The Aotearoa Digital Arts Reader
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encoded constraints of a traditional social politic may actually constitute as progressive or adaptive within an ecological process.

The connectivity and complexity of *the big idea* community is difficult to perceive from the outside. *The big idea* maintains an intimate scale and has a kind of suspended sense of homeliness. The facility for uploading member-content provides a key niche media opportunity for local practitioners. The site does not distinguish between the process and outcomes of creative output, nor does it rank contributions. This open door policy addresses naturalised hierarchies within New Zealand's various creative sector communities. Members have engaged with the project from across a wide demographic and geographic range. Market research indicates that users of *the big idea*: find collaborators, feel more informed, discover old friends, find a job, a grant, a leg up, a sub-network, and have mapped-out future career pathways.

There are however other types of encounter occurring, encounters existing in what Guatarri calls the "microsocial."[12] These interactions are not able to be mapped or gridded, largely because they exist in experiential psychic space. In real space, the microsocial is made up of glances and looks. On a website, the microsocial potentially exists as a counter to isolation, in the form of a moment of synchronicity or co-incidence, as a favour or an insult; the type of connection that is subjective and connective at the same time. Marshall McLuhan put this succinctly when he wrote: "The meaning of meaning is relationship."[13] Networks are radical (in the literal sense of springing from the root) because they are so significant to wellbeing and, in a biological sense connectivity is the signature of health.

A network does not evolve into a predictable end product, but instead exists as a responsive environment. As a digital network and a generative social space, *the big idea* provides its visitors, its community, with information, new experiences, interactivity and a sense of connection. A digital social network however cannot evolve through design processes alone. Networks must always prioritise connectivity and the relational. The struggle for a network like *the big idea* to grow, evolve, adapt and survive is bound by overlapping forces: technical, political, social and economic. Today's network users may be able to think of themselves as authors rather than consumers. However authorship and participation are limited by the boundaries of the system. In spite of this, the economics of networks still offer a counter space to hierarchies. The challenge now is for digital social networks to not only create productive social environments but also stimulate alternative economies which become both self-supporting and self-organising.

12. Guatarri, *The Three Ecologies*, 35.
13. Marshall McLuhan and Barrington Nevitt, *Take Today: The Executive as Dropout* (Ontario: Don Mills and Longman, 1972), 3.

A System of Drawing

Kurt Adams

The spontaneity of drawing allows a tactile passage into three-dimensional modelling software, contradicting the precision of its intended use. I am fascinated by the fingerprint on the screen, the varied density of the hand-drawn line, the crumb of graphite, the paper's folded edges. I began from landscape drawings, rough sketches of leaves and branches, diagrams of cloud patterns and tree silhouettes. The pages were scanned and the white of the paper removed, leaving a layer of fragmentary marks nested within the screen's array of clean shiny buttons and drop shadow menus. This library of digital drawing was utilised in 3D software as blueprints, textures or to deform flat architectural planes. The dark graphite lines created ranges of angular hills while smudges carved crevasses over the Cartesian grid.

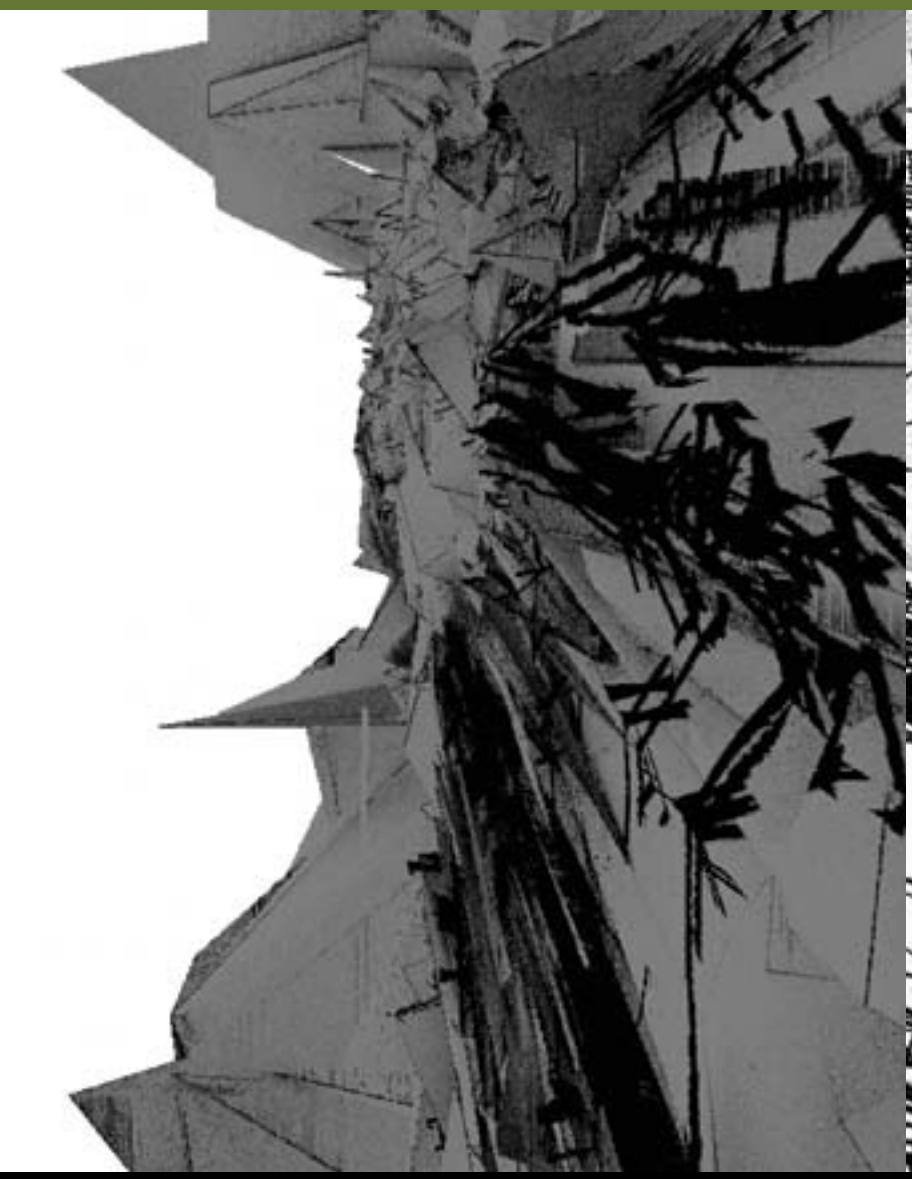
Despite the alluring mutability offered by the computer, this method at first alienated me from my practice, changing the fluidity of mark making into a block puzzle where I clicked and slid wafers of drawings throughout the 3D grid. I tended to the scene each day and as I fed my virtual environment more and more images, the saturation of information provoked errors and software crashes. Traditional 3D graphics construct an environment in advance of plotting a virtual camera path through it, rendering this point of view as a sequence of moving images. This positioning of a camera and framing scenes within it is like setting a stage and positioning props. My method was more improvisational, mixing together drawing and audio, which I used to generate erratic movement. The 3D software converts the amplitude of a sound wave into a value that can be used to animate any parameter within the virtual environment. At a basic level the audio can work like a switch, turning something on or off at a certain threshold, but it can also be used to control an incremental change, a texture fading in or out for example. If the sound's waveform is very jagged and angular then it causes unpredictable stress in an object or texture, the landscape spasms and falls apart, tree silhouettes flicker and distort.

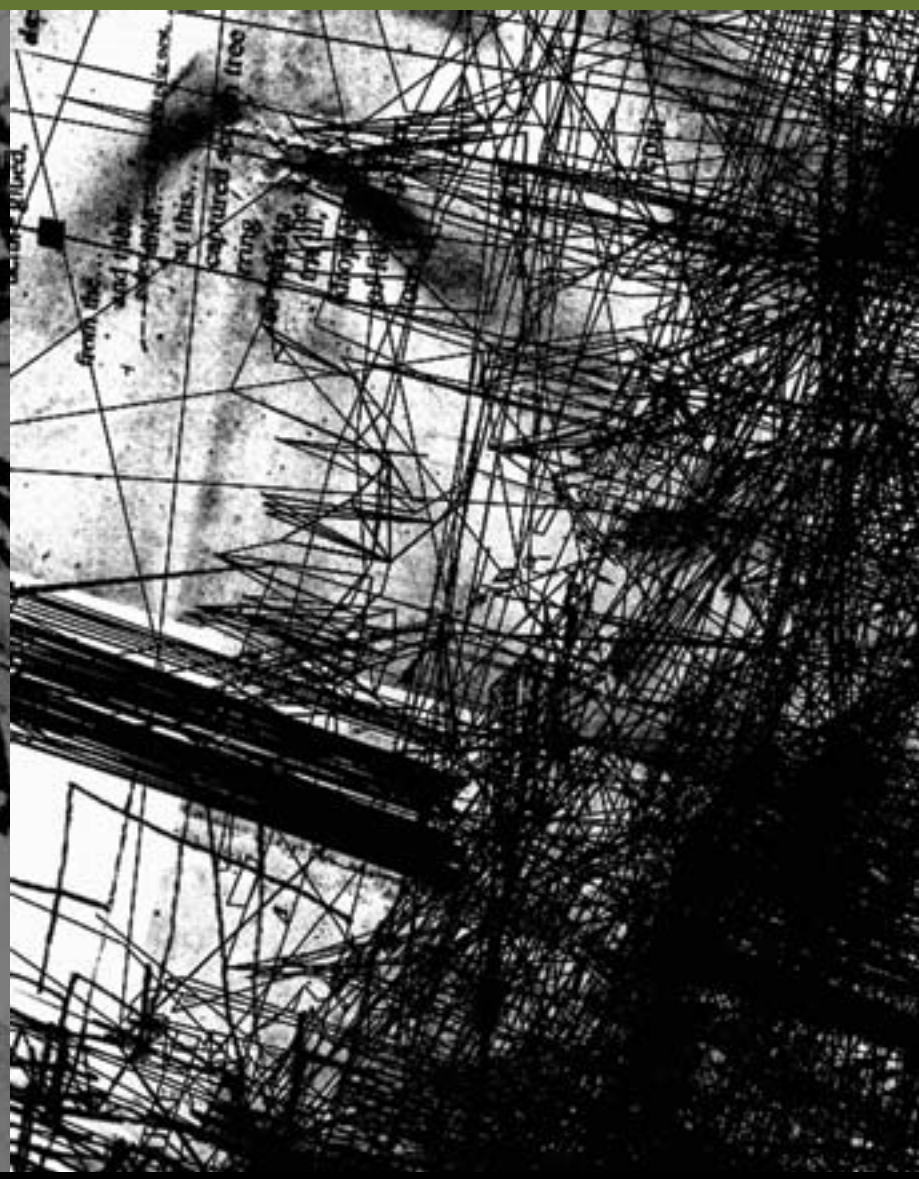
My video output of the 3D space was like working over a canvas and periodically photographing the building-up of the surface, akin to William Kentridge's process of drawing for the camera, his animated charcoal reworkings and erasures creating a narrative. My environment at times was so fragile due to file size, limited computing power, and software instability, that getting a camera to pass over the 3D landscape without crashing was difficult. But the space was so chaotic, it wasn't until inserting a camera that I gained a sense of a horizon and framing. The result was more like witnessing a space unfolding, rather than examining a modelled object.

As fragments crunched and flickered into new compositions I witnessed elements of drawings crumple and compost into the folds of geometry. Certain areas produced vast crops of glitches and surface anomalies, fingerprints grew odd polygon artefacts and the subtle translucence of smudges generated seductive glitches. As I pulled the camera backward through the sprawl of this shimmering garden, the viewpoint was like looking out the back window of a car as the receding landscape is slowly revealed. There is a tension and unease created with this constant falling backwards into an unknown environment.

Eventually geometric debris flooded the viewpoint. With each camera path providing endless baroque arrangements I became absorbed in the scenes' complexity. Some imperfections and irregularities seemed familiar, with their pockets of recognisable drawings and flecks of handwritten notes, yet I felt dizzy, immersed in overgrown fields of information. Finally, travelling through this world, I got lost. Unable to find my way back to my previous day's work I sat and sketched from the screen as if I were a *plein air* painter sitting in a field, gazing at a landscape for the first time. In those new drawings I lost all contact with the original composition. Each subsequent sketch was another fold, another iteration. After a while I began to see Bezier points and vertices in my marks. The language of my digital tools was emerging through my drawings. The lure of the polygons was overwhelming. The crowded screen couldn't disguise my circuitous betrayal.

Above: Kurt Adams, *Error Curve,* 2006, 7:24 minutes, 3D animation.
Next pages: Kurt Adams, *Grayscale Drawing,* 2003, 39:43 minutes, 3D animation.





Electromagnetic Dreams: New Zealand Artists in Radio Space

Zita Joyce

Radio waves, the electromagnetic waves transmitted by human communications devices, flow constantly around and through us all, permeating our bodies and our environments with a constant stream of information. In their ubiquity, radio waves are described by French art collective Bureau d'Etudes as a new kind of natural object, one with which, after slightly more than one hundred years of use, humans have become intrinsically connected.[1] As a result, "In a world constituted by electromagnetic cosmology (and industry), understanding the electromagnetic wave field is the only way to understand ourselves and our surroundings."[2] When media theorist Mackenzie Wark observes that "Television passes through and permeates every pore of my body," he is referring to his absorption of the content of television, which renders his body "90 percent TV drama and pop songs and other trash that wafted in on the vector."[3] In this, Wark incidentally acknowledges the permeation of his body by the waves that carry television information, to which could be added radio sounds, cell phone calls, and data transfer.

Radio and other electromagnetic waves are so intrinsic in contemporary communications that German new media artist and curator Armin Medosch describes them as the "invisible workhorses of electronic mass society" and the fundamental medium of media art.[4] Radio waves are the medium of art that works with broadcast radio and television signals, of projects that use wireless networking and ubiquitous connectivity, of GPS-enabled locative media, and of cell phone-based interactivity. In using radio technologies artists are not simply exploiting their cultural meaning, instant connectivity and location-awareness. Rather, artists are engaging with the medium of radio waves in ways that reveal new aspects of our electromagnetic environment, and raise awareness of the role of these 'invisible workhorses' in our lives, as well as the social, political, technical and economic forces that shape our interaction with them. By engaging with these kinds of issues, Marshall McLuhan wrote, the artist is "indispensable in the shaping and analysis and understanding of the life of forms and structures created by electric technology."[5]

McLuhan viewed 'art' as a means of apprehending the world, a preparation for coping with new technologies.[6] This is articulated by Canadian artist Robert Adrian X in terms of a now-old 'new' technology as he discusses a 1982 work, an international telecommunications networking project using slow-scan television and telefax machines, which he directed. Of the role of artists in relation to new technologies he writes:

> *We can at least try to discover ways to insert human content into the commercial/military world floating in this electronic space. And this is where artists are traditionally strong… in discovering new ways to use media and materials, in inventing new and contradictory meanings for existing organisations and systems, in subverting self-serving power structures in the interests of nearly everyone. Artists using electronic telecommunications are trying to find human meaning in an electronic space.*[7]

In the case of radio waves this "electronic space" is the physical space of the everyday, which makes the role of artists in finding new ways to use radio technologies, subverting the power structures that control them and inserting human meaning into radio waves, all the more significant.

The "electronic space" of radio is a permeable and permeating virtual space. This kind of space is created all around us by the multitude of broadcast and telecommunications transmissions, but also by radio objects that are not documented on databases, by multiple small-scale sources of radio waves. In the introduction to the essay collection *Radiotext(e)* Neil Strauss observes that 'radio' is much more than just the receiving boxes usually associated with the word, "Radio itself is something you can't see, or necessarily even hear; it's radio receivers that are visible and audible."[8] Receivers are simply interventions within the broader progress of radio waves themselves: outside the receiving box, radio "knows no boundaries; its signal is as unavoidable as it is unstoppable."[9] John Cage described radio in terms like this in a 1966 broadcast with fellow composer Morton Feldman, who complained about the ubiquity of sound from transistors. In response Cage argued:

> *All that radio is… is making available to your ears what was already in the air and available to your ears but you couldn't hear it. In other words, all it is is making audible something which you're already in. You are bathed in radio waves.*[10]

This sense of radio evokes the permeation of the body suggested by Mackenzie Wark, and the electromagnetic wave-field described by the Bureau d'Etudes. Radio space is the pervasive quasi-natural presence of broadcast and communications transmissions, the electromagnetic pulses of astronomical objects, the signals of wireless networking, and what Anthony Dunne calls the "electromagnetic dreams" of electronic objects. These dreams describe the tendency of devices to "leak radiation into the space and objects around them, including our bodies."[11] Dunne observes that:

> *All electronic objects are a form of radio. If our eyes could see (tune into) energy of a lower frequency these objects would not only appear different but their boundaries would extend much further into space, interpenetrating other objects considered discrete at the frequency of light.*[12]

This extension through radio frequencies reveals the extrasensory 'leakiness' and fluidity of visually inert objects, in which they take forms we can't interpret with our biological receivers. This sense of the invisible and inaudible radio world is explored by projects that intercept radio waves and translate them into sound, making audible the ubiquity of waves in the environment and reflecting on the broader implications of extended radio wave networks.

Boundary dissolution in radio space

r a d i o q u a l i a's *Radioastronomy* project (begun in 2004) reveals the most pervasive and ubiquitous of environmental radio signals by audifying the electromagnetic emissions of the sun and distant extra-terrestrial objects, the radio-rays that bathe the planet. *Radioastronomy* connects the output of major

1. Bureau d'Etudes, "Electro-Magnetic Propaganda—The Statement of Industrial Dogma," in *Waves: Electromagnetic Waves as Material and Medium for Arts,* ed. Rasa Smite, et al. (Riga: RIXC Centre for New Media Culture, 2006), 44.
2. Bureau d'Etudes, "Electro-Magnetic Propaganda—The Statement of Industrial Dogma," 44.
3. Mackenzie Wark, *Virtual Geography: Living with Global Media Events* (Bloomington: Indiana University Press, 1994), 16.
4. Armin Medosch, "Waves—An Introduction," in *Waves: Electromagnetic Waves as Material and Medium for Arts*, 18.
5. Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: Mentor and Penguin, 1964), 70.
6. McLuhan, *Understanding Media: The Extensions of Man*, 71.
7. Robert Adrian X, "The World in 24 Hours," in *Ars Electronica: Facing the Future,* ed. Timothy Druckery with Ars Electronica (Cambridge, MA: MIT Press, 1999), 346.
8. Strauss,"Introduction," in *Radiotext(e)*, ed. Neil Strauss and Dave Mandl (New York: Semiotext(e), 1993), 9.
9. Strauss,"Introduction," 9.
10. Quoted in Joe Milutis, *Ether: The Nothing that Connects Everything* (Minneapolis: University of Minnesota Press, 2006), 98.
11. Anthony Dunne, *Hertzian Tales: Electronic Products, Aesthetic Experience and Critical Design* (London: Royal College of Art, 1999), 90.
12. Dunne, *Hertzian Tales: Electronic Products, Aesthetic Experience and Critical Design,* 89.