

New Worlds; New Landscapes

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Evolution, said Julian Huxley, is in three different sectors. The first is organic - the cosmic process of matter. The second is biological - the evolution of plants and animals. The third is psychological and is the development of man's cultures. It is this third stage that is now critical, and if we are to survive as a species it can only be by replacing nature's controls by our own, not only birth control but our use of the whole environment.

(Nan Fairbrother, New Lives, New Landscapes)

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Virtual Worlds

Y2K (*Allegory*)

As Gregor Samsa awoke one morning from uneasy dreams he found himself transformed in his bed into a gigantic insect. He was lying on his hard, as it were armour-plated, back and when he lifted his head a little he could see his dome-like brown belly divided into stiff arched segments on top of which the bed-quilt could hardly keep in position and was about to slide off completely.

Franz Kafka, *Metamorphosis*

The Millennium Bug is not a bug. It is a design fault - possibly the most expensive in human history. When the twentieth century ends many software applications will either stop working or give erroneous results. Perhaps it is also an allegory - for the chaos and uncertainty surrounding the transition to new uncharted territories. The Binary Utopian Gateway; a government sponsored construct, a tool for control, a symbol to mark the shared experience of transition. We are exhorted to purge our systems. Orwellian advertising warns of the dire consequences of non-

compliance [A]. The BUG is an acronym; a euphemism, a metaphor, a malevolent presence that has to be exorcised before the New World On The Other Side can be accessed.

We are crossing the threshold from an imperfect, flawed world into a Utopia; or even Heaven. The new, shiny, untarnished Third Millennium. Safe passage is threatened by the machine. Only those who have worshipped at the alter of digital perfection will be admitted. The Unclean will be denied access as they will contaminate this new untrammelled land.

Like the bulletins recounting victories in 1984 [B] daily dispatches from the front line inform us of the latest triumphs in the war against the unseen enemy. British Airways (the world's favourite airline) proudly proclaim that they are now Y2K compliant. They are cleansed and ready for the bright new dawn. Their executives will demonstrate their utter confidence by being airborne at midnight on December 31 1999 [C].

From our pre-eminent chronological vantage point we can review the past and contemplate the future.

The future will never be the same again. Such is the power and versatility of the emerging technologies, architecture will change for ever. The architect of the third millennium will be part-social engineer, part-scientist and part-software engineer. Or she will cease

to exist altogether.

Domain (Heaven)

*When things approach or actually take place
our intellects are wholly at a loss;
and so, unless some other brings us word
we have no knowledge of your human state.
From this you'll understand, that instantly
the doors of future time have been shut fast
and our awareness will die utterly.*
Dante's Inferno

There is near-religious obsession concerning the nature of multi-dimensional domains. The world our disembodied minds occupy during digital intercourse might be heaven [D] . But unrestricted access has polluted and denigrated this binary Eden. It is a decadent world whose genesis in an unlikely alliance of military paranoia and academic opportunism gave way to a liberal distributed democracy that is now under siege from corporate muscle and commercial greed. It is a world struggling to exist in the face of rising commercialism and frontier lawmaking. A three way dynamic stand-off between the incumbents, the newly enfranchised, and the legislators.

The full potential of this incredibly unifying and enabling environment is still to be realised. For a while it was the domain of the initiated, who treated it as their personal fiefdom, a digital extension of the hallowed halls of academia. It was an esoteric world, difficult to access and manipulate. For the cloistered and arcane world of the remote academics this was a perfect environment; impenetrable to most outsiders. A shamanistic world presided over by high-priests of knowledge.

Cerne scientists infected their world with viral HTML. They threw open wide the gates to their fiefdom and the great unwashed flocked in. The World Wide Web was the conduit through which the invading digital arrivistes attacked the bastions of academia and challenged the hegemony of the great institutions. And with them came the diseases, viruses, vermin and detritus that always accompany huge movements

of populations.

This rich environment has been trivialised, vandalised and shamelessly exploited. As a microcosm of the Real World it is excelling itself, focusing and highlighting our worst excesses and shortcomings. Sedentary shoppers browse virtual hypermarkets. Vicarious sexual tourists are offered binary stimulation and satisfaction [E]. Virtual con-men prowl the back streets of the cybercities separating the unwary from their electronic money. Persecutors of racial and gender minorities peddle their shabby wares. The medium is insensitive to weight or proportion. All organisations, no matter how small or marginalised speak at the same volume, reflecting nothing of their pedigree or communal acceptability. The weak, the gullible and the willing are all easy prey. Hate and fear travels well on the web.

The traditional staple of organised information sit neglected on library shelves whilst eager converts restively shuffle through devalued electronic information. Pursuit of knowledge is homogenised. It's not on the Web? - Then it doesn't exist. Boundaries of knowledge are defined by the search engine you use. Everything is so equally available that it is difficult to assign worth or credibility.

VR (Soft Option)

*The feudal serf's 'reality' consisted of the
seasons, local geography, basic feudal
politics, religion, sex and gossip.*
Neil Spiller, Digital Dreams

*Outside and inside form a dialectic of division,
the obvious geometry of which blinds us as
soon as we bring it into play in metaphorical
domains.*
Gaston Bachelard, The Poetics of Space

A young man with attitude and a streak of lawlessness works for an American software corporation. By night he is involved in nefarious network activity. We see scenes of normality, images of the late 20c. This is reality.

But he is a participant in a vast piece of software that simulates The Real World. The Real World is a computer programme controlled by machines that now farm humans for their energy. The human body is confined to a tank of viscous fluid and plugged into the matrix. Whilst the physical entity is born into, and permanently maintained in this state, its mind engages with the software and is never aware of this ultimate schism.

This is 'The Matrix' [F] and there follows the 'enlightenment' of the hero who, Christ-like, joins the 'apostles', who know the ultimate truth, and the subsequent penetration and ultimately, we suppose the destruction of this evil system. There are many religious allegories.

This is a true story. We have perfected Virtual Reality to such an extent that we have forgotten that what we take for the real world is in fact a gigantic software construct.

Architects, collaborating with Sony games engineers, movie directors, engineers and designers set out to design a believable virtual world in which to 'imagineer' their environmental constructs. As the technology rapidly improved and the 'softscapes' became more complex and convincingly populated it was discovered that the softscape visitors were spending longer periods of time in their alternative world, preferring it to their real versions. Several clients opted for permanent occupation of their virtual buildings instead of constructing the hard version.

Having established that long-term Virtual Reality was feasible there was little point inhabiting the old 'real world' when we could construct a new, better version. We soon exchanged bulky, unresponsive external prosthetics for hardwired neural connections.

More convincing virtual environments encouraged more people to abandon their weak, decaying worn-out flesh bodies for shiny new models that looked and worked like those of their youth. Virtual copulation together with computer controlled artificial insemination ensures a continuing real and virtual population.

Many architects were unfortunately redundant in

this environment as the only thing they could provide for virtual citizens was a two-dimensional AutoCAD floor plan. Most architects stubbornly lived out their lonely and meaningless lives in the material world inhabiting buildings of earlier millennia.

NanoWorld (Real Virtuality)

One of the most fateful errors of our age is the belief that 'the problem of production' has been solved.

EF Schumacher, Small is Beautiful

In 1959 physicist Richard Fynman [G] introduced the concept of building machines atom by atom, an idea taken up 20 years later by Eric Drexler in his now famous book 'Engines of Creation'. On its publication the book was met with scepticism and little interest. But his dissertation in 1992 [H], provided the impetus for further research and development.

Nano refers to a billionth part of a meter, the width of five carbon atoms. The basic building block, a nanotube, is extremely strong and durable and anything built from it will be far stronger and lighter than a traditional structure. Computers will also be built of nanotubes, and nanostructures or nanomachines will have their brains distributed throughout their bodies.

The key to nanoconstruction is replication. The difficulty and cost of building at atomic level is enormous so initially a simple machine is constructed that in turn builds a more complex machine and so on. These nanobots are equipped with brains and flexible arms and are programmed to self-replicate.

Self-replicating machines will be used for almost any task from navigating the human bloodstream, repairing damaged or diseased tissue and organs, to assembling food, clothing or buildings. It presages the end of poverty and conflict with limitless food and materials together with longevity or immortality as even human cells can be re-engineered.

The boundary between the Real and Virtual worlds is blurred by the concept of nano swarms. Intelligent 'foglets', human cell-sized nanobots,

equipped with twelve arms grip other foglets to form larger structures. They are intelligent and can share their computational abilities creating a distributed intelligence. These 'Fogs' can be as opaque or transparent, as permeable or resistant as required. They can constantly be reforming themselves creating different materials, different shapes, different properties. One minute you can be sitting in a Living Room the next walking through a park. Virtual environments, but in a real world. Is that man with his dog real or just a fog person and canine?

Bovis NanoBuilders will be providing bespoke swarm technology fog buildings. Wake up in your fog bedroom as it metamorphoses into a kitchen where a fresh cup of nan-engineered coffee is ready to drink.

Beings

I think, therefore I am.

Renee Descartes

Mind (Consciousness)

Before 2030 we will have machines proclaiming Descartes's dictum. And it won't seem like a programmed response. The machines will be earnest and convincing. Should we believe them when they claim to be conscious entities with their own volition?.
Ray Kurtzweil, The Age of Spiritual Machines.

I do not think that non-biological machines can ever cross the chasm between computation and understanding.

Sir Roger Penrose, Rouse Ball Professor of Mathematics, University of Oxford.

And what of the sentient beings that populate real and virtual worlds, that give meaning to built environments, that physically reference them in terms of scale and form? And what of their mind and the brain that accommodates it?

The familiar image of the brain is represented by the cerebral cortex, the mass of randomly folded, soft,

spongy tissue that forms the top and sides of the brain. The two halves share information to produce a coordinated interaction with the body. The corpus callosum orchestrates the exchange of information between the two hemispheres so that they act as one. In the frontal lobes of the cerebral cortex ideas are created. This is the home of consciousness. Beneath the cerebral cortex is the limbic system or mammalian brain and this is where emotions are generated. Further down we encounter the more primitive areas, the mid-brain and the cerebellum or reptilian brain. This part deals with the vegetative processes of the body such as breathing and heartbeat. Using modern scanning techniques to monitor brain activity we are building detailed maps of the mind.

If you were to draw a 'you are here' sign on our map of the mind, it is to the frontal lobes that the arrow would point. In this, our new view of the brain, echoes an ancient knowledge - for it is here too that mystics have traditionally placed the Third Eye - the gateway to the highest point of awareness.

Rita Carter, Mapping the Mind.

It has long been debated whether a computer could ultimately match and finally surpass a human brain in sheer reasoning power. In 1950 Alan Turing proposed a test for what was described as artificial intelligence. To Turing, thinking implies conscious intentionality.

When considering the capacity of a computer to accommodate consciousness, there is much debate as to what constitutes consciousness and how it manifests itself. Does consciousness have a purpose or is it merely a by-product of neural complexity? Is it a continuous stream, or is that feeling of continuity and oneness an illusion? Supposing you could download the entire contents of a human brain and store it in computer memory, would consciousness accompany it? If so, in exactly which bytes of data would it reside and how much data could you junk before that personality ceases to exist. Neil Spiller

contemplates this in the Life-Box [I].

*I returned home, the window was open.
Grandfather was jingling again.
I smiled at him, his red eye blinked back.
He was where I'd left him.
As he always was, hanging from the ceiling
in the
corner of the lounge.*

*I had a question to ask him.
I stood on a chair.
So he could look into my eyes.
He said "Dave, good morning."
I said "Who made you? I mean, what I can
see."
"I did, with the help of two architects."
"How long have you been dead?"
"Fifty Years," came the reply.
"It's not so bad," he giggled.
"I don't know I'm born."
Neil Spiller, Digital Dreams*

Body (Incarceration)

*Ratz was tending bar, his prosthetic arm
jerking monotonously as he filled a tray of
glasses with draft Kirin. It was a Russian
military prosthetic, a seven-function force
feedback manipulator, cased in a grubby pink
plastic. He saw Case and smile, his teeth a
webwork of East European steel and brown
decay.
William Gibson, Neuromancer.*

False teeth and wooden legs are not prosthetics that most people would associate with the sexy world of the ultimate, desirable corporeal add-ons; but they were probably the first. There are an impressive number of organs and parts that can be replaced. We have artificial hands, arms, legs, feet and spinal implants. Micro video cameras have been successfully connected to the optic nerves allowing the unsighted a black and white view of the world. We have joint

replacements including hips, elbows, wrists, fingers and toes. We can replace hearts and stimulate their action. We can rebuild body tissue and even implant devices to assist in penile erection. We are currently working on new materials from cultured cells to replace pancreas and liver. Artificial organs are in development. We are also developing ways in which prosthetics can be hard wired into the existing neural and nerve networks. Films like Robocop [J] have popularised the idea of combining electro-mechanical devices with genetic material to produce a hybrid - the cyborg - half human, half robot.

But, there are other considerations; aesthetic, psychological and emotive. Our concept of our bodies is not just visual, there are tactile and philosophical components. We expect our, and other people's bodies to be soft and warm.

We have now started to understand the cellular composition of our bodies. We are able to interpret and manipulate the code that governs the construction of our cells, the description of what and who we are. It is now conceivable that we can approach the repair, enhancement and replication of the body from a cellular standpoint. Even ageing could be postponed.

A genetically engineered superhuman would be only a second rate robot and a designer would be quick to recognise the advantages of re-engineering the bodies cells using Nanotechnology rather than the traditional protein-based structures.

But why not abandon these atavistic shells in favour of virtual, soft containers for our environmental interfaces. Virtual bodies have none of the drawbacks of actual, physical, vulnerable package of flesh. With a cerebral base in the old world, hard-wired to powerful, fast machines running hyper-real software, the requirements for physical presence in the old sense diminishes. As the discarded body atrophies over time, the brain, relieved of other tasks, evolves into an advanced and enhanced state of super-consciousness, the better to sample the pleasures of its new environment.

Real Worlds

Production (and deviation)

Ortho Mode. An AutoCAD setting that permits only horizontal or vertical input.
AutoCAD Manual, R12

Meanwhile, back in the Real World, vision has been appropriated by followers of other disciplines. In a climate of increasing specialisation and constantly emerging and evolving technologies designers of the hard environment find themselves ever more marginalised other, more focused professionals.

Motivation and inspiration concerning digital technology is informed by half-truths and cliches. "Computer Literacy" is the touchstone of politicians and professionals, with little imagination and even less idea of the true impact of machines in education and the workplace. Aspiration is subjugated by an educational and organisational system that seeks to polarise arts and sciences. Under these conditions little surprise that we are not producing Leonardo da Vinci or Buckminster Fullers.

Our brave RIBA-Boys develop computerised management and production systems of great sophistication. There is much mutual congratulation and re-adjustments of profit margins as the busy hum of the plotter resounds across RIBA-land, and countless aspiring designers are consigned to the keyboard and the friendly emissions of the VDU. Computer technology has arrived, and It Is Good.

A few deviants, encouraged to believe that perhaps the machines could assist in the deeper and fuller exploration of spatial and formal issues, are mostly ignored by their peers who know that economic nirvana lays in their ability to produce.

However, when called upon to do so by patrons, RIBA-Men can demonstrate their dexterity and vision by producing glossy visuals. They are hooked on the, sexy language of slick, empty computer visuals. This language has been adopted, hijacked and subverted. The currency is "photorealism, fly-throughs,

animations, virtual reality" and thin empty projects acquire a veneer of gloss and artificiality.

The deviants, still mostly ignored, think that it is quite a good idea to use the technology to investigate, interrogate and explore. Structures are designed in three-dimensions, issues of lighting, texture, colour and scale are studied at length. Relationships between structure, form and space are examined. Other technologies and disciplines are visited and borrowed from. Virtual spaces are inhabited and sampled. And, oddly, they still like using the pencil and making models.

Hard Choices (Soft Choices)

Cyberspace minds may continue to learn even after the death of the wet intelligence that spawned them and on which they are modelled. Where does death reside, or, indeed, is it fully possible any more?.

Neil Spiller, Digital Dreams.

The pace of technological advances is ever-accelerating, leaving most architects bewildered. They lack the imagination and will to fully embrace the digital world. For the decreasing band of deviants the technology offers a number of choices.

Do we create softworlds and inhabit them virtually? These worlds would be copies of our current world and the soft We's would be copies of the flesh versions. We would live in familiar architecture and live familiar lives. Our bodies and neural hardware would remain in the real world whilst our minds, senses and soft bodies interacted with the soft world. We would design soft buildings.

Alternatively, we adapt our virtual bodies to an environment. In a softworld climates and bodies can be modified instead of building envelopes. Or we create virtual environments in our hard world, interacting with and shaping them at will? We can invent any number of virtual pals to share these virtual environments. In any event it is unlikely that the architect of 1999 would be required, at least not in her present form.

Meanwhile, unseen, millions of self-replicating microscopic aerobots drift through the air. They have been programmed with the AECKIL virus, they are on a mission.....

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