

TURBULENCE

AN INTERACTIVE MUSEUM OF UNNATURAL HISTORY

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What would life be like if it were made from computer algorithms rather than flesh and blood? *Artificial Life* is the name given to the simulation of natural forms and processes using materials other than those found in nature. It is not so much a general method of investigation, but perhaps a philosophy that supposes life can be defined in general terms by its mechanisms, not in any particular materialisation. It questions definitions: what is life? Is there anything particularly unique about the life we know? Could life be a more general property, a logical essence of the universe we inhabit, the planet we live on, the computers we make?

TURBULENCE is an interactive work that travels deep into the computer space of Artificial Life, in both its method of production and the poetic ideas presented in the interactive. The video laserdisc contains almost thirty minutes of computer animation – a menagerie of synthesised forms – created using software designed specifically for this project. By abstracting processes used in natural evolution, the computer becomes the world within which artificial life-forms are created through simple algorithmic rules, which are the Artificial Life equivalents of DNA. Artificial forms are evolved within the machine and made discernible by computer visualisation.

People interact with the work using a touch-sensitive screen. By pressing on words and symbols, different selections from the videodisc are projected on a large screen in front of the viewer. The work is a poetic interpretation that draws upon the philosophical implications of evolutionary theory. As an interactive museum, it is a collection of abstract thoughts, simulations, ideas, information and poetry – all a multiplex of links into an interactive web of computer synthesised imagery.

TURBULENCE is a genuine example of the way in which the computer medium offers a new and different perspective on nature and our relationship with nature. In many ways, the work is a kind of futuristic natural history museum realised through the synergetic combination of mind and machine – a document of a type of life that exists only within the abstract “pluriverse” of computational space: a place that never was, in a time that has never been.

The Beauty to Be

In his poem *Binsley Poplars*, Gerard Manley Hopkins lamented the felling of a row of trees in 1879 to make way for a housing estate: “After-comers cannot guess the beauty been,” he wrote. Hopkins was often referred to as a ‘nature poet’, a man who was obsessed with the ‘sensation’ of nature. He coined the word *inscape*, a name for that ‘individually distinctive’ form which constitutes the rich and revealing ‘oneness’ of the natural object.ⁱ Inscape is the perception of the deeper form or pattern of nature, a unity that gives meaning to external forms. Hopkins had a deep inner communion with nature and his insight foretold much: “O if we but knew what we do / When we delve or hew - Hack and rack the growing green!”ⁱⁱ

Binsley Poplars is an example of what British writer and explorer James Hamilton-Patterson has called “the beginning of a sustained note of mourning” about the loss of natural landscapes.ⁱⁱⁱ For humans, landscape, nature and the wild are more than just a physical resource to be consumed: they are an aesthetic necessity.^{iv} Our landscape is changing because of us, and it seems that we are emotionally worse off without it. Our descendants will never know the ‘beauty been’. Sentiments about a ‘balance of nature’ or a harmony in the world that existed prior to human intervention are of course misguided. We are as much a part of nature as anything else. Nature does not understand beauty, destruction or morality; it is simply callous and indifferent. TURBULENCE seeks to explore this thick root from the tree of the enigmas of being.

TURBULENCE derives its title from Peter S. Stevens’s book *Patterns in Nature*. “Turbulence,” he writes, “forms the primordial pattern, the chaos that was in the beginning...” It is no coincidence that milk

poured into a wet sink imitates the design of galaxies.”^v A mysterious paradox, the phenomenon of turbulence remains beyond our complete understanding. “All things are becoming, all things are flowing,” claimed the ancient philosopher Heraclitus. The new water chases out the old, but the patterns remain the same. How is it that something so seemingly innocent and simple as the spreading of clouds remains so enigmatic? Turbulence defies precise analytical description. It is one of those things related to chaos: statistically, we know what it is like. Visually we know how to recognize it, but analytically it still defies description. Each instance is similar, yet different. It is an *emergent* property from the micro, revealed in the macro – just like life. The form and pattern of turbulence seems to encapsulate some of Hopkins’s inner ‘oneness’: a oneness that defines the distinctive ‘form’ of life.

TURBULENCE is about the inscape of nature. However, this is not the nature we know, it is a digital nature, a synthesised macrocosm that is of more than human design. It is an unimaginable digiscape that has emerged from that realm, so magical and barren, of computation and logic, numbers and rules swimming around in a primordial soup of computer memory. Rules (digital genes) survive based only on the aesthetic fitness of the organisms they define. In this case, the aesthetic fitness is my perception of their visceral quality of “naturedness.” Others would have evolved different things (even using identical software), so in a sense it is an intensely personal interpretation. It is a compilation of dualisms, a celebration and a lament: a lament for things now gone, a celebration of the beauty to come, and the fact that we can appreciate and create it. It heralds a new evolutionary landscape made possible by technology: a digital poesis.

The ramifications of Darwin’s theory of natural selection have so many unsavoury implications that even Darwin himself waited more than twenty years after its development before publishing, and then only because a contemporary, Wallace, was about to publish the same theory. Biologists tell us that evolution should not be confused with progress. French molecular biologist Jaques Monod declares that we are merely “products of chance and necessity.”^{vi} There seems to be a hopelessness in this knowledge for a species such as ours,

obsessed as we are with ascribing meaning. Even Monod, in a cruel teleological joke, has turned to poetry to express sufficiently his thesis of nature and define its purpose. Scientists still smart over Walt Whitman's indifference to their description of our statistical place in the cosmological milieu ("I do not know what it is, / except that it is grand, / and that it is happiness, / And that the enclosing purport of us here is not a speculation."^{vii}) They may preach monism, but this alone leaves us cold in an empty place. Like the Binsley poplars, cut down in the name of progress, a cleft is created by our manufactured sophistication. We need to turn to art in order to cushion ourselves against the incessant blows that discovery keeps delivering us. Art reassures us; it is our collective psychological insulation from that bitter winter of scientific discovery. It is an enigma indeed that these disciplines, considered the greatest endorsement of our purposeful status, reduce us to insignificance by implication. Nature is not teleonomic, and we are the accidental products of that nature. "Teleology is like a mistress to a biologist – he cannot live without her but he is unwilling to be seen with her in public." (J.B.S. Haldane)^{viii}

The space made possible (and visible) by computer simulation seems to pose somewhat of an aesthetic dilemma. It is one of the great uncharted spaces still left for humans to explore.^{ix} But where is this space? Is it a singular representation of the inner mind of the artist, or an external territory, waiting to be colonised? To some extent, many computer-generated works do fit into the realm of the interior. What differs about TURBULENCE is that the represented 'organisms' created by artificial life techniques are to some extent autonomous. They are not completely under the control or design of the creator; they are outside of mind.

It could be argued that many previous artforms have embodied this concept in various ways. Autonomous entities synthesised in the computer are made unique by the fidelity and dexterity of the simulation, the source of representation, and the means of construction. What justifies the status of both a completely new medium and process is the autonomy that these synthesised entities display is based on the externality of nature. In essence, a representational shift from a context surrounding form, to one that proposes a philosophy of process.

Artificial life sees biological life only as a mere subset of all possible life. Theoretical biology's goals are renewed: it can now search, define and analyse life in other media, the wider concept of life as process.

For any representation, reality is an excess that exceeds the scope of representation, a reserve from which the production of truth draws, but representation can never exhaust or contain the real. Representation using computers is generally given the term *modelling*. A model is an abstraction that attempts to capture some components or behaviour of a real system. What artificial life suggests is something slightly different. Our computer representation of 'life' is no longer necessarily a model of life on earth – it is no longer, in fact, a model. It is part of the wider sphere of *life-as-it-could-be*, and some would argue, as such deserves its own status.^x This has an important consequence: something which is no longer a model does not suffer the problems of representation that models do, for models can only ever represent a closed system, and *life-as-we-know-it* is not closed.^{xi}

But how is the 'life' that exists in the machine any different from imaginary life that I can conceptualise in my mind? How different could *life-as-it-could-be* ever be from *life-as-we-know-it*? Like the phenomenon of turbulence these things, at present, await answers.

So, much of TURBULENCE could be considered an inner representation of an outer phenomena – the inscape of an impossible nature, synthesised by a mindless set of rules, executed rigorously and exactly, without question or purpose, by a digital computing machine.

Media theorist Gene Youngblood claims that virtual reality will give us the capability to create on the same scale as we have destroyed. Indeed, our first-world society is rapidly turning inward to the comfortable synthesis of the computer screen (or VR display) in order to hide from the uncomfortable reality that we have created around us. If the entities and spaces that we are now beginning to coalesce in our computers are indications of the aesthetic substitutes for what we soon may no longer have, what does this mean for us? Surely a digital nature will have to offer the same or better aesthetics over the real wild spaces (we are not prone to compromise). These new evolutionary landscapes will be constructed by us and for us, and a nature redesigned for humans is likely to become a mirror of human

limitations, rather than a congruent replacement. As Hamilton-Patterson reminds us, "Landscape blurs easily into the parental."

Can our manufactured constructions ever have that inner oneness of our own evolutionary spaces? Will the beauty to be ever equal the beauty been?

ⁱ Gardner, W.H. *The Poems and Prose of Gerard Manley Hopkins*. Penguin Books: Harmondsworth, England, 1953.

ⁱⁱ Ibid.

ⁱⁱⁱ Hamilton-Paterson, J. *Seven-Tenths: the Sea and Its Thresholds*. Vintage: London, 1993.

^{iv} This does not detract from the fact that natural resources hold a considerable survival value. See for example, "Special Issue: Managing Planet Earth." *Scientific American*. September 1989.

^v Stevens, P.S. *Patterns in Nature*. Peregrine Books: London, 1976.

^{vi} Monod, J. *Chance and Necessity*. William Collins Sons & Co., Ltd.: London, 1972.

^{vii} See Barlow, C. *Evolution Extended: Biological Debates on the Meaning of Life*. MIT Press: Cambridge, USA 1994, page 164.

^{viii} Quoted in Bedau, M. & N.H. Packard. "Measurement of Evolutionary Activity, Teleology, and Life in Artificial Life II." C.G. Langton, C. Taylor, J.P. Farmer and S. Rasmussen (eds). *Artificial Life*. Addison-Wesley: New York, 1990, pages 431-61.

^{ix} McCormack, J. "Memories Fuse into Instructions: the Making of Turbulence." *Narrative & Interactivity: the Filmmaker and Multimedia Conference*. Proceedings, Australian Film Commission: Melbourne, 1995.

^x Emmeche, C. "Is Life as a Multiverse Phenomenon?" *Artificial Life III*. Edited by C.G. Langton. Addison-Wesley: New York, 1994.

^{xi} Oreskes, N.; K. Shrader-Frenchette and K. Belitz. "Verification, Validation, and Confirmation of Numerical Models in the Earth Sciences." *Science* Volume 263, February 1994 pages 641-6.