

# Studies in Material Thinking



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Faculty of Design and  
Creative Technologies  
Auckland University of Technology  
Auckland 1142, New Zealand

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Eml [info@materialthinking.org](mailto:info@materialthinking.org)  
Web [www.materialthinking.org](http://www.materialthinking.org)

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**Nigel Helyer and John Potts**

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*Abstract: This article takes the form of a dialogue between artist Nigel Helyer and writer and theorist John Potts. The themes considered are the concept of the experimental in art and science, the relationship between the arts and science, and the significance of the environment to both scientific research and creative practice. Within this general context, reference is made to recent art works by Dr Helyer.*

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Author(s)

**Nigel Helyer /**  
Visiting Professor,  
National Institute  
For Experimental Art,  
COFA, UNSW /  
sonique1@me.com

**John Potts /**  
Associate Professor in Media /  
Department of Media, Music,  
Communication and Cultural Studies /  
Macquarie University /  
john.potts@mq.edu.au

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**Introduction**

This article takes the form of a dialogue between artist Nigel Helyer and writer and theorist John Potts. The themes considered are the concept of the experimental in art and science, the relationship between the arts and science, and the significance of the environment to both scientific research and creative practice. Within this general context, reference is made to recent art works by Dr Helyer.

**John Potts:** Much of the received wisdom concerning art and science derives from Romantic thought of the early nineteenth century. The Romantic reaction against the Enlightenment's elevation of Reason and science has had an enduring intellectual impact and cultural legacy. The Romantics aligned art with imagination, intuition, genius, sensitivity to the sublime in nature, yearning for a harmonious relation with the environment, while science was aligned (witheringly as in William Blake's treatment) with reason, calculation, measurement, the subjugation of nature, the "dark Satanic mills" of industry. Despite the industrialization and urbanization ensuing in Western societies from the Industrial Revolution, and the rationalization and technologization of twentieth century modernity, the West has never shaken off this Romantic construction. It survives in potent form in the wake of global warming and the increased ecological sensitivity as a result of climate change. The Romantic vision is given popular expression in James Cameron's *Avatar* (2009), the highest-grossing film ever made. In this film, the indigenous Na'vi live in a harmonious spiritual relationship with nature, threatened with catastrophic disruption by the forces of the West, whose rationalism and science is in destructive service to the military and to imperial exploitation of the environment. The spirit of Jean-Jacques Rousseau, whose *Discourse on the Sciences and the Arts* (1750) upheld the 'state of Nature' over advanced civilization, is flourishing in the early twenty-first century.

Yet the relationship between art and science has never constituted a simple dichotomy, even in the formative Romantic period. As Richard Holmes has revealed in his book *The Age of Wonder*, the Romantic period was largely in thrall to the wonder, beauty and "terror" of scientific experiment. Major breakthroughs in chemistry, botany and electricity fascinated learned individuals, including poets. Coleridge admired the genius in science as much as the genius in art; 'he felt that the new poetry and the new science were so closely entwined that they must somehow merge' (Holmes, 2008, p. 274). And even the Romantic vision of *Avatar* includes in its narrative an advanced science of prosthetic visualization, ultimately used to undermine the rapacious and destructive science deployed by the military-industrial complex.

Nigel Helyer's research and artworks resist a simplistic bifurcation of art and science. Instead, they are poised at the intersection of art and science, drawing on both the similarities and differences across these domains. Dr Helyer has written of the "courtship" between "Poetics and Techniks" (Helyer, 2004, p. 196), manifest in recent attempts to foster art/science collaborations and, more specifically, in his own work.

**Nigel Helyer:** I spent my childhood in a small Sussex fishing village that contained two notable buildings, one the home of the poet William Blake, the other the home of his friend Halley. This second home was known as Comet Cottage, named after Halley's namesake the astronomer. Without being consciously aware of it, I grew up in a cosmos where the arts and science were not separated but intertwined. This cohabitation of art and science has marked my endeavours ever since.



**John Potts:** The attempts to develop collaboration between artists and scientists have recently drawn on the concept of the experimental, which may be said to operate in both spheres of endeavour. You have pointed out that in earlier periods in the history of science, including the nineteenth century development of electricity, scientist inventors such as Edison and Tesla were “electrical experimenters prone to spectacular public demonstrations and performances.” (2004, p. 195) Yet there are significant differences between the function of experiment in the scientific method and the practice of the experimental in arts practice. While an artist may try out ideas or the possibilities for different combinations of elements in an art work, the experimental in science takes place as empirical testing of a hypothesis, allowing for the “falsifiability” of hypotheses which Karl Popper defined as the fundamental core of the scientific method. Furthermore, as Siân Ede notes in his study of art and science, this empirical testing is expected to operate according to strictly impartial methodology, “providing evidence which can be open to public scrutiny and rationally assessed” (Ede, 2005, p. 7). Perhaps the experimental in science is of a different order to the experimental in the arts?

**Nigel Helyer:** While both art and science equally share in the process of invention, speculation and intuition in equal amounts (neither has a particular monopoly) science is structured (or so we like to think) in a manner designed to reveal particular and useful knowledge relating to particular questions; in other words it is instrumental. While art can operate in this manner, it rarely does, due partly to our historical expectations, our stereotypes and partly due to the vastly divergent economic mechanisms that govern the structures of art and science.

I am going to conflate the term experimental with science here, which isn't strictly accurate as within my own practice I simply consider “experimental” to mean attempting things which are both speculative and which have a high risk of failure, technical or otherwise - and most of the projects I undertake have this aspect to them.

**John Potts:** Your *LifeBoat* project (2004) contained much of the conceptual framework of scientific practice, even if at times in parody. The project was also manifest as a process in the public manner with no strictly determined outcome, in a way similar to the scientific method.

**Nigel Helyer:** *LifeBoat* was a prosaic title indicating both the physical reality (the project was contained within a fully weatherproofed ship's lifeboat) and somewhat more conceptually, as the lifeboat was home to a biotechnology lab: a home to the processes of life itself. It was a collaboration with Sarah Pell, Oron Catts, Ionat Zurr and myself, and was in several senses modeled on the scientific process. It was also an attempt to critique the public and political role science is frequently asked to play.

*LifeBoat* established a fully functional biological laboratory within a fully enclosed ship's lifeboat, mounted on board the Baltic cruise ship *Opera* for the ISEA 2004 event. The *LifeBoat* laboratory focused on tissue culture of elements of the local marine environment. The lab produced small biological survival packs as well as “provocative instructional” starter items (passports with mini CDs) for re-establishing and/or deconstructing cultural and political structures, quite appropriate in the current political climate. It was developed during the period when Colin Powell was ranting to the UN about the existence of mobile bio-labs in Iraq, and whilst members of the Critical Art Ensemble were on trial in the US for possessing harmless E-Coli bacteria. The *LifeBoat* critique was both vitriolic and playful, demonstrating that in Scandinavia at least (Oslo, Helsinki, Tallinn and later Zagreb) the bio-terrorism paranoia was virtually non-existent.

Other parallels with the experimental include that the work was collective and collaborative. It was a process rather than goal-oriented, combining social and biological experiments in a performative mix, inviting participants to immerse themselves in a bio-science environment, itself encapsulated within an art context.

However, while being process-focused, the entire project was highly structured with a strictly defined and repeatable modus operandi. Yet it also had a generative structure producing open-ended outcomes. Overall the project was enacted in public and



invited public scrutiny, meaning its results, like that of scientific experiments, were open to interpretation and response.

**John Potts:** The *LifeBoat* project incorporated a degree of ambiguity. It seems to have been conceived as a self-reflexive critique, encouraging an ambiguous view of both political culture and the culture of biology.

**Nigel Helyer:** The *LifeBoat* functioned either as a positive and optimistic “survival mechanism” or as a broken mirror, reflecting contemporary colonialist endeavours and carrying the threat of contamination and imperial cynicism. In this respect *LifeBoat* may not be the panacea that it at first might appear; rather it could as easily represent yet another utopian and ill-conceived scheme. In the final analysis, lifeboats are only necessary when the real ship is sinking.

**John Potts:** Concern for the environment has become a central political and artistic issue in the contemporary world. Sean Cubitt in his book *EcoMedia* proposes that eco-politics is indeed “the single largest unifying political discourse of the early 21<sup>st</sup> century” (Cubitt, 2005, p. 9), a grand narrative in an age that was supposedly devoid of grand narratives. Cubitt suggests that art works, and other cultural forms such as films, can voice the contradictions of their period, and this can include the role of technology. For example, it may be demonstrated that “not all technologies are instrumental, that is, used as instruments for domination over nature” (p. 4). Media forms and art works may rely on certain technologies to communicate an ecological sensitivity. Environmental sustainability is integral to a number of your recent works, several of which depend on technology to convey ecological themes.

**Nigel Helyer:** I have increasingly focused upon the environment, but in a manner that combines the physical environment with the social environment. This synergy is highly productive in opening up pathways into the ways we inhabit and understand our surroundings, be they cultural, historical or ecological. So these recent works simultaneously embrace a physical site or locus, a wide range of social and oral history, music and memories. This is then combined with environmental material, recordings and scientific data to form a complex and hybrid image or portrait, which I refer to as an “audio-portrait.”

**John Potts:** *Ecolocated* (2011), in particular, focused upon littoral cultures, how marine ecologies close to human settlements are perceived by scientists and local communities, and how an art and science research team will introduce new cultural strategies to interlace them.

**Nigel Helyer:** *Ecolocated* was a collaboration with Tapio Makela, Andreas Saigan, myself and the AudioNomad Research Group. The project was based upon a large sailing catamaran which we converted into a solar-powered digital studio, sailing from Germany, across the North Sea, through the Great Glen in Scotland and across the Irish Sea to Belfast, later returning to the north-west coast of Britain, finally to moor outside the Tate North in Liverpool for the AND festival at FACT. The AudioNomad team provided new software platforms to produce an online spatial SHIPS\_BLOG, and in the Belfast exhibition we developed an extended version of our sonic cartography, which incorporated a triple-screen projection and interactive map surface. These supported location-sensitive audio, images and water quality data visualisations and sonification. These were mixed in with environmental and oral history material, all of which was geo-located in a multilayered composition that rendered densely intertwined sonic narratives of and by the place: Belfast.

The *EcoLocated* team conducted water quality tests, made field and hydrophone recordings, interviews, and collected and geo-tagged information to create a location based immersive, surround-sound installation. *EcoLocated* embraced a new development which took water quality measurements, which were sonified and visualised within an enhanced version of AudioNomad’s Trigger Tiles editing platform, allowing visitors to interact with pools of scientific data, geo-located within the mapping interface.



**John Potts:** Another recent project *VoxAura, The River Sings* (2011), represents a more public and sculptural approach to similar issues.

**Nigel Helyer:** The focus of this work is upon the maritime life and marine ecology of the Port City of Turku (Finland) and the Baltic Sea. I have been collecting material in two forms, firstly by building up a big library of audio content based upon the narratives, music and ambient sounds of Turku and the Finnish archipelago. The second source comes in the form of water quality data collected from two trans-Baltic ships. The project's computer randomly selects audio and data convolving them to form a type of data-music that reflects both the harmonic structure of the original sound and the variables in the statistical information. Physically the work is manifest as two ships' lifeboats moored either side of a busy pedestrian bridge over the River Aura in the centre of town. One boat plays audio drawn directly from the sound library whilst the other plays the corresponding data-affected audio. In essence the work asks the public to simply reflect upon the River and the Sea, not simply from the normal economic perspective (as a transport medium, a food source or waste disposal system) but for its vital role as a chemical interface that controls our climate and our atmosphere.

**John Potts:** You point out that our blood has the same salinity as the ocean, a reminder of the origin of all life on the planet.

**Nigel Helyer:** This realization also carries an implicit warning that we share our wellbeing with our vast and indifferent mother. As terrestrial dwellers it is easy to overlook the fact that we inhabit an essentially two-dimensional space which has surface area but scant depth. By contrast the marine world is three dimensional, its depths accounting for 99% of the biosphere and its surface accounting for 70% of the planet's area. The ocean forms the principal interface for chemical exchange with the atmosphere, absorbing carbon dioxide and releasing oxygen: it is the pump that drives climate and regulates the air we breathe.

Like other semi-enclosed bodies of water, the Baltic is brackish, its waters less saline than our tears. The River Aura flows through the port city of Turku, past the maze of low granite islands that form the Finnish archipelago and into the Baltic, carrying with it a mixture of chemical nutrients and effluents that simultaneously drive the annual algal bloom and degrade the complexity and fecundity of marine ecosystems. Put simply the Baltic has lost its clarity and its fish but has gained the reputation as the most polluted sea in the world. *VoxAura; the River Sings* suggests that we pay attention to these complex issues that ultimately control our destiny by listening to the chemical composition of the Baltic.

**John Potts:** Your recent works concerned with sonic mapping, including *EcoLocated* and *VoxAura*, incorporate the use of scientific readings of water quality. This information is transformed by technical means into aesthetic representation, either as sonification of the readings or as visual representation. Water quality, which has direct ecological significance, functions in these works as both a data source and as metaphor.

**Nigel Helyer:** Following on from the concept of the "audio portrait", over the past ten years I have been working to develop systems of "sonic cartography" firstly with "Sonic Landscapes" at Lake Technology (Dolby Australia) and more recently at CSE/ UNSW and the 'AudioNomad' project. These systems provide a location-sensitive, immersive sound environment based upon interactive and navigable maps, either gallery-based or mobile, and allow the production of multi-layered audioscapes capable of evoking a polyvocal audition of a terrain, again be it physical or cultural.

More recently I have begun to look at scientific environmental data, initially as an element in larger projects (such as *EcoLocated*) where water quality data was sonified and seeded within a larger soundmap of Belfast Harbour. The next stage was to make a work entirely based upon data, and a beta version was shown in 2011 at the CSIRO International BioLog-



ging conference in Hobart. For this project I collaborated with Scientists of IMAS (University of Tasmania). We sonified satellite tracking data of marine predators. The sonification process convolves actual environmental audio recordings of these species (Wedell seals for example) with the tracking data, and the resulting hybrid sound (part environmental and part data structure) is superimposed on an interactive map of the species location, in this case on sub-Antarctic islands. The interaction allows the map to be navigated, producing a complex soundmix.

In *VoxAura*, the project's computer system takes variables from this data, such as position, depth, temperature, salinity, turbidity and pH, using them as musical parameters to transform the source audio (which is playing simultaneously on the first vessel) producing an ethereal "datamusic" as a metaphor for, or analogue of the chemical composition of the sea.

**John Potts:** The historical dimension is often important in your works, which I have described elsewhere as "multifaceted sounding-boards of history and culture". (Potts, 1996, p. 61) Many of your works detail the history of specific sites, including the power relations that affect the environment in adverse ways. The history of a site is inscribed with the relations between power and sound. This can include the incorporation of human memory and amnesia into a physical site, as rendered in your work. The political force of domination has often been expressed, in your work, as a form of cultural silencing.

**Nigel Helyer:** The *Silent Zones* series were works typically located in a compact of both physical and intangible sites, manifest by hybrid combinations of media which operate within a variety of temporal domains. Each of the works from the *Silent Zones* series addresses historical, ideological and ecological sites of silence and/or silencing. In this context silence has both a physiological and metaphorical weight: the silences created by political and economic processes operate in concert with the qualitative silences of physical locations, and are juxtaposed with the incommensurability, existing at the margins of culture, language and gender.

**John Potts:** *Silent Forest* (1996) was a particularly effective work from that series. Conceptually it addressed the negative spaces generated by political and cultural events.

**Nigel Helyer:** *Silent Forest* (1996) is concerned with the relationship of warfare and the environment on one hand, and music on the other. There are two principal axes in this large and complex installation: a narrative built around the chemical defoliation of the Mekong delta during the American War, using Agent Orange, and coupled iconically with the Vietnamese tradition of supersized bonsai. The second axis develops between the (then empty) Opera House built during the French Colonial occupation of Indochine (in which no Vietnamese were permitted to perform) and a large air-raid siren set on its cupola, placed there by the occupying Japanese Imperial Army in WWII, but never used until the American War when it announced incoming B52s.

At first this seemed to me an incongruous image, high culture topped by an air raid siren. Then it became obvious that both the French Opera House and the Japanese siren were two expressions of identical colonial enterprises, outwardly different but fundamentally relying upon raw power. Sonically the work mingles Western art music related to nature, pastorales if you like, with brief extracts of Vietnamese musical instruments and the background wail of the siren, all surprisingly meditative.

**John Potts:** *Silent Forest* suggests that it is these inarticulate voids which hold the key allowing us to glimpse, or grasp, the massive contradictions of our economic and aesthetic realities.

**Nigel Helyer:** It's for this reason that the work is structured to avoid a frontal or factual approach (which is the task of other media perhaps) and to take as its principal axis the active seeking of zones of cessation, of inertia or smothering, for these are traces of suppression



and marginalization, the fault-lines of action.

*Silent Forest* proposes that we listen to a cluster of silences decreed by political and military power, constructed as a tracing of colonial and neo-colonial relationships linking cultural form with political force. The installation, together with its accompanying radio broadcast, weave a sonic web between a natural environment under chemical siege and the high culture of Western Opera, here exemplified by the French-built Hanoi Opera House. The massive deployment of dioxin defoliants in Vietnam to create an ecological silence is metaphorically linked to the prime function of the Hanoi Opera, employed as both a sign and transmitter of the colonial process and charged with the task of extinguishing the traditional with the Imperial.

Within the sonic forest a matrix of sculptural towers relays not the whispering of foliage or the rustling of a myriad of forest creatures: here the forest is reproduced from the surface noise of early archival 78 r.p.m. field recordings. The arrow of time is resolute; the loss, silence or absence evoked by such an inversion is manifold. In reality many of the animals and habitats preserved on these recordings no longer exist; indeed what is lost forever in the biosphere is mirrored here by the extinction of recording and storage technologies themselves. We might consider analogue, disc-based recordings as an endangered species, which are in effect silenced, inundated by their own surface noise and relegated to the margins by the hygiene of digital fetishism.

The forecourts of traditional Vietnamese temples frequently house (in a somewhat oxymoronic manner) large scale bonsai arrangements, portraying extensive mountainscapes. Bonsai, as a paradigm of cultural effect and control, is employed here in a triple signification, as specifically Asian, as specifically landscape, as specifically modified through human agency. Beyond this the bonsai in *Silent Forest* participate within yet another trinity of enclosure. They rest within the antennae-like towers which comprise the “forest” section; they are captive specimens—dislocated within the precincts of scientific examination and finally inundated by a viscous fluid which preserves their form but petrifies their growth. They stand mnemonically for the “Land of the Dead”—the colloquial Vietnamese name for those vast areas of jungle rendered desolate by Agent Orange defoliation.

**John Potts:** *Silent Forest* juxtaposes multiple forms of silence and loss.

**Nigel Helyer:** The work is sourced within the specific historical and geographic locales of the Vietnamese forest, a forest unwittingly at war, reduced to silence by chemical defoliant. This act of muting resonates against the cultural silencing which is implicit in colonialism, specifically embodied here by the imported culture of European Opera employed to overlay and obscure traditional expression. Silence plays on ironically, in the muting of the divas themselves since they departed Hanoi in 1954, to be replaced by the cacophony of the air-raid siren, itself now redundant, bowing out to the raucous cries of the hawkers announcing the new-world economic order.

**John Potts:** The more recent work *The Wireless House* (2009) takes a very different approach to the narrative of history and place, and is an attempt at re-sounding a small architectural structure in a public park.

**Nigel Helyer:** Built in 1934 in Sydney as a groundbreaking piece of social provision, the wireless house provided daily radio entertainment and information to the poor and unemployed of Depression-era Glebe at a time when only the rich had access to radio. The City of Sydney commissioned me to revive the site which had lain empty and semi-derelict for decades. The Wireless House was revolutionary in that it catered to large crowds including many unemployed, who congregated to enjoy the daily programs. The initiative, although hailed as unique in Australian municipal history, attracted criticism from the church and sporting organizations, both sharing concerns about a loss of patronage. The Wireless House eventually succumbed to accusations that it encouraged the unemployed to idleness and was subsequently de-commissioned. Our original research pointed to a closure date in the early 1950s



but we have subsequently discovered that the “House” operated at reduced volume until the early 1970s. The intervening decades have wrought extraordinary changes in our attitudes to and acceptance of broadcast media and the fact that the Wireless House has survived intact, albeit mute, for over forty years is equally extraordinary.

My approach was to give the physical structure a sculptural treatment, opening up the interior for view and wrapping the walls with stainless steel radiation pattern grilles. More importantly, two methods for building up a huge sound library were adopted, firstly a collaboration with the National Film and Sound Archive to curate material from the 1930s, 1940s and 1950s. This provided a historical foundation. The second avenue was to establish a community-based oral history program (and audio technology training program) both of which empowered the community to tell their stories. The final element to the work was the establishment of a park-wide free internet service as well as developing a comprehensive web site.

The work is proximity-activated, playing sound files selected at random upon approach.

**John Potts:** The creative treatment given to the Wireless House brings both the physical structure and its audio capacity firmly into the contemporary realm.

**Nigel Helyer:** Contemporary technology is used to re-activate, or re-sound, a forgotten site, which had spoken through an earlier technological system. The Wireless House automatically detects visitors and selects audio sequences from a large data-base of archival and community oral history material, playing them at a modest level. In a sense, the work now quietly announces its memories to visitors.



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**John Potts /**  
Associate Professor in  
Media /  
Department of Media, Music,  
Communication and Cultural  
Studies /  
Macquarie University /  
john.potts@mq.edu.au

John Potts has published five books, including *Culture and Technology* (co-authored with Andrew Murphie) and *After the Event: New Perspectives on Art History* (co-edited with Charles Merewether). He is a founding editor of *Scan Online Journal of Media Arts Culture*.

**Nigel Helyer /**  
Visiting Professor /  
National Institute For  
Experimental Art /  
COFA, UNSW /  
sonique1@me.com

Nigel Helyer is an artist and sculptor whose many commissioned works deal with sonic objects and sonic architecture.

