

WORMHOLING IN CYBURBIA, AND OTHER PARANATURAL PLEASURES

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Wormholing

The "wormhole" is one of the more potent metaphors to have come from the new physics, a science which has been conspicuous in its relevance to the developing aesthetic of interactive art, and most notably in issues concerning the relationship between the artwork and the viewing subject in the negotiation and creation of meaning. Wormholes are found tunnelling in quantum foam. Technically, as Kip Thorne (1) of Caltech describes it, a wormhole is a "handle" in the topology of space, connecting two widely separated locations in our universe. The wormhole promises the rapid transit of particles and also - if recent proposals published by the Royal Astronomical Society of Great Britain are to be believed - people, from one layer of reality to another, from one time frame to another, from one galaxy to another, in micro seconds or virtually within no time at all. Certainly this metaphor commands attention in any account of the direction in which we are now moving culturally, artistically, and perhaps spiritually . Quantum foam may not mean much to us on an everyday level of experience, but tunnelling through what might be called "datafoam" from one hyperlinked layer to another, shooting the wormholes from one telepresence to another, from one website to another, actually zapping from one mind to another, and faster than light should allow, is a perfectly reasonable aspiration of all of us living and working in the telematic, post-biological universe. For the artist it is becoming a creative necessity.

Transformation is the commanding concept of interactive, virtual, networked, multimedia art - the transformation, that is, of meanings, images, forms, and perhaps of oneself and even the world - and it is the rapidity of transfer, the speed of shift between states that we value most. Overarching this constant flux, which is both semantic and psychic, are the two great infinities that frame our consciousness: the mind of the universe and the universe of our mind. These are the two classic undecidables which we are increasingly coming to apprehend as one, as a unity of consciousness, even maybe of self, and of whose universal connectivity we are indivisible parts. As artists voyaging into the 21st century, we are simultaneously facing out toward the galaxies and inwards to the deepest recesses of the brain.

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The Royal Astronomical Society's 1995 publication of *Some thoughts on the implications of faster than light travel* by Ian Crawford gives credence to the idea that wormholes could be stabilised and manipulated to create short cuts for humans between any two points in space. This publication coincides with the founding of the Interstellar Propulsion Society whose goal is to get us to the stars. Crawford contradicts Einstein's assertion that because bodies have infinite mass at the speed of light, no amount of energy can make them go faster, arguing that one way is for them to pass through wormholes, rifts in the fabric of space caused by intense gravitational fields such as those found around the collapsed stars known as black holes. He is opening the theoretical possibility of us entering a wormhole from one point and leaving it at another, possibly thousands of light years away. Rapid transition, instant transformation and total teleportation are equally the goals of our telematic, hypermediated culture.

Roger Penrose argues that the mechanism for consciousness and cognition may involve quantum gravitational phenomena, acting through microtubules in neurons. He is not without powerful detractors such as Patricia Churchland who can find no evidence that quantum coherence involving super radiance occurs in microtubules. But Penrose sees them to have properties that could make certain quantum-mechanical phenomena possible. Microtubules, because they involve both quantum mechanics and conscious thought, provide the opportunity for noncomputationality - intuition - in human cognition. In the view of Penrose, quantum gravity may provide an adequate theory of the collapse of the quantum-mechanical wave function, which via microtubules must play a key role in consciousness. For the artist, Penrose is preferred over Churchland for the aesthetic simplicity of his model which can be visualised as combining an elegant biotechnical form, the tube, with a richly metaphysical concept, the collapse of the wavefront.

It seems that tunnelling through wormholes can describe behaviour at both macro and micro levels of our universe and of our consciousness. In this broader definition, to wormhole is a verb whose use value can be found in all of the interactive arts. What we are doing as we dig deep into richly layered datafields is wormholing, what we do as we penetrate deep into the Web is wormholing. We wormhole in the brain as we search for new associations, new connections, new meanings. It's a kind of cognitive tunnelling. It's the subtlety of our capacity to wormhole artistically and intellectually that gives us our identity as creative individuals, just as it will be our capacity to wormhole in the quantum foam that will allow us to emerge as players in the galactic scheme of things. The telematic culture weaves its global webs so densely that tunnelling between disparate sites, a kind of worldwide wormholing, is an inevitable consequence.

We wormhole too, telepathically. We always have done so. Science holds back its formal recognition of the fact as obstinately as it held back from acknowledging the paradoxes of

the quantum world. But increasingly the paradigm is changing. This is reflected in the remarks of Isao Karube, a leading-edge technologist of Tokyo University. "Kiko-jutsu is now in fashion (an Asian discipline which develops the inner energy called Ki) Even I could move a static piece of paper with my force, like this! This energy might possibly be measured by a sensor, perhaps a quantum wave sensor that works on a completely different theoretical basis. Now that people's attention is turning towards the inner world, in the developed countries where materialism has reached saturation point, the future of electronics depends on the problem of what sort of approach to take towards the brain, the neurons, and the mind" (2). And at Qinghan University in Peking, research into "qigong" seeks to apply extra sensory perception, X-ray vision and telekinesis to the control of molecular structure, to horticulture, medicine and the exploration of space.

Just as the electronics revolution, which led from telecommunications to the computer, is now taking place in the human brain and extending our conception of mind, so artistically we are moving towards a culture of bioelectronics, cyberspirituality, intelligent architecture and the self-organising, self-referential, self-aware systems of artificial life. We have entered the noetic domain, and consciousness is at the top of our agenda. Electronic art is soon to become bio-electronic art, just as the primary element of its practice, the microchip is about to become the molecular bio chip, and the digital computer is giving way to the neural network. We are moving towards the spiritual in art in ways that Kandinsky could hardly have imagined, such that telepresence will be accompanied by telepresence, and cybernetic systems will integrate with psychic systems, mutating into what could be called psybernetics.

A noetic infrastructure is forming within the Net which could lead to a spiritual awakening. The artist could be the first to take an important evolutionary step, leading us through art to the transcendent state of collective intelligence and the distributed mind of the telematic domain. The activity of the hypercortex - networked mind - is creating what in eastern philosophy would be called a 'subtle body', a psychic envelop for the planet, Gaia attaining a new level of consciousness. We may see the emergence of some kind of shamanic system within the global Net, rooted in this interactivity between minds, stimulating the visionary powers of the hypercortex. Such a system will be consulted for knowledge as much as the encyclopaedia was consulted in the past. But whereas the dream of Diderot, planetised into the Xanadu of Ted Nelson, and now being realised in the hypermedia of Web sites and CD ROM online, dealt with existing knowledge and events, this system would be an engine of intuition - futures oriented, generating visions, constructive scenarios, creating new knowledge in unforeseen and unimagined ways.

This visionary system would relate to knowledge as art relates to its new media, within the canon of apparition, emer-

gence, coming-into-being. We shall leave behind the aesthetic of appearance, the surface look of the world, , materialist objectivity and expressive representation. Both knowledge-work and art-work will commonly constitute an interstitial practice, that is work located at the intersections of biology, art, cognitive science, engineering, mysticism and electronics, mediated by the global Net.

The emerging human faculty of cyberception (3) is enabling us to enter into both inner and outer worlds more deeply and more richly than our unaided natural senses hitherto permitted. This evolving symbiosis of mind, technology and living systems confers upon us a great responsibility for the kind of worlds we construct. The artist, after being suspended for the last thirty years in a state of post-modern moral weightlessness, is now subject to the gravity of ethics, and must find new values and a new morality

The primary issue in art of the next thirty years will be that of consciousness; bioelectronics, intelligent molecules , the “chip in the brain”, will determine the precise nature of our cultural translation to the noetic culture. Once the interface moves into the brain, once electronic sensors routinely utilise biological elements, once semiconductor devices use living micro-organisms, the artificial neural networks will join with our own biological neural networks into a seamless cognitive whole. The Net has the effect of releasing mind, distributing intelligence, collectivising thought, allowing for a kind of collaborative consciousness. The Net also has the effect of extending itself, of reaching out, finding new nodes and niches to spread to. The economy of networks both regional and global, activated by both baddies (transnational corporations) and goodies (local cooperatives), is a growing economy. No part of the planet ultimately will be excluded. Far from being a grid of solipsistic indulgence, it sets out vital pathways of information between individuals, cultures and economies in ways that no other technology or ideology has been able to achieve. It will not cease to spread until the whole planet is in a state of total connectivity. This is not simply a strategy of late-capitalist marketeering but a spiritual aspiration such as Teilhard de Chardin has described.

The finger wagging of such well meaning but confused moral arbiters as Julian Stallabras in the *New Left Review* over the “wondrous but specious technology [which] threatens to act as another curtain between those who consume it and the condition of the world” (4) serves only to mask a lack of constructive thought and creativity in the face of the realities of post-biological life. The cyberphobes of academia completely misunderstand the positive social implications of interactive systems. Like the old ideological art, whose dystopian despair merely provided ballast to late post modernist misery, they miss the point entirely. Democracy, as Marilyn Ferguson once reminded us, is not a political state but a spiritual condition. Far from “excluding the poor” and preventing them from appearing “as subjects with their own voices”, and rather than there being

“a danger of them receding even further from the consciousness of the comfortable”, it is expressly a spirit of inclusiveness, collaboration and social involvement which not only marks out the ambitions, projects and protocols of artists working in cyberspace but it is inherent in the very connectivity of the technology itself. What most of these old-media theorists, living off the back of our artistic innovation and exploration, fail to grasp is that interactive art is not some kind of extension of television, and that their old discourses and diatribes are completely redundant if not perniciously irrelevant. You can only recycle Walter Benjamin a limited number of times before those insights which were so perspicacious in the era of “silver” reproduction become quite leaden and dull in the silicon age.

Knowledge is escaping from books and from those who exercise cultural control through and by their production. It is this fact more than perhaps any other which is causing the fear and loathing that so many academics exhibit towards cyberspace and the telematic culture. The plight of the third world as a presumed exclusion zone of the global networks is nothing as far as they are concerned compared to the lost preeminence of the Word whose power they have scrabbled so assiduously to master.

Cyburban living

The wormhole, in the fullness of its metaphorical reach, identifies the next great challenge for urban design. With the advent of smart materials and self-regulating systems promising the emergence of an intelligent architecture, urban design is becoming cyburban design, and it is there in the cyburbs that we shall need to be able to wormhole effortlessly between real and virtual locations, meeting with real bodies and telepresences in the same continuum.

It is wormholes, too, which will bring virtual goods into the real kitchen, or virtual clothes onto our real backs. The unity of the domestic house with its fixed functional areas, is about to be exploded and fragmented just as the unitary nuclear family is becoming nonlinear and multi relational. Walls no longer separate and privatise but, as datascreens, open out onto dataspace; doorways are either realtime or wormtime, our passage is either continuous and discrete or discontinuous and dispersed. We walk or wormhole. We can be at home and itinerant, grounded and displaced both at the same time.

Even the simplest of things are losing their place, slipping from the domestic repertoire. Think of the table. Our relationship to the transfer and creation of energy from a variety of substances both natural and engineered calls for new forms of ingestion and consumption, new methods of preparation and presentation, and new social rituals to contain them. The table too much identifies with the old unitary family, living and working within a unified frame of time and place. The domestic hearth, always the focus of conversation, dreams and kinship, is being replaced by a telematic matrix whose capacity to pro-

vide a space for reflection and social solidarity, as well as learning and recreation, albeit on a more global scale, will be no less human. Where once the domestic environment embraced and supported all our closest relationships, our companionship, our hospitality, our celebrations, now increasingly we make our home in the interspace between the virtual and the real, tunnelling between the interstices of the Net.

The domestic environment is becoming the reticulate environment with all the protection, pleasure and pursuit of happiness that the home was intended to sustain: from the safe containment of the Dome, to the supportive embrace of the Net. And just as, historically a fixed, permanent base, forced upon itinerant peoples by the exigencies of a changing ecology, or by the economy of climate, could bring traumatic changes to the society and to the sense of self, so too can we expect that the transition from domestic life to reticulate living will bring great problems as well as great possibilities. We are at that turning point in our evolution where we can contemplate the redesign of ourselves and of our mode of living.

Similarly, the city must gather up its suburbs, dislocate its centre, redesignate and redistribute its functional parts. If Architecture cannot respond radically to the advent of smart materials, intelligent systems, and nano-engineering, then we shall be unable to realise the vision of a sensuous city to complement our post-biological condition. How then shall we accommodate the technology of consciousness, house the cybernaut, service the telematic traveller, or farm artificial life? In this respect it is not simply cyburban design which is on the line but our own bionic evolution. Our children move effortlessly through cyberspace, networking with their peers as they navigate the world's knowledge. With bio-technology as the context of their personal growth and telematic interactivity as their sense of community, what structures will they see fit to inhabit, what conception of the city can we prepare for them?

In so far as the psychology of architecture is concerned, psycho-therapy for intelligent buildings may be more appropriate than putting ourselves in analysis. It is enough to think of all the psychotic and schizophrenic places we know: maladjusted buildings, dysfunctional apartment blocks, overbearing high rises, passageways and bridges lacking in self confidence, paranoid parking lots, depressed elevators and over excited exits.

As for the economy of leisure, we have so exhausted the imaginative potential of theme parks, quaint villages, and sites of the simulated past, and tourism has so saturated the imagination of the inflight couch potato, the vacation voyeur, that new initiatives will be sought. This will call for the creation of rapid transition zones, urban wormholes, that allow us to move rapidly between recreational fantasies, between new architectural hypotheses, in the spirit of open-ended play. Being there instantly, wherever there is, no matter how far, is the Internet's contribution to the idea of foreign travel. It will not belong be-

fore this becomes the demand in the physical, geographical domain of packaged vacations. Although it may never become a commercial reality, the wormhole will certainly survive as an overworked metaphor.

The Hopi have in the floor of each of their kivas a ritual hole called the sipápuni, which represents the place of emergence from the previous world into this fourth world. The entire architecture, one could say the entire culture, is built round this point of emergence, around the concept of emergence and creation. It could be called, in our present terms, a wormhole, a passage of paradigmatic transition. Where shall we locate the sipápuni which brings us into the fifth world, the paranatural, post-biological domain? This is as important a question for urban design as it was for the Hopi.

Wormholes, quantum tunnelling, spiritual channelling, telepathic connectivity, microtubular quantum wave collapse - in every case we are dealing with metaphors of the transformation and transplantation of mind, matter and energy. Our increasing understanding and utilisation of bio electronics means that we have now not simply the ability but the obligation to investigate the psychic and spiritual spheres. For much of this century, art discourse has scorned any mention of the spirit, just as science had left the mind well alone, apart from dancing to the tune of the Freudian fantastic. Cognitive science is relatively new and its studies in consciousness are setting up quite radical trajectories of research. Just as the electronics revolution, which led from telecommunications to the computer, is now taking place in the human brain and extending our conception of mind, so artistically we are moving towards a culture of bioelectronics, cyberspirituality, intelligent architecture and the self-organising, self-referential, self-aware systems of paranatural life. We are witnessing the advent of noetic culture.

The artist has always approached the mind from the outside in. In the West we have attempted to understand mind as a discrete entity, as a finite whole. But telematically mind is without boundaries, it is infinite and dimensionless. We are just emerging from a kind of psychological police state in which the unified mind, the singular personality was the ideological norm.

Paranatural pleasures

Paranature is Nature II (5), the new nature with which we are bionically co-evolving. Paranature does not exist alongside nature proper but absorbs its, recontextualises it. Nature hitherto has always been the a priori context within which or against which creative work in art, science and engineering has always been set. Paranature is growing beyond nature, technologically assisting in nature's many inadequacies. Living systems do not always provide the best solution to human needs. And a part of Paranature is the bio electronic body. What precisely this body will be and how precisely it might be defined is a question which falls as much in the province of art as it does in those of bio-engineering or ethics. We know already that it is not easy to

discriminate between where the body ends and where the environment begins, particularly when the environment is both virtual and actual, non-linear and telematic. The location of the instruments of mind is fuzzy, lying both inside and outside of the brain. The faculty of cyberception which is superseding our natural cognitive and perceptual abilities is as much the product of the artificial environment as of our own internal restructuring. As we engage in personal transformation, self-creation, and the flexibility of identity, the boundaries of gender are eroding. The decline of the modern world, with its relentless fixation on materialism, which in art was translated as an endless preoccupation with surface and appearance, is bringing about a renewed interest in the spirit, an interest in what moves living things, in process, in coming-into-being, in what the Japanese call "ki". Paranature also leads us to reconsider the paranormal and parapsychological, aspects of experience which were largely suppressed or denied in industrial society. Databasing in the telepathic ganzfeld may yet become a viable option in our pursuit of rapid information processing. We know, from recent CIA disclosures if nothing else, that remote viewing can be both efficacious and quite reliable. Our aim is to see that artificial systems, machines and finally architecture not only acquire consciousness but participate in some sense in paranormal life. If our paranatural environment is to display the intelligence that can anticipate our desires as much as it responds to them, then intuition must become as much a part of its constituent systems as cognition. An artificial environment displaying intuitive behaviour is likely to be a creative environment. We may see the day when an aesthetics of self-organisation can be proposed.

For artificial intelligence to acquire consciousness it must attain quantum uncertainty; creative possibilities could arise out of the indeterminacy of neural networking. Now that we can not only get single electrons to store information but, with single-electron logic, to process information as well, and now that the age of the single electron device is near, neuronal modelling of the human brain is feasible. For the artist this is less a matter of performing a more profound analysis of brain behaviour as opening up new regions of intuition and associative thought. It suggests the possibility of a kind of nano-navigation where our multimedia explorations will go deep into the nano-field of particle consciousness. Our bodies will host the molecular chips which process these navigations. Nanotechnology will give us the tools to re-materialise art from screen-based media to world-based paranatural life.

Our understanding of our environment largely depends on our sensory systems, and inversely the very environment that we wish apprehend is constructed by us, notably by the devices we set up in order to interrogate it. These devices are largely digitally equipped to process vast quantities of data captured by artificial sensing systems which far exceed the limitations of our own sensorium and our powers of cognition. Without cyberception to navigate our paranatural environment and to negotiate for new meanings we should be isolated and alien-

ated from the artificial intelligence which surrounds us. The development of our paranatural abilities is such that we are becoming as unlike our biological forebears as they were unlike the apes. This evolutionary gap can be expected to widen exponentially as the technology of cyberception and artificial consciousness develops.

Paranature is producing an environment in which many cherished institutions, practices and perceptions are feeling challenged, threatened, or just plain redundant. The cyberstress that the new technologies and new media exert upon the Culture of Representation is felt as much at the larger political level as it is in individual, personal experience. The impact of telepresence, bionic diversity, distributed knowledge, collaborative creativity, and paranatural life on our sense of self, what it is to be human, indeed of the status and legitimacy of every day reality, is more than most traditional discourses can bear. The breaking point however need not mean the death of culture or the incoherence of consciousness but the revitalisation of our whole state of being and a renewal of the conditions and construction of what we choose to call reality.

Telematic culture concerns the global connectivity of persons, of places, but above all, of mind. The Internet is the crude infrastructure of an emergent consciousness, a kind of global brain. The Net is prodigious in its empowerment of associative thought - the thought of the artist - that aspect of cognition which leads most often to creativity. It is the intelligence of neural networks. It is leading us to the collective intelligence of a planetary hypercortex. Art is always first a matter of consciousness, without a spiritual dimension it atrophies. The artist working with digital technologies must always be asking the question "is there love in the telematic embrace?" (6). Our focus shifts from the plastic arts to the xenoplastic arts, the arts of connectivity and interaction. It not only brings people together across great distances, it brings ideas together across great differences.

There are three orders of art within the paranatural world. The first is translational, storing existing material artworks in digital space; the second concerns the production of art in digital space; the third is transformational, where the observer becomes an integral part of the creative system. Art of the third order, be it digital, paranatural, technological, online, virtual, or unequivocally post-biological, will be intrinsically interactive. In this context, the art object cannot be understood as a thing-in-itself any more than a quantum state can be independent of our observation of it.

First order art, however concrete and materially substantial in its origin, cannot be immune to the global telematisation of culture. What ever its physical makeup or material disposition, it will henceforth find itself at some stage of its history in the Net. Its function there is largely referential. There will always be a loss in translation since no digital simulation can wholly reproduce the tactility of a surface or the precise resolu-

tion of form. The gain, for some, is that the backlit image is often more compelling than a light reflecting surface.

Art of the second order does not originate in pigment, canvas, or steel, but from its inception is composed of pixels, digitally destined from the start for the computer screen and to slip easily into the Net for instant world wide consumption. Aesthetically it mirrors painting or drawing in the traditional sense: a picture is rendered, forms are composed, a work of aesthetic finality is created. You may navigate it but it is basically a closed world. In both cases the Net remains a delivery system, an archival source, a catalogue of holdings. Contrary to its frequent claims to do so, this second order art neither challenges the traditional plastic arts nor renders them redundant. It simply extends the repertoire of artistic images and ideas, reaching those parts of the globe that other gallery mechanisms cannot reach.

There is an art which exists only in the Net, for the Net and by the Net alone. This is integral to art of the third order. It uses the computer not as a video terminal, through which you view objects of art, as a kind of digital carousel projector, and not as an electronic paintbrush, but as a screen of operations, an interface, which enables you to enter into a process of manipulation and transformation of images, texts and sound. It deals not so much with the behaviour of forms and the aesthetic of appearance, as with forms of behaviour and the aesthetic of apparition, of coming-into-being. Our interaction is with its multi-mediated form and its many layered meanings. The viewer is active in the creation of art and with the creation of meaning. In this context ownership of ideas and images is not so much a problem for the artist as a possibility for the viewer. In the Net, to see is to own! To receive is to possess. It's not just that whatever arrives at your particular interface from wherever on the Net is yours to keep but that it is yours to transform. The capacity to transform and be transformed is a primary functional determinant of art of the third kind.

Virtual Reality has long been heralded as the prescription for the art of the 21st. century. The present state of the art is arid and dry. Art in the post-biological culture will be moist. It is from here with its nanotechnology of molecules, its bio electronic systems and its artificial genetic structures, that the paranatural world will emerge. We shall work with forces never worked with before, and sense things which have never been sensed before. This is the phase in our culture where art, science and engineering will most truly converge, where as artists we may finally become partners in evolutionary change rather than simply expressive or analytical bystanders.

Paranatural practices both electrify the classical pleasures of nature and extend them onto another plane. We continue to explore, navigate, surf and play. But we can also distribute ourselves in space and in time. We can enjoy a loved-one's telepresence as much as we once feared their absence. We no longer hold a mirror up to nature but have it reflect what we

want it to be. The artistic pleasures of expression and representation of what we have seen and felt give way to those of the construction and co-evolution of what we envision and wish to experience. The seasons remain but the cycles of transformation multiply. The poverty and disease of the old nature (which included of course human nature) will not disappear. But the consciousness and culture that can arise in a paranatural world, founded as it is in a context of connectivity, reciprocity, interaction and amelioration, is more likely to embody love and compassion than the societies constrained by tradition, non-communication and fear that those in the natural world have had for so long to endure.

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Notes

- (1) Kip S. Thorne, *Black Holes and Time Warps: Einstein's Outrageous Legacy*, Norton, NY, 1994
- (2) Hiroaki Yanagida, ed., *Technology's New Horizons, Conversations with Japanese Scientists*, Oxford University Press, 1995
- (3) Roy Ascott, "The Architecture of Cyberception", in *Leonardo Electronic Almanac*, Volume 2, N° 8, MIT Press Journals, August 1994
- (4) Julian Stallabras, "Empowering Technology": The Exploration of Cyberspace, in *New Left Review*, N° 211, May/June 1995
- (5) Roy Ascott, "Nature II", *Esthétique des arts médiatiques*, Tome II, Poissant, L., ed., Presses de l'Université du Québec, 1995; "Nature II, Telematic Culture and Artificial Life", *Convergence*, Vol.1, No. 1, Libby, London, 1995; "Zurück zur (künstlichen) Natur", *Kultur und Technik im 21. Jahrhundert*, Kaiser, G et al., eds., Campus Verlag, Frankfurt, 1993.
- (6) Roy Ascott, "Is there Love in the Telematic Embrace?", *Art Journal*, New York, 1990, Vol.49 N°3 and in *Theories and Documents of Contemporary Art*, Stiles, K. & Selz, P., Eds., University of California Press, January, 1996