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More Real is Real - The Transorganic and Hypermorphic  
in the Einstein's Brain Project

In relating Pliny's famous anecdote about the artist Zeuxis, that Zeuxis (parnted) a picture of grapes

so deftly represented that birds began to fly down to eat the painted vine, Richard Sennet comments that,

*"a modern reader might take this to be a story about the artist's powers of illusion. A Roman thought it showed art's relationship to reality."*<sup>1</sup>

If there is a single general expectation of the recent advances in the technologies of virtual reality and hyper-interactive simulation it is that of its capacity to present an ever increasing realism. The quest for seamlessly reproduced worlds is paramount in the military and institutional development of the simulation technologies. The ideal (achievable or otherwise) of immersive virtual reality consists of surrounding an individual with images and sounds so apparently like those of the real world that the eye and consequently the brain is fooled into thinking it is in that world. These developing strategies are those of realism rid of expression, symbol or metaphor and they are sustained by the authorities of homogeneity and seamlessness. Just as long rendering times and their outcome of low frame rates are constantly, and expensively, fought against because they disturb the seamlessness and the effectiveness of the illusion so ruptures in the content and the consumption of the worlds are discouraged. Stopping to consider the strangeness of a sound distorted by being played too slowly or the flickering or jerkiness of an image disrupts our sense of ourselves as being in normal relations with a world. Similarly the consideration of a subtext or a hidden meaning draws attention to our consideration and away from the construction and sustenance of our normal relationship to the world.

One must see these contemporary desires as linked to a history of naturalism, its concurrent dualistic pairing of reality and appearance and the authority and correctness of institutional space.

*"The (Roman) people also gained from believing that their ruler's building works bore the stamp of absolute authority. To the Romans we owe the phrase 'teama mundi', later rendered by Shakespeare as 'all the world's a stage.' A Roman could give him- or herself over to that willing suspension of disbelief which is the essence of theatre, assured that power guaranteed as consequent and «aea those places in which the speaote offje unfolded. The realm of certified stone literally set the stage for Romans believing the evidence of their eyes.»<sup>1</sup>*

If the architecture of the emperors assured the propriety of those places in which the spectacle of life was revealed and in doing so presented a true picture of the world, then the contemporary architecture of simulated reality likewise sanctions and fabricates a seemingly world where the normal and natural are unattached to the understanding that such things are cultural constructions.

*Einstein's Brain* is a collaborative, immersive, virtual reality work that explores the notion of the brain as a real and metaphoric interface between bodies and worlds in flux and that examines the idea of the world as a construct sustained through the neurological processes contained within the brain. It suggests that the world is not some reality outside ourselves, but, is the result of an interior process that makes and sustains our body image and our relationship to a world, and that the investigation of virtual reality, its potential use as a perceptual filter, and its accompanying social space is an exploration of the new constructions of consciousness and the consequent technological colonization of the body.

The image of *Einstein's Brain*, a reference to the human brain and to Roland Barthes' essay of the same name serves not only as a metaphor, but, also a point of entry for a participant's journey through the virtual landscapes. The figure of Einstein embodies a variety of references from the comic figure of the mad professor, to the socially conscious scientist and humanist. His name is synonymous with genius. His body seems feeble beside the awesome, mechanical power of his brain. His name invokes man's quest for the secret of the universe. His brain has passed into the world of myth, cut up and minutely examined but revealing little. The title of our project assumes a link between science and mythology, between the machine and its capacity to offer a key to the unknown and the continual re-presentation of familiar structures and myths.

The project has at its core a series of worlds digitally generated from topographical maps, dxf models of the human body and brain, and neuro-physiological delineations which are rendered and organized so as to provide familiar yet unnamable, naturalistic environments. Embedded in these spaces are semi-otic references to literary, mythological, poetic and social content indicating that an appreciation of this artificial world through effect and appearance is congruent with a representation of the natural world inscribed over and over by mediating and mutating cultural bodies.

The worlds are constructed so as to be in constant flux. Like states rather than objects, they are affected by feeder streams of data, by passage through the worlds and by an elusive and changing perceptual apparatus. Indexes of labour, thoughtlessness and thoughtfulness, sensory deprivation and impairment, cleverness and stupidity effect dynamic changes throughout the system altering the body and topography of the worlds.

Active elements, external data sources change the worlds. We are working with a number of statistical agencies to develop a means to mark the changes in the global bio-mass which will in turn affect the worlds. We are linking these continuously changing worlds to various databases, astronomical, social, financial, topographical, medical and these effect the form and content of the spaces. The moon's grav-

itational forces change the form of the land, the stock exchange is tied to the growth patterns of trees and plants, the daily attendance at Graceland determines the current cultural pattern of the land. Local time elements age the worlds, matching the passage of real time - at night it is night and the only means of navigation is with the aid of artificial light. In Spring the worlds are Spring-like, pliant and fecund, in Winter the worlds exhibit brittleness and slow growth. Passage through the world is recorded - a twig breaks when a passerby comes too close, footprints are left in the sand, rocks are worn away by the many steps of many travellers.

Imagine a room, inexhaustibly full of images, sounds, smells and objects. One cannot begin to count all the objects in this room. There are so many, one would not know where to begin or to end. Imagine walking into this room dothed in a thick, insulating suit. Gloves cover the hands, ear plugs make hearing difficult, dark goggles cast the room into a permanent dusk. It is here at the twilight of the senses that the room begins to disappear and the sounds and pressures of the body emerge. Images and sounds seem artificial, lacking full resolution or credibility. Objects seem less solid, sometimes offering little resistance to a passing body. Depth perception is limited and unconvincing. Remove the suit and the other constraints and the room is restored to full resolution and believability.

We are most aware of the brain when one of its functions is impaired. In absence the function exposes itself and draws attention to the remaining perceptual and communicative operators. A soundless or visionless world is noticeably so. Does the loss, or alteration of a sense make the world any less real? Is the world less real for a blind person, a deaf person, a person with double vision? Was it any less real for a Helen Keller? The breakdown of the normal connections in the brain changes the way we construct the world, but, it doesn't, however hallucinatory it may seem, alter our belief that we are in a world.

We think of the body as separate from the world. Our skin is the limit of ourselves, the ego boundary. The point at which here is not there yet, the body is pierced with myriad openings. Each opening admits the world - star dust gathers in our lungs, gases exchange, viruses move through our blood vessels. We are continually linked to the world and other bodies by these strings of matter. We project our bodies into the world - we speak, we breathe, we write, we leave a trail of cells and absorb the trails of others. The body enfolds the world and the world enfolds the body. The notion of the skin as the boundary to the body falls apart. The body, as here not there, and its defining sense of the other is a mental construction. Every perception of the other is a creation and every memory a re-creation.

Inside a virtual space we are almost blind, have little or no sense of touch, our hearing and sense of smell are enfeebled and inconsequential. Our sense of others is abbreviated or entirely absent. We are thrown back upon and into ourselves to sustain our sense of ourselves as being in and of the world. In the most deficient worlds do we lose the sense of ourselves? The sense that here is not there? That the body begins and ends here? Through its deficient rendering of the world virtual reality allows us to perceive our perceptual apparatus and the representations that construct the world. It suggests that the world is a virtual construction. That the development of consciousness, selfhood, is a function of its capacity to represent the world's contents symbolically in the face of a constantly shifting and exponentially multiplying material world.

We are embracing the simulation technologies as imperfect, reality engines connected not to the generation of a reality but as a means of attending to a consciousness that in turn fashions a reality. The real-time rendering engines provide a space in which the spontaneous processes of being in the world are made evident, generating what neuroscientist Antonio Damasio describes as a "dispositional representation of the self that is in the process of changing as the organism responds to an object."<sup>2</sup> This dynamic representational process occurs in the brain.

The worlds we are generating from the physical and visual structure of the brain are a visible representation of invisible, mythic processes. These worlds are not external to the body, but, are properly thought of as being inside the body. This accounts for the apparent invisibility of the body in a virtual space. The body disappears because it is turned in on itself. The ego-boundary is no longer the point at which the body begins and ends in relation to an external environment, but is the very limit of the world.

*"The brain imposes coherence on the external world not the other way around. The external world contributes the reflected light, the raw data, but the brain throws most of that raw data away and does the hard job of computing, piece by piece, the answer to what (is seen)"<sup>4</sup> and, consequently, what is the world."*

We are attending to the simulation technologies as diagnostic and analytical tools. The very deficiencies that prove so disruptive to the appreciation of a real-feeling world can provide a means by which content, and form, is made manifest. Virtual reality can act as a filter which renders visible the brain and its processes of the continuous construction of the self. It makes it possible to view ourselves as dynamic entities continually engaged in perpetual iconoclastic biological and social renovation and construction. Given this and other technologies of the self we are now able to undertake transmutational operations that enable us to recognize and transform our image of ourselves.

To this end we are developing worlds in which the raggedness of the virtual reality systems are exaggerated and invoke those dysfunctions of perception and selfhood associated with brain damage and

menial illness. Vision is blurred, detail is inconstant, slower or faster frame rates suggest a rendering engine behind the scenes, left or right hand sides of stereoscopic vision blink out, depth perception is lost, objects only appear when one is in motion, the edges of the worlds visibly reinvent themselves. In one situation the participant is only able to move through the world by turning to his or her right. Turning to the left freezes and fades the world to invisibility. In another, binocular rivalry, achieved by providing differing inputs to each eye via a stereoscopic HMD, causes parts of the world to be erased, or depending on one's immediately previous attention, to remain. Another uses a slower than normal frame rate to call attention to the motion of a falling object. In yet another, the redrawing of textures lags behind a changing parallax references the time light takes to hit the retina and invokes Barthes' deliberations on photography in *Camera Lucida*. These are transorganic and hypermorphic worlds; worlds of smooth, contiguous fields inhabited by the nomadic body, a body, a self- in being, in motion. Antonio Damasio describes the continual, moment by moment, construction of this self as

*"an evanescent state, so continuously and consistently constructed that the owner never knows that it is being made unless something goes wrong with the making. It's not continuously becoming past, and by the time we take stock of it we are in another present, consumed with planning for the future, which we do on the stepping stone of the past. The present is never here."*<sup>5</sup>

As western artists, we developed from a world where we learned to objectify our bodies, to separate our minds from our bodies' viscera, where we learned to distinguish matter from mind and where the construction and placement of objects was the focus and culmination of our intentions and desires. Developments in cultural and social theory and in technology have suggested that we and other artists shift their attention away from a graspable, predominately corporeal world to one which is increasingly slippery, elusive and immaterial. Mind and matter, combining in the cognitive body, are interdependent. The world we inhabit is in flux, comprised of increasingly complex connections and interaction. In this world there are no fixed objects, no unchanging contexts. There are only coexistent, nested multiplicities. Spectator and spectacle are entwined, occupying the same space. Perception enfolds us in matter and synthesizing us and the perceived object. In a world of objects, the subject is characterized and limited by boundaries and frames, perceived very much as invariant and separated from an unbroken field of transformations. Now it is possible to view ourselves as dynamic entities continually engaged in perpetual iconoclastic biological and social renovation and construction. Technologies of the self permit us to undertake transmutational operations on our own bodies and allows us to transform our image of ourselves existing in

*"a state of continuous construction and reconstruction. It is a world where anything goes that can be negotiated. Each reality of self gives way to flexible questioning, irony and ultimately the playful probing of yet another reality."*<sup>6</sup>

Given this can we ever really know our own minds? Living in each other's brains as voices, images, words on screen, the brain is merely one image among many, constructing and reconstructing itself even as it makes the world.

1. Sennet, Richard, *Flesh and Stone*, Norton, New York, 1994
2. Sennet, Richard, *Flesh and Stone*, Norton, New York, 1994
3. Damasio, Antonio R., *Descartes Error*, Avon Books, New York, 1994
4. Berwick, Robert C., Los Angeles Times Book Review, "Walking the Walk, Talking the Talk: review of *The Symbolic Species* by Terrence W. Deacon, Sunday, September 7, 1997.
5. Damasio, Antonio R., *Descartes Error*, Avon Books, New York, 1994
6. Gergen, Kenneth: *The Saturated Self*; as quoted in *Life on the Screen*, Sherry Turkle, Simon & Schuster, 1995