TURBULENCE
An interactive museum of unnatural history

Catalogue Essay: THE BEAUTY TO BE
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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 by any specific materialization. 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. A video laserdisc contains almost 30 minutes of computer animation - a menagerie of synthesized forms - created using software written specifically for the work. By abstracting processes used in natural evolution, the computer becomes the world within which artificial life-forms are created, through simple algorithmic rules (the Artificial Life equivalent of DNA). Artificial forms are evolved within the machine and made discernible by computer visualization.

People interact with the work using a touch screen. By touching words and symbols, different sections of 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, it is a collection of abstract thoughts, simulations, ideas, information and poetry, all a multiplex of links into an interactive web of computer synthesized imagery.

TURBULENCE is a unique example of the way in which the computer medium offers a new and different perspective on nature and our relationship to it. In many ways the work is a type of futuristic natural history museum made visible 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 [1]. Inscape is the perception of the deeper form or pattern of nature, a unity that gives meaning to external forms. Hopkins had a deep camaraderie 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!' [2]

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.[3] For humans, landscape, nature and the wild are more than just a physical resource to be consumed - they are an aesthetic necessity.[4] Our landscape is changing because of us and it seems we are emotionally worse off without it. Our descendants will never guess the beauty been. Sentiments about a 'balance of nature',

or a harmony in the world that existed prior to human intervention, are of course false. 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. One thick root from the tree of the enigmas of being, this is what TURBULENCE seeks to explore.

TURBULENCE derives its title from Peter S. Stevens' 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' [5]. 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 an exact analytical description. It is one of those things related to chaos: statistically, we know what it's like; visually we know how to recognize it; but analytically it 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' inner 'oneness': a oneness that defines the distinctive form of life.

TURBULENCE is about the inscape of nature. But it is not the nature we know, it's a digital nature, a synthesized macrocosm that is more than of 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 poeisis*.

The implications of Darwin's theory of natural selection have so many unsavory 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 we are merely 'products of chance and necessity' [6]. There seems to be a hopelessness in this knowledge for a species such as ours, so obsessed with 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') [7]. 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 made sophistication. We need to turn to art to cushion ourselves against the incessant blows that discovery keeps beating us with. 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 [8].

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 [9]. But where is this space? Is it a singular representation of the inner mind of the artist, or an external territory, waiting to be colonized? 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 synthesized 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 synthesized entities display is based on the externality of nature. Representation using computers is generally given the term 'modelling'. A model is an abstract thing that attempts to capture some components or behavior of a real system. What artificial life proposes 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 [10]. 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 [11]. But how is the 'life' that exists in the machine any different from imaginary life that I can conceptualize 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 phenomenon' - the inscape of a possible nature synthesized by a mindless set of rules, executed rigorously and exactly, without question or purpose, by a digital computing machine.

Media theorist Gene Youngblood claimed that virtual reality will give us the capability to create on the same scale as we have destroyed. Indeed, our highly technological society is rapidly turning inward to the comfortable synthesis of the computer screen (or VR display) to hide from the uncomfortable reality that we have created around us. If the entities and spaces that we are now beginning to synthesize 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). Our landscapes are often imagined as parental. Can our synthesized constructions ever have that inner 'oneness' of our own evolutionary spaces?

Will the beauty to be ever equal the beauty been?

Jon McCormack, 1995.

References

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[2] Ibid.

[3] Hamilton-Paterson, J., Seven-tenths: the sea and its thresholds, Vintage, London, 1993.

[4] This does not detract from the fact that natural resources hold a considerable survival value. See for example, Scientific American, Special Issue: Managing planet earth, September 1989.

[5] Stevens, P.S., Patterns in nature, Peregrine Books, London, 1976.

[6] Monod, J. Chance and necessity, William Collins Sons & Co. Ltd., London, 1972.

[7] See Barlow, C., Evolution extended: biological debates on the meaning of life, MIT Press, Cambridge, USA 1994, p.164.

[8] Quoted in: Bedau, M. & N.H. Packard, 'Measurement of evolutionary activity, teleology, and life in artificial life II', in C.G. Langton, C. Taylor, J.P. Farmer and S. Rasmussen (eds), Artificial Life, Addison-Wesley, New York, 1990, pp.431-461.

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[10] Emmeche, C., "Is Life as a Multiverse Phenomenon?", in Artificial life III, C.G. Langton (ed), Addison-Wesley, New York, 1994.

[11] Oreskes, N., K. Shrader-Frenchette and K. Belitz, 'Verification, validation, and confirmation of numerical models in the earth sciences', Science vol. 263, February 1994, pp.641 - 646.