teaching facility. But somehow I am haunted by a deeper hope for Virtual Reality. After all, technology has already proven that it is the drug most palatable to the Western mind. Could not Virtual Reality allow us to blaze a high trail into the wilderness of the human imagination? Then where each went, all would be free to follow through the miracle of instant Virtual Reality replay? Can the riches of the imagination be made a commodity that can be sold back to the consumer who is also their producer? Selling the self should be the easiest of tasks in a society as narcissistic as our own.

And speaking of drugs, just where on the spectrum of the cultural pharmaphobia can public and governmental attitudes towards Virtual Reality be expected to fall? Is Virtual Reality to be seen as a "safe and harmless substitute for drugs" or is it "electronic illusions from hell?" It is a dreary comment on the current infantile state of public dialogue that there is little doubt that we will be subject to both claims in the debate ahead.

Certainly Virtual Reality represents a technology of escapism that dwarfs the modest intent of the opium smoker or the video game addict.



But on the other hand, so does modern film. Through color photography, most people on earth have vicariously experienced sufficient data to allow them to create Virtual Reality fantasies based on imagination and media-fanned expectation. It seems highly unlikely that the development of Virtual Reality will be treated as the spread of a new drug; rather it is seen as a new frontier for marketing and product development. Indeed, the non-destructive nature of Virtual Reality means that the talent of many artists, designers and engineers can be absorbed into Virtual Reality projects with no impact whatsoever on ordinary reality. Finally, Virtual Reality, with its capacity for virtual replay of constructions of the imagination, may hold the key to accessing the mapping of the imagination. The dream of artists, to be able to show the fabric of their dreams and visions, may be fast approaching Virtual Reality.

The more extreme, inventive, and *avante garde* of the Virtual Reality constructions are likely to resemble experiences with psychedelic plants and drugs rather than the more conventionalized forms of art. The doorway to the realms of dream and the unconscious will be opened, and what had been merely symbolic representations of eccentric individual experience will become that experience itself.

Does Lanier's "non-symbolic communication" have anything to do with the visible languages of the DMT Ecstasy? It was this unobvious question that had gotten me interested in Virtual Reality in the first place. My experiences with shamanic hallucinogens, especially *ayahuasca* use in the Upper Amazon Basin, had shown me the reality of vocal performances that are experienced as visual. The magical songs of the *ayahuasceros*, the folk *medicos* of the Indians and Mestizos of the jungle back

rivers, are not songs as we understand the term. Rather they are intended to be seen, and to be judged primarily as visual works of art. To those intoxicated and adrift upon the visionary reveries unleashed by the brew, the singing of the shaman becomes a magical airbrush of color and organized imagery that is breathtaking in its alien and comic grandeur. My hope is that Virtual Reality at its best may be the perfect mind space in which to experimentally explore and entrain the higher forms of visual linguistic processing that accompany tryptamine intoxication. In other words, the Virtual Reality technology can be used to create a tool kit for the construction of objects made of visual language. These objects would be experienced in the Virtual Reality mode as three-dimensional-manifolds devoid of ordinary verbal ambiguity. This phase shift is a move toward a kind of telepathy. The shared beholding of the same linguistic intention in an objectified manifold is a true union. We become as

one mind with this style of communication. Language beheld could perhaps serve as the basis for a deeper web of interlocking understandings between human beings that would represent a kind of technically aided evolutionary forward leap of the species. The near future may hold a public utility that will provide access to a hyper-dimensional ocean of visibly expressed public thoughts via cable. This service will be delivered over cable simply because the very large computers necessary to create moving, real time, high-resolution Virtual Realities will be state of the art mainframes for the next few years at least. A kind of informational network that one can actually enter into and control through the use of visual icons. Is this not true cyberspace? I believe that

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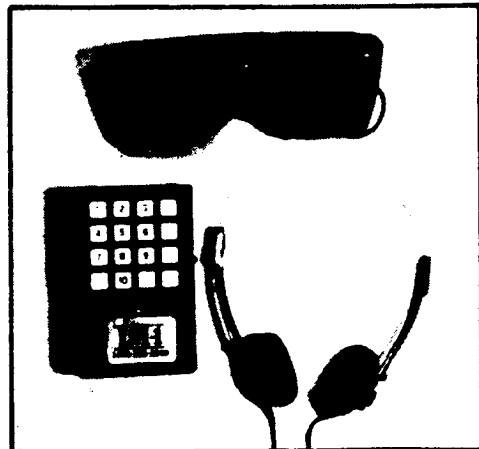
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image of Juno that has come down to us is of a shrew, a manipulator, and a bitch.

However, as with the other goddesses, there is a much deeper level to Juno, who was a much older goddess than Jupiter was a god. We find that Jupiter's temples were built on the ruins of Juno's temples, who in her earlier time period was known as Hera, an embodiment of the triple-moon goddess. Like human women, Hera went through all three phases of a woman's life cycle: the new moon, in which she was a young maiden; the full moon, in which she became bride and mother; and the dark moon, in which she was the widowed crone. Hera was particularly the goddess of women, representing their bonding with one another and their sexual life cycle. She was such a powerful divinity that when the Dorian invaders came into her land around 1100 B.C., she was too strong to totally squelch. She had to be acknowledged in some way, so she was made the wife, or the bride, or the consort, of the Dorians' sky god, Jupiter. The amalgamation of the two cultures was symbolized by the marriage of Juno and Jupiter on Mount Olympus.

From this point of view, we can see Juno's rage from a slightly deeper source. She was a queen and sovereign in her own right, and her power and rulership were forcibly taken away from her. For the first time she was bound into monogamous marriage, and a chastity belt was put on her. All of Jupiter's affairs can be seen not as simple infidelity, but as the ridiculing of her ancient religious customs. Similarly, all of his rapes and assaults represented the destruction of her worshippers and her cults. From that point of view, there's a much deeper anger than mere sexual jealousy. Jane Ellen Harrison calls her the prototype of the captive nation princess who was coerced, but never really subdued, by an alien conqueror.

There are other mytho-historians who say that Juno willingly gave over her power to Jupiter, and they address the issue of women wanting to give their power over to their husbands once they become married. In the psychic development of the feminine in her evolution into the role of consort, there comes a point when she feels the need to move from the one-in-selfness, or the self-containment of Vesta, into the full union symbolized by Juno. She has a sense that she can only realize the full-moon phase of her womanhood when she can be mated and matched as an equal in every single way. She no longer wants the masculine as simply an object to satisfy her sexual passions, but wants to be mated psychologically, emotionally, mentally, and spiritually as an equal. Out of that desire for a deeper intimacy, Juno willingly gave over some of her power so that

Jupiter could come to her as an equal. Her pathos lies in that she did not receive the intimacy, depth, and fulfillment she hoped for from her husband. He took her as wife in name only. The rage, vindictiveness and jealousy for which Juno is known stems from her betrayal by her husband, and her subsequent disappointment and despair over her empty marriage. However, Juno made the commitment to remain in her marriage nevertheless, because of her wisdom that the only way to learn how to develop meaningful relationship is to be in relationship.

Juno symbolizes the principle of relatedness and commitment to the other and the use of creative sexual energy to foster and sustain relationship. She shows the need for deep and committed relationship, but with full equality and justice. When those needs for intimacy are denied or frustrated, all of our neuroses and complexes emerge out of us. In today's world, she also symbolizes the plight of battered and powerless wives, the rise in the divorce and remarriage rates as people are driven to form meaningful relationships, and the confusion over changing sexual roles and nontraditional relationships.

Social psychologists are saying that we are on the brink of a quantum leap in consciousness. You've heard this from Marilyn Ferguson and Buckminster Fuller. This implies that many more parts of our brains will be brought into active utilization. If these new planetary bodies have a direct correspondence to aspects of psyche, then, by seeing the planetary bodies, we can acknowledge those parts of our psyche. Over the past hundred years we have seen tremendous change. Perhaps this is because we are in a cuspal period where there is a transformation from one world age to another. The esotericists say that the keynote of the Aquarian Age is to grow into collective awareness and develop the concept of group consciousness. So, many more parts of our psyche are being activated to bring us to an expanded awareness from the individual to the group. To the extent that these new aspects of personality are active in a person's life, it is symbolic that these individuals are part of the catalytic change that is occurring at the cusp of the world ages to a more expanded awareness of the holism of our life and our planet. ✨

Demetra George has been an astrological counselor, mythologist, and teacher since 1972. Her book, Asteroid Goddesses is published by ACS. Astrology For Yourself is published by Wingbow, and her Mysteries of the Dark Moon material will be published by Harper and Row in 1990. She is available for consultation and can be reached care of Pallas Publishing Services, P.O. Box 405, Waldport, OR 97394.

Virtual Reality

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it is, that it is what cyberpunk hyper-prophet William Gibson was thinking of in his novel *Neuromancer* when he introduced the notion of cyberspace as a...

"... consensual hallucination experienced daily by billions of legitimate operators, in every nation... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data. Like city lights, receding..."

My hope for Virtual Reality would be that exploration of such new frontiers of language and communication could be built into research strategies from the start. Then the loop from the trivial to the archetypal might be appreciably shortened as the Virtual Reality option becomes well known.

A major career option of the near term future is that of professional cyberspace architect/engineer. Such folks will design and direct the construction of virtual realities and scenarios. Gullichsen, in an article for *Nexus* wrote:

MAGICAL BLEND

"The talents of a cyberspace architect will be akin to those of traditional architects, film directors, novelists, generals, coaches, playwrights, and video game designers. The job of the cyberspace engineer will be to make the experience seem real. This job is as artistic as it is technical, for experience is something manufactured spontaneously in the mind and senses, not something that can be built, packaged, and sold like a car or refrigerator."

Consciousness is no better than the quality of the codes that convey it. Virtual Reality may hold the possibility of an icon based-visual language that could be universally understood while being much more wide spectrum in its portrayal of emotions and spatial relationships than is even theoretically possible for spoken language. But we will not find the fountain of pure visual poetry if we do not look for it. ✨

An interview with Jaron Lanier appeared in the fall 1989 issue of Whole Earth Review, 27 Gate Five Road, Sausalito, CA 94965. \$6 ppd. For more information about Virtual Reality, contact VPL Research Inc., 656 Bair Island Rd., Suite 304, Redwood City, CA 94063 (415) 361-1710.