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MACHINIC AFFINITIES

By

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LIST OF ILLUSTRATIONS_

FOREWORD_

My relationship with technology comes from an exposure to esoteric philosophies involving mysticism and spiritualism from an early age. It feels important to tell you that I began this research with a journey to find the first 'spiritual machine' I ever encountered.

My grandfather, Harry van Gelder (born 1907) was trained originally as an engineer, but later he studied in London, India and Indonesia to became a healer of many sorts, practicing homeopathy, naturopathy, osteopathy, and *radionics*, an esoteric healing technique which utilises electronic instruments that produce frequency specific microcurrents. His practice was very much informed by his clairvoyance, an ability he and his siblings were encouraged to develop by his mother during their upbringing in Indonesia, where his mother had worked with local healers. These parapsychological abilities were coupled with a strong involvement in Theosophy from all members of the family, initially in Indonesia with key exponent Annie Besant, and later establishing the first Theosophical head quarters in Australia with C.W. Leadbeater. Harry incorporated these philosophies into his practice of healing and in his lifestyle, encouraging his six children to continue his traditions.

Radionics utilises specially devised instruments that monitor energy frequencies of a patient's body and transmits or synthesises healing frequencies depending on their ailment. Harry could perform this treatment without the patient being present using photographs through *radiesthesia*, an ability to detect radiation in a person, animal or object by perceiving their aura.* Harry worked with a number of practitioners and electrical engineers to modify radionics machines to his own specifications between 1950 to 1965, first in Canada and then the United States, while at the same time the Food and Drug Administration

(USA) and the Canadian Medical Association began prosecuting radionics and other alternative medicine practitioners.

To continue his practice, my grandfather moved with his family to over five different countries. After his death in 1995, his machines were inherited by his protégé, who continues to practice his techniques somewhere in the United States (her name and exact location I will not disclose to protect her from prosecution by the FDA). To begin the development of this work I journeyed to visit her in 2010, where I received treatment from her and also examined my grandfather's original machines. These experiences consolidated my early fascination with the mystical and spiritual capabilities of machines and electricity.

* The word 'radiation' is used in a broad context within radionics to describe the electromagnetic field that surrounds the body.

Fig 1. Harry van Gelder's radionics machines.

ABSTRACT_

Audio-Visionaries is a body of work that includes open-circuits and assemblages that create audio-visual outputs. Through electronic experimentation, exploration and improvisation the work practically investigates the notion of *machinic affinities*, whose theoretical implications this paper will investigate. The work, and this paper, engage in media archaeology as a methodology, an emerging field of media theory which re-examines forgotten or quashed ideas and practices dealing with media technologies. This methodology manifests itself in the work by employing everyday media machines, along with heirloom technologies, and by appropriating historical and contemporary interdisciplinary techniques, in order to reveal machinic liveness. The paper examines these techniques and their relationship to threads of both esoteric and popular philosophy, science and psychology that discuss the ontology of machines.

Machinic affinity is a feeling of closeness or fondness for machines. For the purpose of this paper I will limit my discussion to machines of a specific nature, excluding computer technology in order to focus on a more general class of machines that generate audio or video media; media-machines. This affinity is precipitated by an animist belief; that all objects are living or have a spirit. This esoteric philosophy, often associated with primitive cultures, has been recently re-examined by contemporary theorists and artists. I will discuss how this discourse has influenced my art making.

This paper investigates two specific tangents relating to animism itself, *liveness* and the *spiritual*. I will use my own practice, along with work of historical and contemporary artists in my field of electronic media art, to discuss these trajectories throughout this paper. Liveness is a concept

that is used inside the field of electronic art to describe the life-like behaviour of machines and has a particular application relevant to the field of electronic performance and media art. I will discuss how this sense of machinic liveness can be explored through hacking and augmenting circuits and through exploratory approaches to composition and interactive set-ups. Entering into this kind of dialogue with machines, I believe, reveals their perception and expression, which instigate the spiritual trajectory of this paper. This will involve a study of *hauntology* and *haunted media*, in order to uncover how these dialogues and their outputs provoke feelings of the uncanny and a *discrete technological sublime*. I will examine how these ideas have been amalgamated to establish my own techno-mystic ideologies that have fuelled my work.

INTRODUCTION:

LOOKING INSIDE TECHNOLOGY_

> *Artists must take an interest in machines... They must get to know the anatomy and the language of machines, they must learn to understand machines and distract them by making them function irregularly, thereby creating works of art with those same machines and with the means they offer.*[1]
>
> Bruno Munari, Manifesto of Machinism (1952)

This paper is an investigation into the conceptual implications and historical connections of a body of work I have entitled *Audio Visionaries* (2010-2012). The nature in which I approach technology, my personal relationship with machines, gives the premise for both my practical and theoretical research. This paper will explore something I call *machinic affinity*: feelings of closeness to a machine. The two forms of research (practical and theoretical) that inspired this concept come from entangled methodologies, which sprout both ideas and actions that contribute equally to my practice. These methodologies are all forms of media archaeology, involving an exploration of media histories in the areas of television, film, instrument design and electronic composition.[2] These histories carry important interdisciplinary connections, from esoteric and primitive philosophies and psychoanalytic theories to contemporary philosophies regarding technology and artificial intelligence. I will discuss how this research has lead to the

1 Bruno Munari, "Manifesto of Machinism", (1952), in Hultén, K. G. (ed.), *A Magic Stronger Than Death*, (London: Thames and Hudson, 1987) 29.

2 Erkki Huhtamo and Jussi Parikka (ed.), *Media Archaeology: Approaches, Applications, and Implications* (Berkeley: University of California Press, 2011).

development of my own ideologies, a kind of machinic transcendentalism, techgnosis or *AV mysticism*.[3]

Audio Visionaries is a body of work involving electronic audio-video media-machines. The work participates in a kind of 'media-machine archaeology' by employing a combination of ordinary and familiar electronic devices, including digital versatile disc (DVD) players, closed circuit television (CCTV) cameras, mini digital video (DV) cameras and hand-held radio and cassette players along side archaic or heirloom technologies including cathode ray tube (CRT) television field monitors, vision mixers and audio-video synthesisers. These machines are subsequently hacked and augmented, connected via hand-made circuit extensions and assembled into complex reactive systems enabling the machines to take on a life of their own. In this way *Audio-Visionaries* is a process of technological transgression, subverting the general perception of everyday technologies through adjustment and augmentation.[4] The work is created through a practical methodology, an electrical experimentation that attempts to reveal the personalities and idiosyncrasies of these machines. Some of these personalities may summon nostalgia for some people but to most they have been forgotten due to rapid technological advancement and the succession of heirloom technologies. Similarly, some of these idiosyncrasies have been overlooked or censored with error correction circuitry, the application of which has been subsumed into the hegemony of everyday machines. This uncovered machinic liveness is presented via interactive installations and performances, which experiment with the balance between 'user' control and machinic autonomy. This experimentation leads to a questioning of who is responsible for the outputs that are created, you or the machine? Through this kind of dialogue with machines, the work has become a quest to exhibit how these machines

3 What I call 'AV Mysticism' is a form of techno-mysticism or what Erik Davis calls 'techgnosis' in his book *Techgnosis: Myth, Magic and Mysticism in the Age of Information* (Updated Edn.; London: Serpent's Tail, 2004).

4 Technology, generally perceived as lifeless tools for human subjection and use.

can create audio and video outputs that are "not of this world" by examining and appreciating their outputs as machine language.[5] I attribute this approach to the video artist and pioneer of video synthesis Woody Vasulka, an artist I will refer to throughout this paper along with his partner Steina Vasulka who "have created several generations of machines that defy simple notions of agency and programming. These are machines that command our attention, that demand a dialogue."[6]

My interest in machinic affinities is based on my inherent animism: a belief that all objects are alive, including machines.[7] This fundamentally affects my approach to technology and my making of art. This reclamation of a philosophy commonly attributed to primitive cultures is shared by most children and presented commonly through play. It is also exhibited by psychotic people, and by many artists. For example Paul Klee, who devoted much of his practice to understanding the relationship between people and nature, declared "objects can see me." [8] Klee's statement—that objects have the ability to perceive—indicates an assumed consciousness and consequently the possibility of a reciprocal relationship between the artist and these objects. I find this statement most interesting to ponder in relation to 'vision' technologies like video cameras.

Walter Benjamin discusses the 'aura' in relation to art, borrowing a term most commonly associated with spiritual or religious energy.[9] He suggests "To perceive the aura of an object we look at means to invest it with the ability to look at us in return."[10] R.L. Rutsky offers that this

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5 Woody Vasulka cited in, "On the Trail of the Fire from the Gods" by Marco Maria Gazzano, *Steina e Woody Vasulka: Video, Media e Nuove Immagini Nell'Arte Contemporanea*, ed. Marco Maria Gazzano (Rome: Fahrenheit 451, 1995), 20.

6 Marita Sturken, "Exploring the Phenomenology of the Electronic Image", *Steina e Woody Vasulka: Video, Media e Nuove Immagini Nell'Arte Contemporanea*, ed. Marco Maria Gazzano (Rome: Fahrenheit 451, 1995), 42.

7 Animism has been recently discussed in relation to contemporary art and philosophy in the important exhibition and accompanying catalogue curated and edited by Anselm Franke *Animism Vol 1.* (Berlin: Sternberg Press, 2010)

8 Paul Klee, 'cited in Paul Virilio, *The Vision Machine* (Indianapolis: Indiana University Press, 1994), 59.

9 My first experience of the aura however was through my great aunt Dora van Gelder, who published many books describing her clairvoyant ability to see and read auras.

10 Walter Benjamin, *Illuminations* (New York: Schocken Books, 1969), 188.

reciprocation in art as being some kind of narcissistic reflection of the self the maker. However, in my work the machine is not my original creation.[11] Their origins are mixed and their purpose is sometimes subverted; transformed from being just a tool for re-playing our media into being a performer of its own media. Again, I find this reciprocated gaze is interesting to consider in regards to machines that have conventional 'human-like' perception like video cameras as well as technologies that express perceptually; with sound and image, like the audio-video synthesiser.

It is important to address that most of the technology used in *Audio Visionaries* is most commonly perceived as tools. Steven Shaviro discusses Heidegger's notion of technology, a tool that is 'ready-to-hand', suggesting that "this very availability of our tools gives them a strange autonomy and vitality. We find that we cannot just use them. We must learn to work with them, rather than against them. We have to accommodate their nature, and their needs, as well as our own."[12] This accommodation becomes a form of collaboration in my case, in which the machine's liveness is acknowledged and given space to be and express.

Audio Visionaries presents media machines as Marshall McLuhan's 'extensions of man' by asking for the viewer's interaction, literally connecting the human body with the machine's body; its circuitry.[13] However, the outputs of these machines are often unexpected and disturb the balance between body and circuit, destroying any notion of the virtuoso and in turn repositioning the machine, suggesting its singularity and letting it take on a life of its own; in turn considering McLuhan's suggestion that "a thing is always more than it's qualities; it

11 R.L. Rutsky, *High Techné: Art and Technology from the Machine Aesthetic to the Post Human* (Minneapolis: University of Minnesota Press, 1999), 26.

12 Steven Shaviro, *The Universe of Things* [online] www.dhalgren.com/Othertexts/Things.pdf [accessed 06.05.2012], 4.

13 Marshall McLuhan, Understanding Media: The Extensions of Man (New York: Routledge, 2001).

always exists and acts independently of, and in excess over the particular ways that we grasp and comprehend it."[14] This singularity characterises what philosopher Graham Harman calls *object oriented ontology*. Despite Heidegger, Harman insists that the existence of objects cannot be reduced to just their use. Harman suggests that objects are more than the sum of their parts. He refers to the metaphysical possibilities of all objects, honouring their complexity and in turn their liveness and harmony much like the Japanese Shinto animistic practice, *shizen tono chₒwa* (harmony with nature).[15]

This belief in the living quality of machines is further discussed according to Gilles Deleuze and Félix Guattari's many readings of machines—technical, social, abstract, political and so on—by philosopher Maurizio Lazzarato and artist Angela Melitopoulos. In their essay entitled "Machinic Animism" they point out what I have found in my own studies: that "aspects of polysemic, transindividual, and animist subjectivity also characterize the world of childhood, of psychosis, of amorous or political passion, and of artistic creation." [16] [17] *Audio Visionaries* employs this animistic approach to technological machines calling into question their subjection and machinic enslavement by consumer design to function as unquestioning conduits of audio and visual media reproduction. By being augmented and deconstructed, explored and entangled, their roles are reconstructed, their singularities are given new space to exist, thereby un-enslaving the machines from their previously intended subjection. This transgression of technology is done through the subversion of the machine's predefined role as 'ready-to-hand'. The tool becomes a being. This is enacted through hacking and supplementing the machine's circuits.

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14 Ibid.

15 Yuji Sone, "Internalizing Digital Phenomena: The 'Performing' Body at the Intersection of Japanese Culture and Technology", in Henry Jonson and Jerry Jaffe, (ed.), *Performing Japan: Contemporary Expressions of Cultural Identity* (Hawaii: University of Hawaii Press) 2008.

16 Gilles Deleuze and Felix Guattari, *A Thousand Plateaus. Capitalism and Schizophrenia II* (London: Continuum, 1987)

17 Angela Melitopoulos and Maurizio Lazzarato, 'Machinic Animism', in Anselm Franke (ed)., *Animism Vol I.* (Berlin: Sternberg Press, 2010) 48.

Hacking, as an activity is part of a larger do-it-yourself (DIY) culture which is practised in many forms beyond technology. I would like to say that it has become a kind of praxis that I have been involved with in social, artistic and technical forms, for a long time. It has a social implementation through my ongoing involvement in DIY artist-run spaces and Dorkbot Sydney.[18] These activities have transformed my practice into one that is reciprocal; generating equal output and input. The exchange through organising and participating in events that in turn effect my making of art has itself become a methodology. This experimentation with formats for social engagement, effectively a hacking of hegemonic institutional models, is motivated by the need to redefine and un-enslave social systems with ingenuity to support emerging and innovative forms and ideas, bringing to life formats and platforms for social engagement and experimentation. Although it is important to point out my involvement in this form of socially engaged hacking, I will not have the space to discuss this part of my practice in this paper.

This sociological and political relationship to technology is an intrinsic part of a broader philosophy of hardware hacking that is now common in music and media art. This philosophy manifests a practical approach using open source and DIY principles, magazines and online blogs like *Make Zine* and their slogan "*if you can't open it, you don't own it*" encapsulates the popularisation of this movement.[19] Although sometimes the sociological and political implications of this philosophy go unconsidered, when this approach to technology comprises a large

18 I began living and working in DIY spaces in 2004 at Lanfranchis Memorial Discotheque, an artist warehouse and venue space. I have gone on to be co-director at the Artist Run Initiative Serial Space since 2009. This space is dedicated to the development and presentation of emerging interdisciplinary, hybrid and experimental art. Dorkbot is a memetic regular event for 'people doing strange things with electricity'. The format is continued in over 75 cities around the world. I started Dorkbot in Sydney in 2006, taking the role of the 'Overlord' by being responsible for co-ordinating each monthly meeting.

19 www.makezine.com

part of one's creative practice, a deeper examination of these elements is unavoidable. As many hackers have done, a kind of personal manifesto is almost a natural inclination to develop a strong basis for these approaches. This is something I am developing in my work and part of what I will endeavour to outline in this paper.

It is because these ideologies are developed through fused practical and theoretical research that it is important for me to discuss the two forms, hand and mind, side by side. In each chapter of this paper I will unpack a different area of theoretical research in parallel with a piece from *Audio Visionaries* that best represents my practical investigation of these theories.

The first chapter will concentrate on the audio component of this work, examining some particular histories of experimental music and sound art to which it is most connected to; most importantly an approach to making music invented by David Tudor, called *composition inside electronics*. I will discuss how this practice is a way of looking inside technology to find the implicit composer inside the machine. I will discuss how I have engaged in this field and how these newly-defined machines become performers in their own right; unpredictably, noisily, spluttering, glitching. I will talk about how this school of composition gives the space for a machine to be disobedient and furthermore how this disobedience becomes their character, their language. I will consider what this perspective implies. These machinic expressions of sound and image provoke feelings of affinity towards machines, which I share through interaction and performance. Interestingly, this affinity can be experienced by myself and the viewer as uncanny. In the viewer's case, this feeling may be precipitated by a deep-seated paranoia of the motives of the 'ghost in the machine'.
In my second chapter I will discuss the visual aesthetics of *Audio-Visionaries* and how they connect to the history of video performance, in

particular the work of Woody and Steina Vasulka and important conceptual discussion offered by Yvonne Spielmann and Marita Sturken. Through these connections, I will talk about how an interpretation of an area of computer engineering called *machine vision* can be taken on in an inverted fashion to propose a new aesthetic reading of the visual language and perception of machines. Free from machine censorship—that is, error correction circuitry—the machines teach us what they perceive: scan-lines and earth hums. Their artefacts are like offerings, from the machine to the viewer. These offerings can be placed in a new contemporary aesthetic field called *glitch*. I will conclude the chapter with some discussion on how my work contributes to this field.

These machines possess a mortality that I try to reveal in my work through their open circuits and their subsequent audio-visual fragility. Generally this mortality is otherwise only recognised unconsciously within our everyday language. We consistently refer to technology in terms of its inherent liveness with very little examination as to why. When a machine breaks and becomes inoperable it is referred to as 'dead'. These Freudian slips render machines the convenient scapegoats for our mistakes. It isn't often that they are given credit for our achievements.

Gilbert Ryle conceived the term *ghost in the machine* in reference to Descartes' mind-body dualism. [20] With this term he intended to point out the absurd nature of this separation between mind and body. The term is now often used to describe the uncanny nature of disobedient machines, when machines seem to take on a life of their own. It is used to attribute machinic behaviours to some other force outside of our control, or even outside of machinic control. It seems ironic that the absurdity Ryle once intended to point out is lost here in subconscious

20 Gilbert Ryle, *The Concept of Mind* (Harmondsworth, Middlesex : Penguin, 1963) c1949.

associations to the uncanny and other dystopian fears in regards to technology.

My third chapter aims to investigate some of these metaphysical or transcendental implications that *Audio-Visionaries* explores and explains how these investigations have helped form a kind of techno-mysticism. Both within and outside the context of my work, these machinic entities can be seen as connected to the 'outer realms', conjuring haunted outputs. In this chapter, I intend to examine these 'ghosts in the machine' and ask some important questions, such as whether the machine is a conduit—an empty vessel, or rather, a medium—connected to the outer realms? I will discuss these ideas in relation to recent area of media archaeological studies called *haunted media*, whose origins are firmly connected to the history of cinema and television as well as radio and telegraphy. [21] I will discuss how these paranormal possibilities can be seen in the work of instrument builder and composer Michel Waisvisz, and how his techniques have been integrated into my work. I will also consider two contemporary artists; installation artist Spencer Finch and AV performance duo Botborg, discussing how these artists have developed their own philosophies through borrowing and mutating from esoteric traditions, transforming these theories into enriching personal artistic ideologies. To conclude this chapter I will also introduce a concept called the *technical delusion* and consider how it relates to my research into machinic affinities and the development of my own techno mysticism.

We often feel a sense of real sorrow and loss when a machine of personal significance does indeed 'die'. These emotional connections are heightened in creative practice and can become particularly interesting in relation to heirloom technologies. In my fourth chapter I

21 Jeffrey Sconce, *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham: Duke University Press, 2000).

will consider these technologies, namely the audio-video synthesiser, and how their integration into my performances and more recent interactive installations has become a conscious, more fully formed dialogue with machines. This dialogue involves a translation from electronic liveness into an invented synchresis that is reflexive. [22] [23] This interlocked audio-visual language, both aesthetically and conceptually references the history of visual music. I will briefly talk about this link specifically in relation to the work of Len Lye.

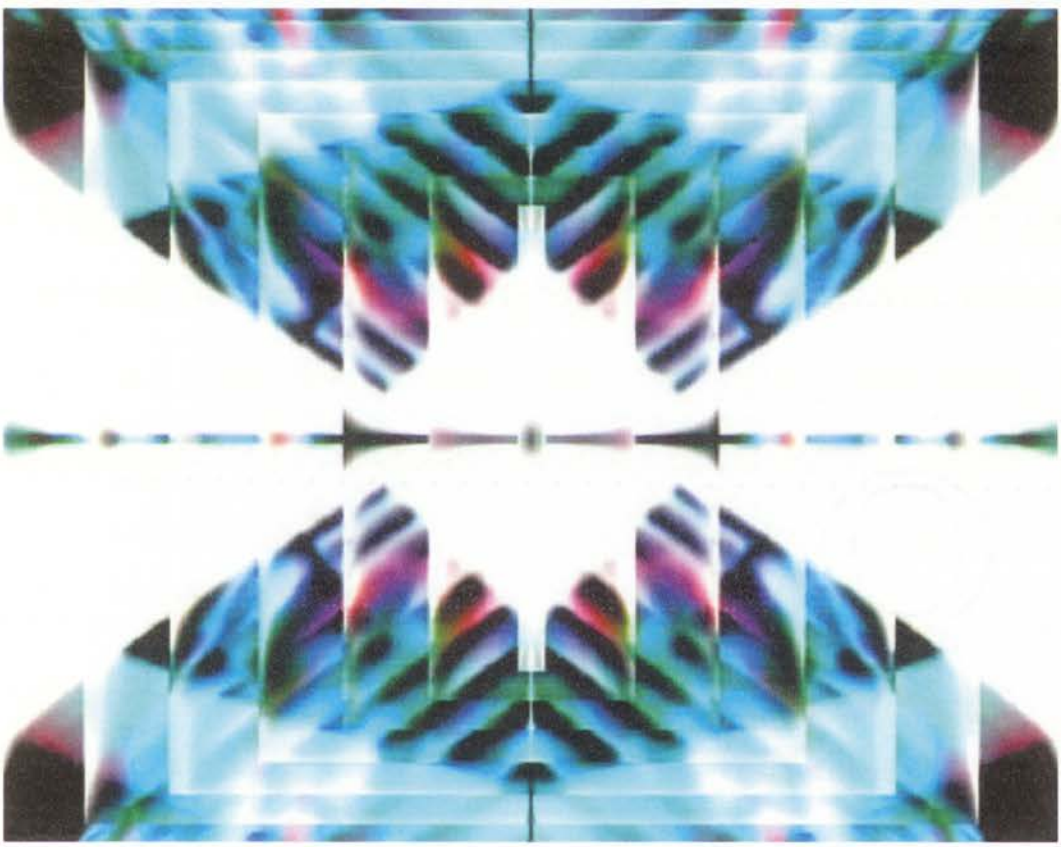

Fig 2. *Synchresizer*, 2011. Video image capture of video feedback.

Like an audio-visual quest this dialogue is an exploration into the aesthetic language of electricity. I will talk here about how these journeys have evoked feelings of a kind of *discrete technological sublime*, which stems from historical examples of the technological

22 Synchresis is a word most often used in the context of cinema, meaning a created relationship between sound and image.

23 Yvonne Spielmann, *Video: The Reflexive Medium* (Cambridge: MIT Press, 2008).

sublime but contemplates the infinite within a contained space like video feedback displayed on a video monitor.[24] I will study how this feeling connects with the uncanny and further, how this work has inspired an investigation into my own techno-mystic interests. I will briefly look at how this relates to Erik Davis' ideas of *techgnosis* discussing these ideas through my own work and the work of Botborg.[25] I will also consider the historical connections to audio-visual electronic art in Australia offered by Stephen Jones, particularly the work of Australian video collective Bush Video.

Finally, in my conclusion I would like to discuss the possible connections between these underlying philosophies and psychoanalysis, machinic animism and the technical delusion along with the uncanny and technological sublime. I will also discuss some of the possibilities for future research that have emerged from this process.

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> *...Heidegger accidentally incites a new age of metaphysics. Accordingly, we are finally in a position to oppose the long dictatorship of human beings in philosophy. What emerges in its place is a ghostly cosmos in which humans, dogs, oak trees, and tobacco are on precisely the same footing as glass bottles, pitchforks, windmills, comets, ice cubes, magnets and atoms. Instead of exiling objects to the natural sciences (with the usual mixed emotions of condescension and fear), philosophy must reawaken its lost talent for unleashing the enfolded forces trapped in the things themselves.*[26]
>
> Graham Harman

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24 David Nye traces the origin of the term as being invented over 30 years ago by Perry Miller, suggesting 'in a physical world that is increasingly desacralized, the sublime represents a way to reinvest the landscape and the works of men with transcendent significance': David Nye, *American Technological Sublime*. Cambridge: MIT Press 1994, pg. xiii

25 Erik Davis, *Techgnosis: Myth, Magic and Mysticism in the Age of Information* (Updated Edn.; London: Serpent's Tail, 2004).

26 Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects* (Chicago: Open Court, 2002) 2.

CHAPTER 01:
COMPOSING WITH ELECTRONICS_

> *The electronic future, as envisioned for the past 80 years or so, has usually taken one of two forms: the streamlined, antiseptic, utopian vision in which technology allows us ever more control (the iPod future) and the messy, chaotic, dystopian vision in which electronics multiply and decay, leaving us at their mercy (the impenetrable-thicket-of-cables-making-it-impossible-to-vacuum-behind-your-desk future). There is, of course, a third vision: one in which we accept the machine as a collaborator, rejoice in its inexplicable intransigence and, like Michelangelo finding the figure in the marble, pause to listen to the composer inside the electronics.*[27]
>
> Nicolas Collins

This process of listening to the *composer inside electronics* describes a unique appreciation of the individual characteristics of electronic machines that suggests a collaborative approach to composing with electronics, a collaboration between the artist and the electronic machine. In this chapter, I would like to discuss how this approach to technology, developed by renowned experimental music composer and performer David Tudor and continued by contemporary artist Nicolas Collins, has been taken on in my own practice. I will explain this in relationship to a series of works inside the *Audio-Visionaries* project I called *Signaux* (2010-2011).

The field of *Composition Inside Electronics* came out of 1973 workshop *RAINFOREST,* described as an "experimental electronic workshop in sound transformation without modulation: building and performance" lead by David Tudor. This spurred an ensemble of electronic artists who

27 Nicolas Collins, 'Composers inside Electronics: Music after David Tudor', *Leonardo Music Journal* 14 (2004), 3.

called themselves *Composers Inside Electronics* from 1976. The name is now carried on to describe a discipline for composition, the idea of which emerged early in Tudor's transformation from a pianist to electronic performer, whilst he was working with John Cage, finding new musical forms in found machines like radios and turntables. It was here that he "recognised the profound potential of electronics to create fundamentally new, endlessly adaptable and (equally important) eternally unpredictable performance instruments."[28] There are two forms of composition inside electronics that emerged from this movement, one that involves the invention and building of completely original circuits, and another that entails modifying pre-existing technologies (for example, a compact disc player), to perform in new ways. It is important to distinguish that I will be concentrating my discussion on the latter. At the same time as this movement was coming about, other artists, completely removed from this scene were practising similar ideas, exploring electronics as a form of creative expression to similar ends, some examples include the work of Nam June Paik and Maurizio Bolognini. 'Tudor-esque' is the term Nicolas Collins uses to refer to an aesthetic that is now apparent throughout the arts, from the avant-garde through to the mainstream.

It seems that this aesthetic approach contains a particular sensibility, a kind of affinity between the artist and the machine that differs from the ordinary perspective of viewing the machine as a simple tool. This sensibility suggests an idiosyncratic power dynamic I will name *composing with electronics*, in which the machine is both an author and a collaborator. This power dynamic is present in the work of the artists I will discuss in this chapter including my own. Furthermore, it is my belief that there is an intrinsic link that lies in the art of improvisation and exploration in these practices that transforms the relationship between artist and machine from improvisation into collaboration.

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28 Collins, 'Composers inside Electronics,' 1-3.

Signaux includes two pieces that I began working with in 2010, the *AV Harp* and the *AV Bells*, which play and interpret multi-channel audio-video compositions in a unique way. Both pieces are assembled using a combination of found or ready-made everyday electronics, including DVD players and cathode ray tube (CRT) video monitors. These machines are connected with signature complex mixing circuits or matrixes, which open each audio and video signal out, offering them to the performer or viewer to interact with. The interaction introduces an opportunity for pre-composed audio-video media to be 'individually interpreted' by the machine using the viewer's movement and contact as stimulus. Finally, these circuits mimic the form of pre-existing instruments, the bell and the harp.

Both pieces play up to six channels of pre-composed audio-video media. The pre-composed media for both pieces are created through a kind of audio/video synthesis, where the relation between the audio and video is intrinsically connected in their creation. Sine tones produced from an analogue audio synthesiser were shifted in frequency using its arpeggiator function. [29] This signal was then sent to a Max/MSP patch, which analysed the audio and produced monotone colour outputs dependent on these audio tones (refer to Figure 3). [30] The resulting audio-video media comprised alternating monotones of correlated colour and sound. This approach was inspired by early nineteenth century musical instruments including Alexander Wallace Rimington's colour organ *Clavier à lumières* (1915) (see Figure 4). [31]

29 An arpeggiator is a basic synthesiser function that into sequences through notes dependent on a chord input and rhythm setting.

30 Max/MSP is a visual computer programming environment.

31 Rimmington's organ triggered a different coloured light for each note in a scale based on the system developed by the Russian Symbolist composer Alexander Scriabin, who was not a synesthetic himself but instead was very influenced by theosophy and Isaac Newton's *Opticks* (1704).

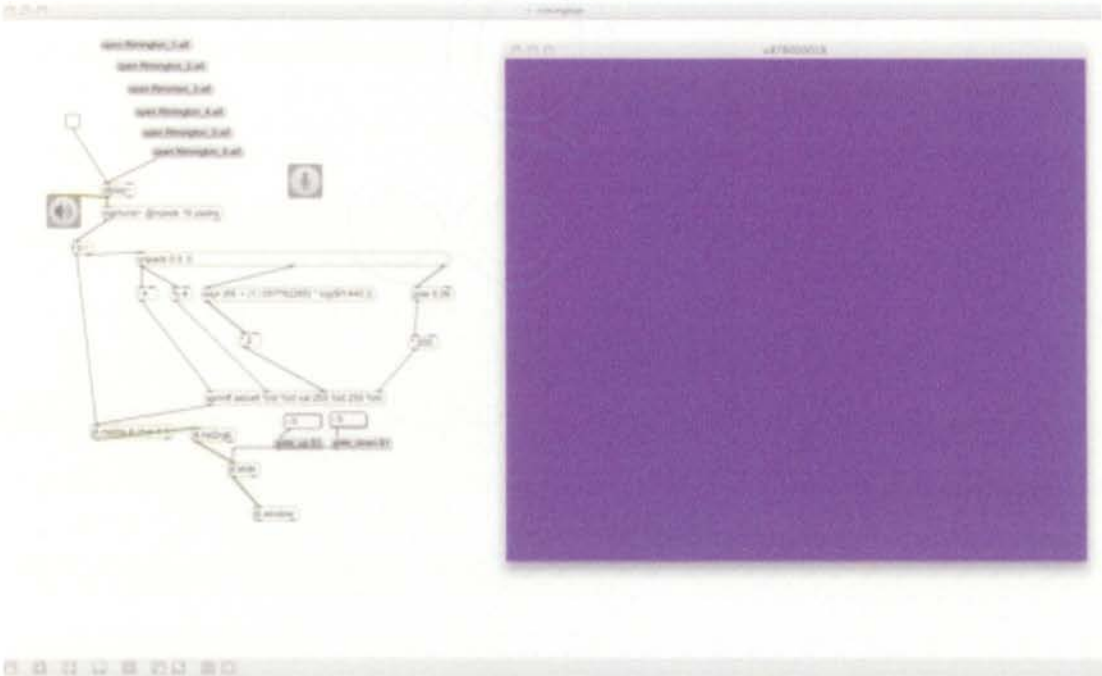

Fig 3. Screen capture of Max/MSP patch used to create synchronised video monotones with arpeggiated audio monotones

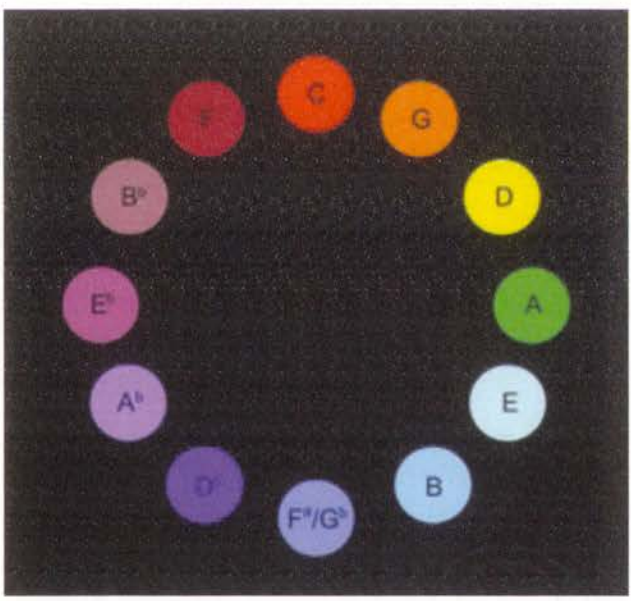

Fig 4. Alexander Scriabin's circle of fifths

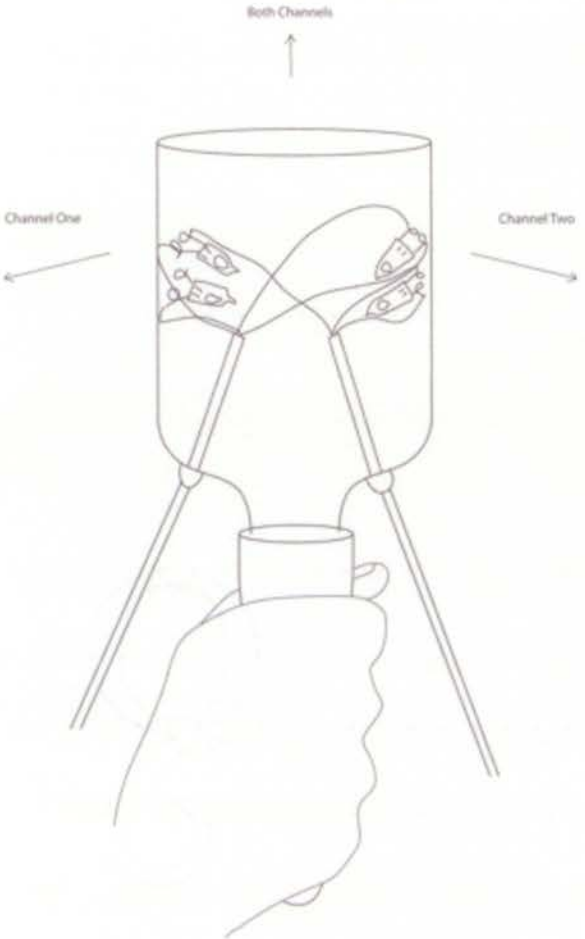

Fig 5. *AV Bell Instructional Diagram*, 2011

Fig 6. Monotone colour video output being reinterpreted by *AV Bell*, 2011

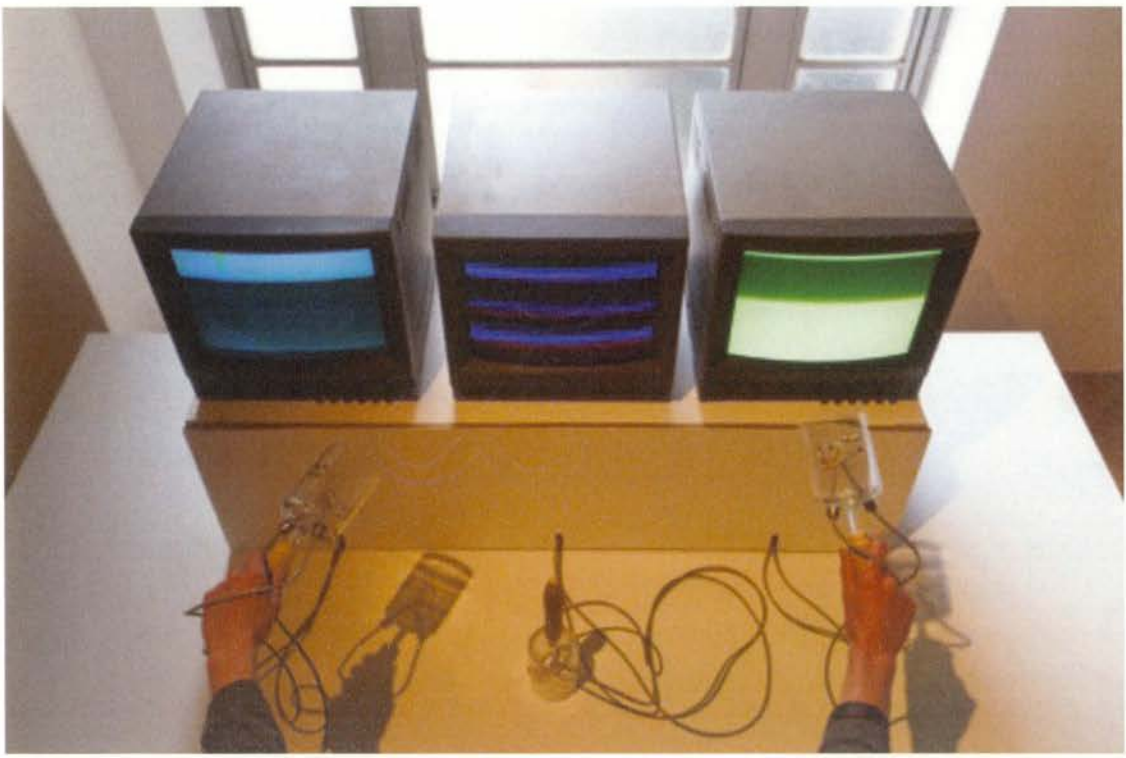

Fig 7. *AV Bells: Rimington Scales*, Installation Shot, 2011

AV Bells includes a 6 channel audio/video composition of simple slowly arpeggiated tones/colours which can be mixed together by the viewer by shaking and tilting the three hand-held 'bell' controllers (refer to Figure 2). This mixing is actuated using mercury switches that are secured inside of the bells' transparent body. These switches are positioned diagonally so that when the bells are placed 'handle up' on a flat surface the AV signals are disconnected and cease to appear on their corresponding monitor. When the bell is held upright at 180 degrees, both signals are fed into their corresponding monitor, which provokes or forces the monitor to interpret these signals, inducing a range of activity as the signals become warped and glitches occur in the transmission. This action invites the viewer to consider the aesthetics of signal error and malfunction. Here the six channel composition acts as a backdrop for the television's own inherent visual machinic language (see Figure 4 & 5 and *Signaux* section of accompanying DVD).

This provocation of signal malfunction is what interested me most in the making of *Signaux*. The act of inviting a viewer to take part in this provocation, through interactivity, is a direct way of revealing the process of composition inside electronics. Here, the viewer is invited to make the monitors perform functions they are not designed to do. The three Sony Trinitron field monitors were specifically selected to complete this assemblage because they can perform this media malfunction without the censorship from error correction circuitry we see in new televisions or the later models of cathode ray monitors. These monitors are as much a part of the work as the bells themselves. Their inclusion is for their idiosyncratic interpretation of media, which represents a form of media-machine archaeology; a practice that I have found is often coupled with contemporary practices of composition inside electronics.

AV Harp (2010), the second of the *Signaux* pieces, is an array of cracked and augmented DVD player circuits for display via projection (using video amplification to avoid the projector's error detection circuitry) and loudspeaker. The harp is an AV machine that is mostly presented in a performance context, although the performance set-up has been exhibited as an installation, where it was often interacted with by viewers.[32] In this circuitry matrix the signals are triggered by direct physical contact with the matrix itself, as opposed to tilting mercury switches. This contact is via a glove or a bow. There are several different bows that invite different interactions and responses, which are constructed from a variety of different kinds of conductive wire stretched over wood. Some bows trigger spluttered signals, connecting audio to video outputs and vice versa. Others only allow a small opportunity for direct connection with woven cable shielding.

32 (Firstdraft Gallery, 2010).

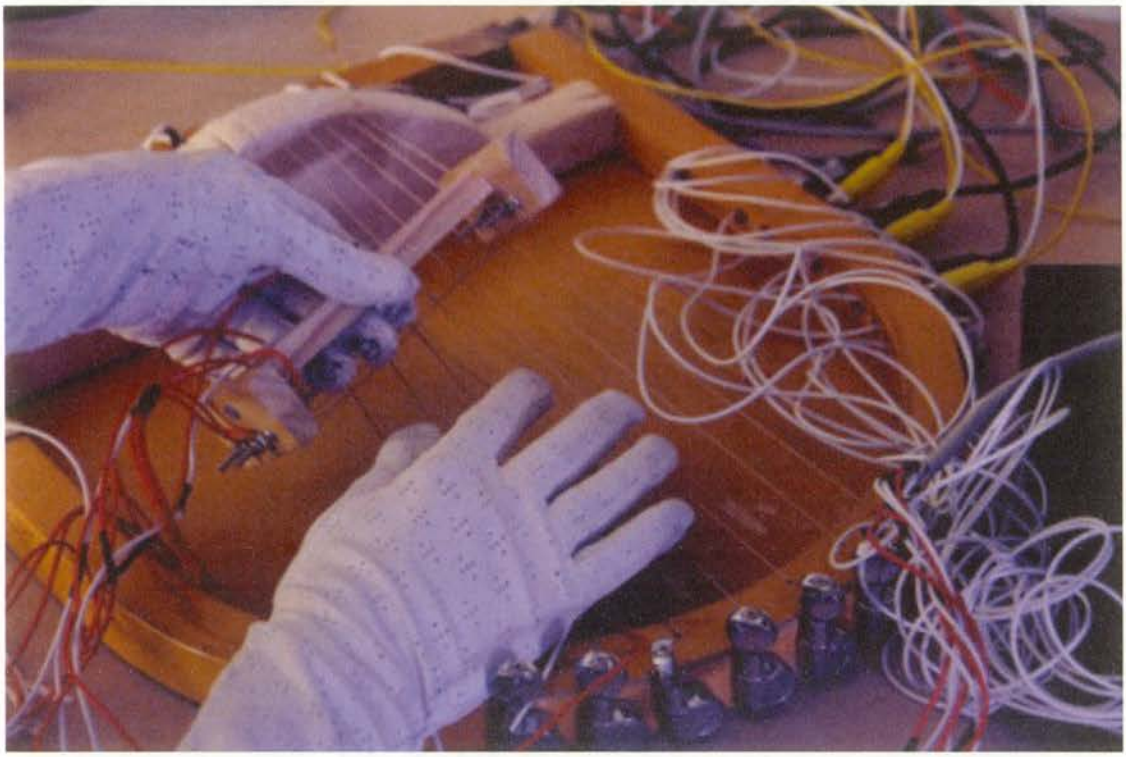

Fig 8. AV Harp performance documentation (2010).

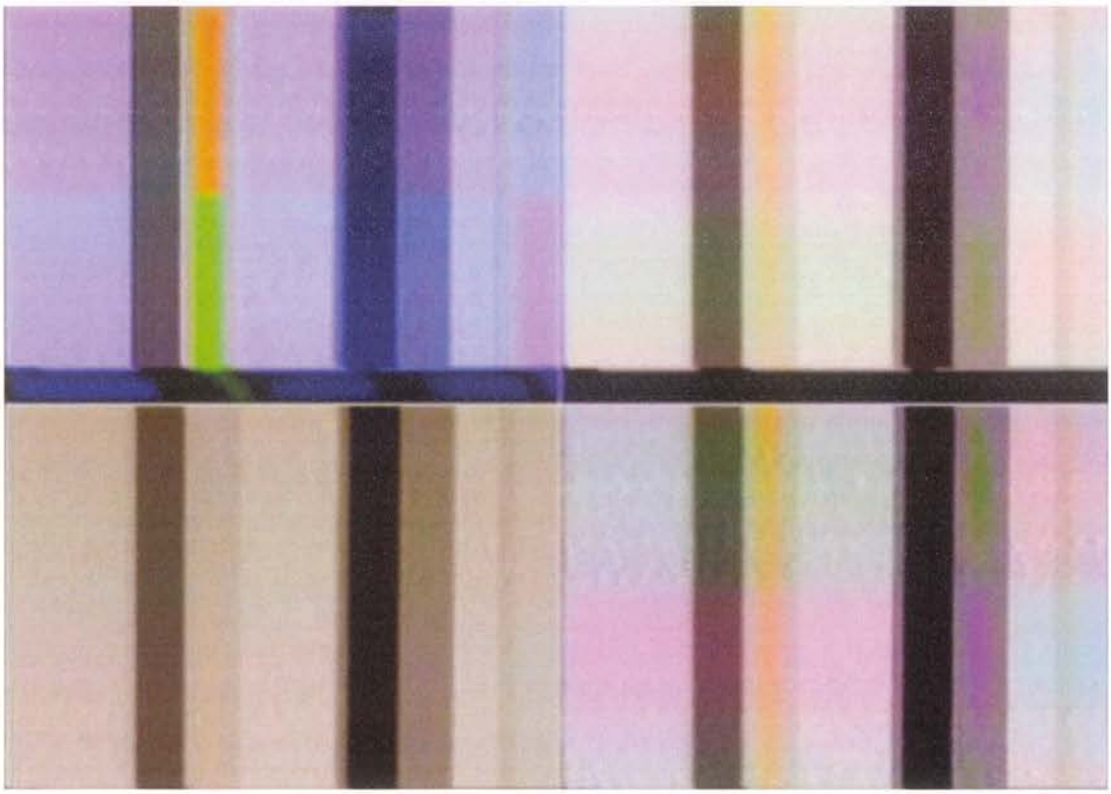

Fig 9. Still frame from video capture of AV Harp performance, 2010

As an instrument, the harp is very uncontrollable to perform with. It is possible to place a bow on the strings and simply leave it there, taking a step back to watch and listen to its unexpected and overwhelming hypnotic outputs. It is very much a space of collaboration or competition between four DVD players. Again, in these performances, the media that I have composed for the players is very sparse and simple so as to act as a backdrop or conduit in which to best exhibit the media 'mashing' that transpires.

In his article *David Tudor as Composer/Performer in Cage's "Variations II"* (2004), James Pritchett writes about Tudor as a kind of dual practitioner - a "performer of avant-garde [music]... [and] as a composer of music using live electronics."[33] I would like to emphasise this term 'live electronics' and consider the possibility that Tudor takes on a true meaning of this phrase in his practice, one where the machine is considered to be actually living. This kind of machinic animism is substantiated in Tudor's 'setting up' or facilitation of the machine's own unique outputs and in his description of this human-machine collaborative relationship. An example of this machinic affinity is apparent in Tudor's approach to playing John Cage's *Variations II* in 1958 which Pritchett's paper focuses on. In this realisation, Tudor uses the amplified piano as the key player in a complex system involving multiple microphones, contact microphones and phonograph cartridges. Tudor describes the prepared instrument as being one that he felt he "could only hope to influence;" it was certainly one that was often unpredictable in its interpretations of his actions, as the positioning of the various amplification devices around the electric piano facilitated a kind of chaotic feedback system.[34] Pritchett explains Tudor's approach to composition here as being the "design of a complex and uncontrollable electronic instrumental system that must be explored

33 James Pritchett, 'David Tudor as Composer/Performer in Cage's "Variations II", in *Composers inside Electronics: Music after David Tudor*. *Leonardo Music Journal*, 14 (2004) 11.

34 Ibid, 16.

through performance."[35] I want to point out that it is possible that these performances are by both Tudor and the prepared instrument itself. Tudor says, "I try to find what's there - not to make it do what I want, but to release what's there. The object should teach you what it wants to hear."[36] As Pritchett points, out "Tudor is clearly thinking of the amplified piano as something greater than the sum of its parts."[37] It seems fair to say from these statements, that Tudor believes the amplified piano, a machine he describes as having the perceptual ability to *hear*, can also *teach* him. He imbues what is generally considered an object that is to be harnessed by our own desires through skill and precision, with a quality of the living, or liveness, suggesting it too has desires. Through approaching technology in this way Tudor and his followers are able to achieve an original form of expression that is established by developing a personal and creative relationship with their technology. This kind of machinic affinity is something I have developed with my media-machines.

Pritchett concludes that he "consider(s) Tudor's realisation of *Variations II* to be a composition in it's own right," pointing out an issue of authorship—addressing the transfer from Cage to Tudor—because of Tudor's unique interpretation of the piece. [38] I think Pritchett has neglected to include the system that Tudor has set up, the ensemble of machines: piano, amplifiers, loudspeakers, varied microphones and cartridges in this transfer of authorship. From Tudor's own comments, it seems possible that these live electronics should be considered to be at least partially responsible for the authorship of this shared composition. Tudor's relationship to live electronics is the basis for an ongoing appreciation and collaboration; appreciating machines for their own individual character and eccentricities. Perhaps this is what Tudor meant

35 Ibid.

36 David Tudor and Victor Schonfeld, 'From Piano to Electronics', *Music and Musicians 20* (1972), 24-26.

37 Pritchett, 'David Tudor as Composer/Performer in Cage's "Variations II"', 14

38 Ibid pg 16.

by the phrase 'Composition Inside Electronics' - through the adaptation and modification, the hacking or augmenting of pre-existing technologies, inside, these machines are also composers themselves. *Signaux* tries to present this possibility.

In his book *Cracked Media - The Sound of Malfunction* (2009), Caleb Kelly introduces a field that he names *cracked playback technologies*, defining it as being "the use of mediating devices for the generation of sound and performance practices... technologies that have been designed and manufactured as playback equipment for recorded media."[39] Although his chapter focuses specifically on the uses of phonograph and compact disc playback technologies, his discussion points to a much larger field of hardware modification or hacking for media performance that is not limited to music. This can be traced back to the early work of Nam June Paik and his experiments with magnets and cathode ray televisions. Kelly discusses this approach to technology as being something that can be opened up and changed, adapted and modified, pointing out that for these practitioners "Technology does not appear in a finished state, ready to be passively consumed; instead it is in a constant state of development in the market and the domestic sphere, as well as in historical and theoretical discourses."[40]

Nicolas Collins has written a comprehensive guide on techniques of hardware hacking and cracking in his *Hand Made Electronic Music - The Art of Hardware Hacking*, defined as a "guide to the creative transformation of consumer electronic technology for alternative use."[41] Collins' work is strongly connected to electronic composer-performers from a generation before him, like David Tudor and Gordon Mumma. Collins practices both schools of *composition inside electronics*. Of the latter he says "I think a lot of my music has had to do with the

39 Caleb Kelly, *Cracked Media: The Sound of Malfunction.*(Cambridge: MIT Press, 2009), 24.

40 Ibid, 26.

41 Nicolas Collins, *Hand Made Electronic Music : The Art of Hardware Hacking*, (2nd Ed. New York: Routledge, 2009)

implications present in a piece of technology, even very common circuits, consumer electronics: I take a CD player, I modify a radio or a Walkman, trying to work at a very low technological level and then customize it a little bit, cannibalize it." [42] [43] When Collins looks inside technology he says "there's a piece in this circuit and I have to find it. Rather than saying: I've got this song, I wanna use this box."[44] I can see how this description relates to Tudor's approach. Interestingly, Collins distinguishes here between a general consumer approach to media technology, that of the 'user', and begins to define a different kind of relationship that contains this *composing with electronics,* a kind of machinic affinity. I would argue that Collins' 'looking inside technology' is an approach that involves a setting-up or facilitation of the exploration of a machine's hidden or previously censored capabilities: like the Sony Trinitron Monitors in the *AV Harp*, these machines are un-enslaved.[45]

The *Signaux* pieces continue this re-subjection of circuits with their physical housing. Taking influence from pre-existing instruments, the bell and harp, whose forms are readily recognised and easily referenced, which consequently invite the viewer to interact with little inhibition. This physical 'hack' also takes place in part though the fact that the bodies of both works are made from re-purposed parts; the *AV Harp* is made from the base of a wooden chair, the *AV Bells* are housed in repurposed upside-down plastic picnic glasses; their stems replaced with wooden handles.

The works have their own machinic behaviour which question the virtuoso relationship between a human player and instrument as is done

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42 As previously discussed, the latter being when the composer hacks, extends or augments 'ready-made' pre-existing technologies.

43 Nicolas Collins, *In Conversation with Martin Conrads* [web page] http://www.art-bag.org/contd/issue2/collins.htm [accessed 01.10.2011]

44 Idid

45 Maurizio Lazzarato, 'The Machine', *EIPCP: Evropski Institut za Progresivnu Kulturnu Politiku* October 2006, [online journal] http://eipcp.net/transversal/1106/lazzarato/en [accessed 02.02.2012].

in the work of Tudor and Collins.[46] These 'instruments' can create outputs autonomously and yet react to human interaction in a combination of predictable and unpredictable ways. This behaviour is experienced through interaction and its autonomy reveals the machine's ability to perform itself. The issues that came about in this work were mostly due to the fact that some parts of the machine set-ups or circuits were obscured and were not obvious to the viewer. So to the untrained eye, the resulting behaviour from the viewer or performer's interaction wasn't clearly understood. This disconnect is what lead me to my next work entitled *You or Me?* which was created with the intention of pointing out AV machinic behaviours in a more simplistic and autonomous performance context.

46 I intentionally avoid using the word 'instrument' when referring to my work as it contains the stigma of a prescribed power dynamic between 'player' and 'instrument'. An 'instrument is often seen as nothing but a tool for expression. I prefer to use the word 'machine' because of its definition being widely debated. Interestingly I am often referred to as an 'instrument builder', mostly by those who have not interacted with my work.

CHAPTER 02:

MACHINE VISIONS_

Audio Visionaries is a body of work involving a series of hand-built or modified electronic media-machines that create both audio and video outputs. In this chapter I will examine the specific aesthetic nature of their video outputs with particular attention to the visual component. I will examine how the work has been influenced by video art histories, and a specific area of artificial intelligence called *machine vision*. Finally I will offer some conclusions on how my work contributes to forms of contemporary AV aesthetics including *glitch* art and *no-input* outlining the possible connections these areas have to some preceding historical examples, namely the work of Steina and Woody Vasulka. It is my intention to point out how their work has contributed to a discussion about particular possibilities and meanings around mixed and inverted machine authorship that relate directly to my body of work and in many ways carry on from *composition inside electronics*. I will use a specific piece entitled *You or Me?* to make these comparisons.

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> *By 'artefacts' I mean, I have to share the creative process with the machine. It is responsible for too many elements in this work. These images come to you as they come to me, in the spirit of exploration.*
>
> Woody Vasulka, *Artifacts,* 1980

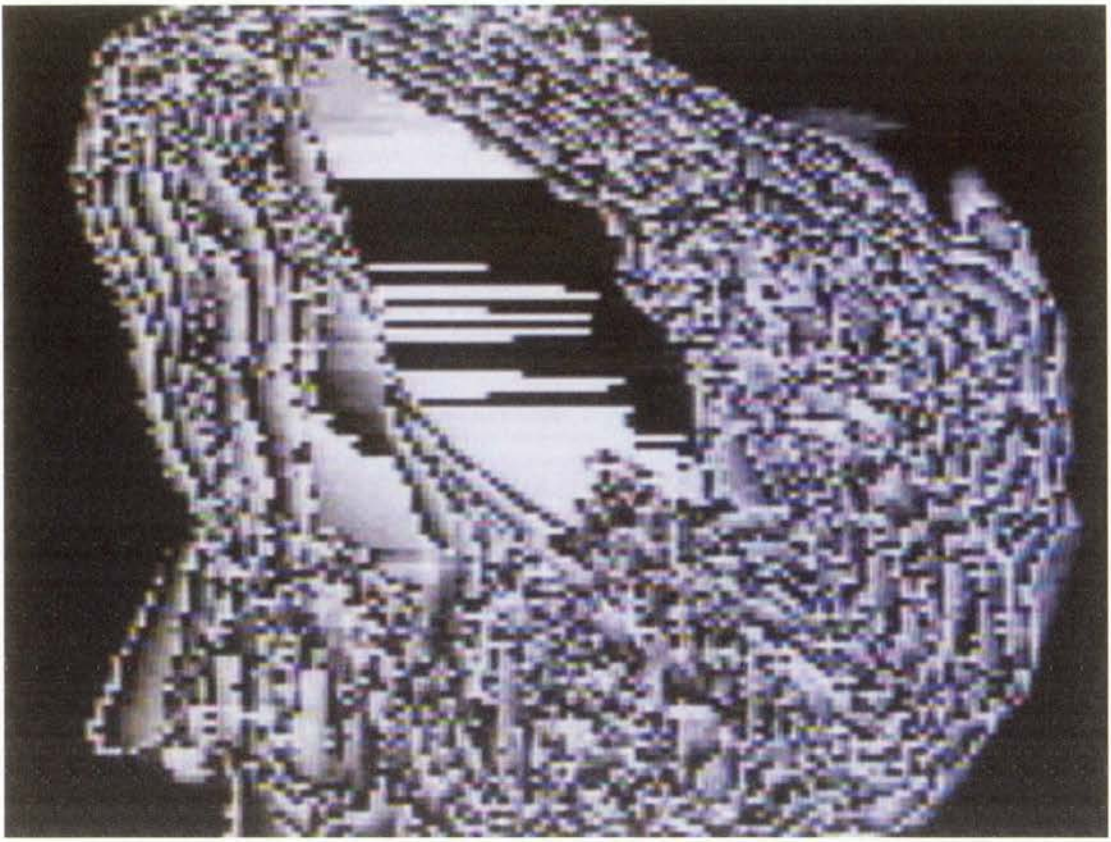

Fig 10. *Artifacts*, Woody Vasulka, 1980. Still image capture from single channel video

This is the voice over of Woody Vasulka from his video work, *Artifacts* (1980) explaining his collaborative process or "dialogue with machines."[47] There is something that occurs in Woody's exploration here which presents an interesting inversion between man and machine at the point where his hand enters the frame (pictured above). Woody uses his hand to experiment with form and depth to demonstrate the complex live visual effects being produced by his machine. In doing this, his body becomes a tool for the machine to exhibit its capabilities, reversing roles between human and machine, or human and tool. Video art historian Yvonne Spielmann points out this irony:

> *Woody makes reference to the pictorial motif of the artist's hand (adapted from the classical tradition of handcraft). In response to the*

47 Woody Vasulka - Marita Sturken, 'Exploring the Phenomenology of the Electronic Image', in Marco Maria Gazzano (ed.), *Steina e Woody Vasulka: Video, Media e Nuove Immagini Nell'Arte Contemporanea* (Rome: Fahrenheit 451, 1995) 27.

> *production methods of artists who maintain control over their own image, Artifacts allows a transformation to almost unstructured pixelation... in the digital imaging process of this motif. Evidently, the production methods in electronic culture require that the artist acknowledge that he/she co-produces with the machine.*[48]

Here the role of the machine is expanded and the possibilities of co-authorship are opened up. It is my thinking that this role is how machinic affinities are developed within a creative process. Interestingly, Speilmann discusses:

> *abstract machine operations as "performance"... the performance can be described as distortion of sound and image through machine processes and through the shared processable activity of the performer and machine. The notion of processing, first of all, refers to real-time operations.*[49]

Audio Visionaries explores machinic language, similar to Woody Vasulka's *Artifacts*, through improvisation and collaboration with machines in installation contexts, for which I will discuss in this chapter and live performances, for which I will discuss in Chapter Four.

To follow on from *Signaux,* I was interested in somehow trapping a viewer in the video frame as a way of initiating a more direct dialogue between the machine and viewer, pointing out the performative qualities of television monitors; taking on this inversion that Woody Vasulka acts out in *Artefacts*. In order to explore these ideas I created a very simple video installation entitled *You or Me?* (2011). The title is a question posed by a monitor and camera assemblage to the viewer. This work

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48 Yvonne Spielmann, "Woody Vasulka : Artifacts", in *La Fondation Daniel Langlois* [online journal] http://www.fondation-langlois.org/html/e/page.php?NumPage=489, [accessed 9/1/2011]

49 Yvonne Spielmann, "Video and Computer; The Aesthetics of Steina and Woody Vasulka, The Reflexive Medium", in *La Fondation Daniel Langlois*, [online journal] http://www.fondation-langlois.org/html/e/page.php?NumPage=465,(accessed 19/07/2011) 4.

was originally exhibited in a gallery window facing the street. The work involved two small pin-hole colour surveillance cameras, an RCA splitter and a large LCD monitor (refer to *You or Me?* In accompanying DVD) Both cameras were secured to the monitor, one on the left with its lens facing out towards the street, the other on the right, with its lens facing back towards the monitor itself. Both cameras were connected to one input of the monitor using the RCA splitter, sending two different signals to one input at the same time. The *AV Bells* did a similar thing when turned completely upright, sending two signals to one input on a television monitor causing the monitor to interpret both media simultaneously and as a result, idiosyncratically. Both of these works engaged in a synchronisation malfunction; the monitor's resultant behaviour being partly determined by its error correction circuitry, and how this circuitry dealt with multiple simultaneous signals. In *You or Me?* the resulting competition was between two signals, one that reflects the viewer in front of the monitor - "you", the other that reflects the screen itself - "me", opening video feedback between the camera and the monitor.[50]

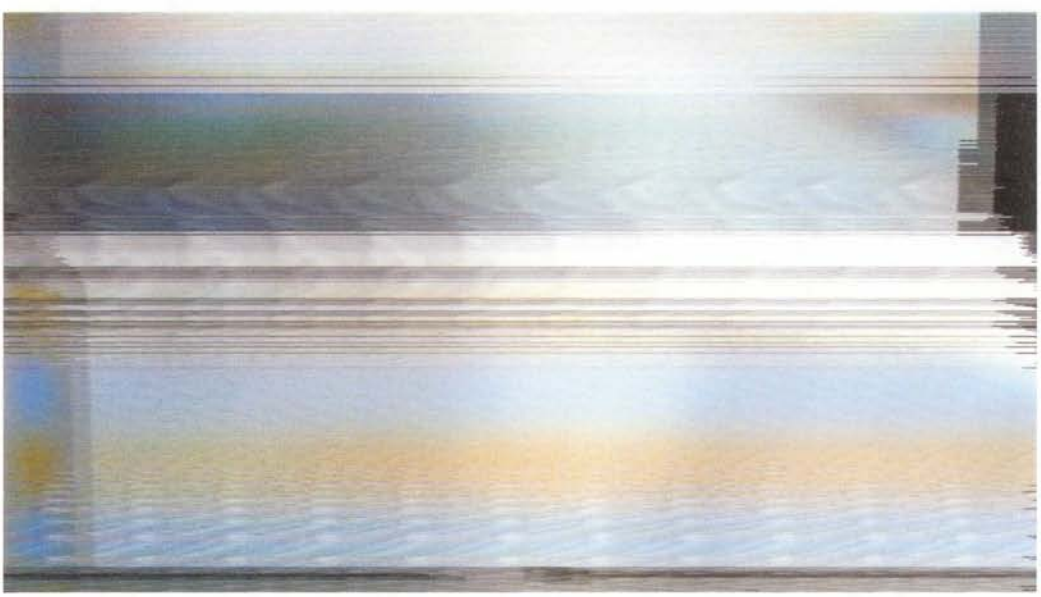

Fig 11. *You or Me?*, Pia van Gelder, 2011, Video image capture

50 Through the camera facing the monitor – a closed circuit feedback.

Different to the *Signaux* works, *You or Me?* does not require interaction through direct contact, nor does it involve pre-existing media. In this way the work is autonomous. It is a dialogue between an assemblage of machines and their environment. Interaction is only a bi-product, generated from the viewer's presence in the camera's frame. Like a witness who is dragged into the drama of an accident, their image becomes part of the live feed by proximity. This machine assemblage performs independently, creating a composition of live moving images for the viewer, regardless of whether they are present or not. Stuck in a conflict between incoming information, the monitor switches erratically; signal one, signal two, signal one, signal two... and leaves a visual reflection of its confusion in glitches and malfunctions. Sometimes the screen is black reading 'no signal', correcting its error, then spluttered imagery appearing suddenly and then disappearing.[51]

Both *You or Me?* and *Signaux* explore the disobedient machine and the visual and audio aesthetics of *glitch*, a movement inside electronic and digital media art that examines the aesthetic contributions of technological malfunctions. Iman Moradi, digital artist and academic, defines a visual glitch, in his survey of contemporary glitch art, as being "an artefact resulting from an error."[52] Woody Vasulka's *Artifacts* could be said to be a precursor to glitch. Glitch today has been popularised with digital optical technology and the Internet. As a movement, the glitch itself has been transformed from objective to subjective, lead by a desire to set up or facilitate errors, mistakes and malfunctions so as to appreciate them for their aesthetic qualities. Similar to *composition inside electronics*, the artist here is again taking on the role as the facilitator, or at least sharing the creative process with the machine. Subsequently this facilitation de-subjectifies these machines.

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51 Strangely, the gallery curator called me the day after the opening of the exhibition *You or Me?* was shown in to inform me that the monitor did not seem to be working and I had to assure her this was a subjective opinion and that I had set the monitor up intentionally to 'not work'.

52 Iman Moradi, *Glitch : Designing Imperfection* (New York: Mark Batty, 2009) 8.

As Moradi points out, it can be noted that the form is well established by its reflection in popular culture, from music to movies. The glitch has been saturated, turned into a language and has consequently brought a common appreciation of its aesthetic values. But who do these values belong to? Glitch is a movement that participates in the accident, embracing the unexpected or surprise, which is already well established in the history of art making. It is fair to say that glitch art is like a ready-made; a facilitation of commonly perceived digital refuse. Glitches are artefacts created by machines and in turn exhibited by its finder - the artist. Generally, the glitch is considered erroneous by a 'user', who subjectifies media-machines for their own intentions, and the engineer, who interprets the glitch differently by understanding its mechanical origins. It is important to note that most media machines today are engineered with stop-gaps that are created to mask or censor these 'unwanted' results, replacing them with a blue screen or visual 'mute.'[53] This language may state a specific 'malfunction' to the technically trained eye/ear; to an artist it's meaning is completely different.[54] This perspective on the commonly perceived malfunctions transforms the subjective into an object of art.[55] Through this de-subjection the machine is unleashed and unenslaved from its censoring designs and displays the results of this unleashing, which is a motivating force and has been further developed in my work, and also a sign of an affinity between artist and machine.

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53 As Nicolas Collins discusses in his explorations with skipping CDs (mentioned in the previous chapter).

54 Furthermore, if a glitch is most commonly created from mistranslations that are facilitated by a loss or breakdown in our communication signals (for example, an audio signal being plugged into a video input on a video display) and this breakdown occurs in our communication, not in the machines, it is then plausible that the results are perfectly predicable and straightforward to the machine, even if these signals are simply misunderstood or unwanted by its user. So if you plug two channels of video into one television, the machine simply tries to play both to the best of its abilities, reinterpreting the signals in its own original ways. Consequently, I look at these results and consider them beautiful and exhibit them as art.

55 Deleuze and Guattari, *A Thousand Plateaus*.

As Moradi points out, "Glitches are quite often fleeting artefacts that momentarily offer a glimpse into the inner workings and complexities of storage, display and communication technology."[56] With this machinic affinity in mind, I would like to consider that glitch art offers a new contribution to the expanded meaning of machine vision that has been discussed so far.

I first came across the term 'machine vision' with an early work by Steina Vasulka called *Machine Vision,* otherwise known as *All Vision* (1970). The term is normally associated with the physical implementation of *computer vision*, an area of artificial intelligence research in which a computer is effectively taught how to see. Steina's *Machine Vision* produced images and sounds that presented the machine's 'perception', involving an assemblage of motors, cameras, a mirrored globe and a television. The work explores an electronic machine's capabilities to

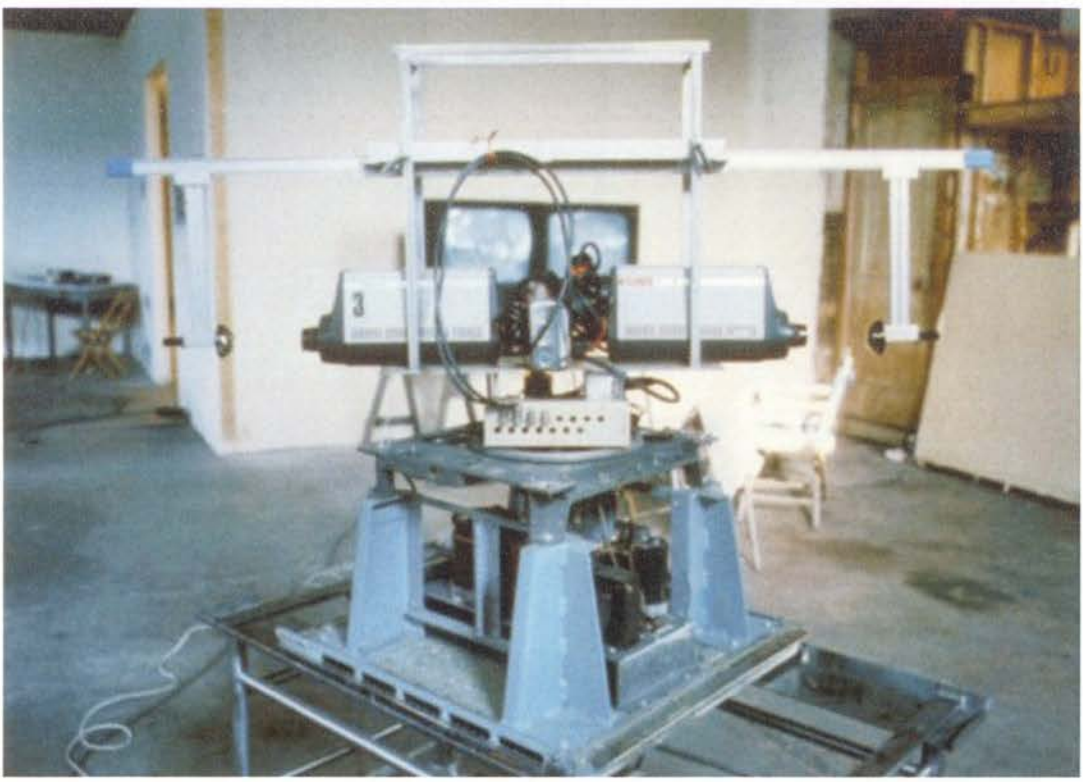

Fig 12. *All Vision/ Machine Vision* by Steina Vasulka, 1975

56 Moradi, *Glitch*, 8.

perceive its environment and create its own images. Steina Vasulka sees this as "signifying an awareness of an intelligent, yet not human vision. The act of seeing the image source and the kinetic resources come from the installation itself, choreographed and programmed by the cyclical nature of its mechanised performance."[57] These mechanised performances are like the machinic behaviours I have studied in my own practice. Based on this statement I think it's fair to consider that Steina chose the title of this work to imply this inversion I am examining here, which occurs by facilitating the exhibition of a machine's visual language and perception as opposed to our own. Similarly, if glitches offer glimpses into the creative expression of machines or machine aesthetics, then they are a form of machine language and mechanised performance. This dialogue with tools engages in a journey to learn what machines see.

Audio Visionaries offers different perspectives on the nature and language of machines representing common audio-visual errors like horizontal lines, broken images, scan-lines, interlacing errors, noise, static, earth hums as a form of machinic expression. They are transported from being represented as a technical failure or mistake to a form of audio-visual expression. The work embraces the uncanny, unexpected and spontaneous nature of these machines, presenting their aesthetic beauty. The audio-visual behaviour is appreciated for its discretely technological sublime nature; it is awed for its chaos. These possibilities are presented in a combination of open systems that ask for interaction to generate results: interaction with myself in performances or interaction from a viewer in an installation. By interacting, viewers may experience an affinity with machines by recognising their ability to reinterpret simple media, transforming it into beautiful phenomena, what Woody Vasulka calls "images which [are] not of this world."[58] In my work

57 Steina Vasulka, cited in Karen Lee Spaulding (ed.), *Vasulka*, (New York: Manhartd Alexander Inc., 1978) 9.

58 Woody Vasulka, cited in *Steina e Woody Vasulka: Video*, Gazzano, Marco Maria ed. Rome: Media e Nuove Immagini Nell'Arte Contemporanea, (Rome: Fahrenheit 451, 1995) 20.

and in this paper I ask you to consider this dialogue with a machine as an exploration of the creative world of machines; machines that are common or everyday, often overlooked and misinterpreted as simply being conduits.

CHAPTER 03:
HAUNTED MEDIA MACHINES_

> *As an anticipator she opens a space to it and lets non-human life live. As an operator she gives it face and eyes but splits the optical input. She turns one eye outward beyond the window and the other eye she faces in on itself...*
>
> *Providing real-time communication with disembodied agencies she allowed spirits of the dead to come to life, crystallizing in a population of ghosts who communicate by taps through the medium. Electrical and animal magnetism have never been more intimately connected and mysteriously interchangeable.*
>
> *She adds its own spectral effects, the layers of uncanny channellings and associated ghostly activities. This is why I say that she is one of the ghosts to whom the future most belongs.*[59]
>
> Nick Keys, "One of the ghosts to whom the future most belongs", *SuperKaleidoscope Featured Artist – Pia van Gelder*, June 2011

In this chapter I discuss the more peculiar electronic forces that are found within machines. So far I have discussed the animistic possibilities that machines can be given within composition inside electronics, and in dialogues with machines. Within this chapter I will focus my discussion on what happens when a machine is afforded more than just liveness, by examining some spiritual possibilities regarding the ontology of machines.

59 Nick Keys, "One of the ghosts to whom the future most belongs", *SuperKaleidoscope Featured Artist – Pia van Gelder*, June 2011, http://www.superkaleidoscope.com/featured-artist-june.php [accessed, 06.05.2012].

The autonomous behaviours of open circuits and augmented disobedient machines in the *AV Harp* and *You or Me?* summon my own feelings of the uncanny, which I hope to share with my viewers. In this chapter I will discuss how these assemblages can sometimes seem guided or connected to some mysterious electronic forces. I will investigate some of the esoteric ideas that I explore in *Audio Visionaries,* and examine the work of other artists that illustrate similar machinic affinities and ontologies, including Michel Waiswisz and Spencer Finch. Further, I will consider how the work of theorists and philosophers Jacques Derrida, Jeffrey Sconce, Ray Kurzweil and Jonathan Sterne explore these possibilities. I will explain how their ideas relate to my body of work, and in turn I will offer some responses to the following questions: do machines have a spirit? Is this spirituality imbued or inherent? How does this spirituality effect the making of art, and can these mystical possibilities be shared with the viewer? In exploring this topic I will use some examples of my work *Haunted Performers* (2011).

The term *ghost in the machine* is familiar to most people. I have found it used in reference to no-input mixing, a technique I employ with vision-mixers in *Haunted Performers* and particularly *Apparition Apparatus.*[60] The autonomously created media in a no-input system is often described as coming from a *ghost in the machine*, as in the work of Toshimaru Nakamura, a Japanese experimental musician who performs on a no-input audio-mixer.[61] In my work, I employ the video mixer to perform a combination of its intended tasks along with two forms of closed circuit feedback, internal and external. The video mixer is designed to apply visual effects on video signals, and to mix between

60 No-input mixing is a form of experimental music practice that harnesses the audio phenomena which occurs inside an audio mixer, a machine specifically built to be a kind of transparent conduit for externally produced sounds. By plugging the mixer into itself this internal behaviour is amplified and presented as a kind of machinic performance. Depending on the mixer's 'personality', the outputs can be extremely unpredictable, leaving their 'user' to act simply as a facilitator for the machines own uncanny agenda.

61 "Don't be fooled by the casual title of this release; you will hear a veritable Ghost in the Machine cloaked in pure electronic sounds." cd catalogue note by 'CD / B-BOY 025', http://www.bottrop-boy.com/?page=842478&action=product&webProductId=6104195

two or more signals. In performances I have utilised these functions on a channel that comes from a closed circuit video feedback loop channel (a CCTV camera facing its display monitor), and also another channel that feeds it's own signals into itself, plugging its own output into an input and back again. This activates an internal feedback that can be adjusted into infinitely autonomous, visually exciting imagery. Similar to a no-input audio mixer, this imagery is authored by the machine that is intended to be a transparent medium.[62] The question presents itself: where is this imagery coming from?

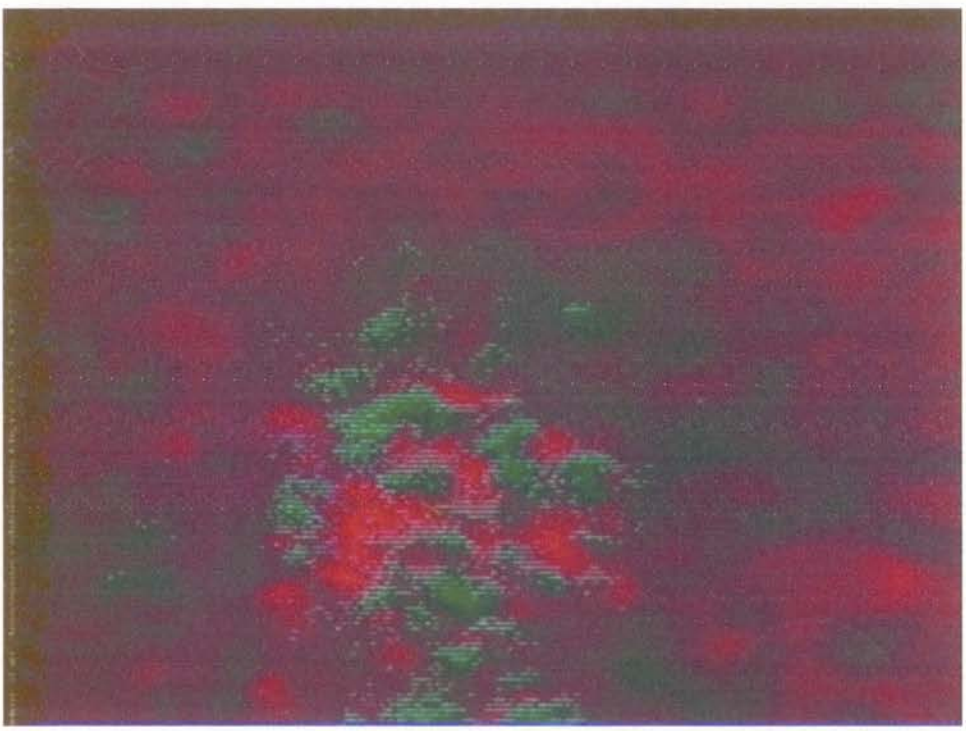

Fig 13. *Apparition Apparatus*, Pia van Gelder, 2012, Still image capture from audio-video installation of autonomous no-input vision mixer.

I am interested in how media machines are perceived as ghostly things, and how their media can be haunted. I believe that this esoteric philosophy, although often lightly suggested, deserves more in depth study. I am especially interesting in the manner in which this spirituality

62 Different to film, which is also described as a 'transparent medium', mixers are designed as conduits for pre-existing media which is electronic or magnetic as in tape. The nature of this media has an intangible quality that is susceptible to electromagnetic elements from the body or the ether.

contributes to the machinic affinities I explore in my work, and also how it has contributed to the animistic and spiritualist ideologies that I have developed in *Audio Visionaries.*

Australian AV performance duo Botborg also use no-input video mixing to create synesthetic live improvisational compositions. They claim to demonstrate the theories of a possibly fictional Dr Arkady Botborger "founder of the 'occult' science of Photosonicneurokineasthography," with an instrument they have invented "incorporating a tangled entangled mix of new and old technologies that are altered and customised... although the human operators of Botborg are skilled manipulators of the system, it is equally unpredictable and uncontrollable." [63] Although it is hard to establish their statements as true or false, they are clearly grounding the conceptual rationale of their performances, using possibly invented mythologies that point to early research around synaesthesia, theosophy and spiritualism all with a dash of KGB post war spin. Their playful connections establish their esoteric influences with a tone I admire, and yet their audience might not be exposed to these theories without reading about their work.

In my research I have found that art, engineering and alchemy are historically interwoven fields. Historically, electrical and electronic inventions have held a kind of spectacular magic, which may have come from technological incomprehension and consequent feelings of a kind of technological sublime or enchantment. An example of this can be seen in early pictures of electrical engineer and inventor Nikolai Tesla, and his famous Tesla coils. Seen to be man made lightning, their power was unfathomable at the time and were one of the many acts that secured his public title as 'the wizard'.[64] This mixing of science and magic occurred also in the early impressions of the moving image. At

63 Botborg, [web page] http://botborg.com/index.php?go=about [accessed 20/12/2011].

64 Mark Seifer, *The Wizard The Life and Times of Nikola Tesla* (New York: Citadel Press, 1998).

the time of its inception, film and animation was considered to be nothing less than the bringing to life of the inanimate world, with advertisements reading: "see (life-size) figures... come to life before your very eyes."[65] In the invention of audio reproductive technologies in the late nineteenth century, some people believed that the phonograph was a kind of vessel capable of holding the recorded subject's soul. Theorist Jonathan Sterne points out that at the time of the phonograph's invention, "Spiritualism, that strange mix of religion and science, was a major cultural force among the middle classes and something in which even respectable intellectuals publicly dabbled."[66]

Jacques Derrida talks about the haunted nature of cinema and other electronic media in Ken McMullen's improvised film *Ghost Dance* (1982), stating: "The cinema is the art of ghosts, a battle of phantoms..."[67] Derrida goes on to suggest that all electronic representations carried by the telephone or television are also spirits or phantoms. These machinations of telepresent spirits have been haunting the history of telegraphy and media technology since its very beginnings. Cinema and television history includes many examples of real attempts, along with fictional narratives, that depict the use of recording and telegraphic technology to contact or capture the dead or the missing, where mysterious entities that can be channelled from the ether with radios or captured on magnetic tape. However, there is an assumption relating to these comments from Sterne and Derrida, one that formulates these technologies as empty vessels to carry our own ghosts or spirits like a conduit or medium. This assumption poses the question about media that includes no direct representation of a human subject or 'living' thing, but instead consists of noise, or static, or internal feedback.

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65 Lynda Nead, *The Haunted Gallery: Painting, Photography, Film around 1900* (New Haven: Yale University Press, 2007) 1.

66 Jonathan Sterne, *The Audible Past* (Durham: Duke University Press, 2003) 291. Which is arguably in the same decade as the introduction of the moving image.

67 Jacques Derrida in Ken McMullen (director), *Ghost Dance* (1982).

Could these audio-visual expressions be from the machine's own animistic spirit?

In Jeffrey Sconce's book *Haunted Media: Electronic Presence from Telegraphy to Television* (2000) he studies the origins of electronic technology, specifically telegraphy, and its connection with the emergence of spiritualism. Sconce introduces his book with several historical reports of bizarre acts of violence against household televisions, including the 1952 case of Frank Walsh, who shot his household television with his 38-calibre revolver. This story literalises the inherent language we use when dealing with technology referring to its liveness. Sconce asks the question: what is it that drives these people to commit violent acts against technology, acts that are normally directed at living beings? Sconce points out that these incidents illustrate a mythology around the "living" nature of these technologies, referring to Jane Feuer's idea of television as "alive... living, real, not dead."[68] Sconce says:

> *The living quality of television transcends the historically limited and now almost non-existent practice of direct "live" broadcasting to describe a larger sense that all television programming is discursively "live" by virtue of its instantaneous transmission and reception. Central as well to the initial cultural fascination with telegraphy, telephony and wireless, such liveness is at present the foundation for a whole new series of vivid fantasies involving cyberspace and virtual reality. At times this sense of liveness can imply that electronic media technologies are animate and perhaps even sentient.* [69]

Sconce investigates how Walsh's 'homicidal' act against his television implies his belief that the machine was alive. This psychological and

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68 Jane Feuer, "The Concept of Live Television: Ontology as Ideology", in E. Ann Kaplan (ed.), *Regarding television : critical approaches-an anthology*, California: University Publications of America, 1983.

69 Jeffrey Sconce, *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham: Duke University Press, 2000) 2.

theoretical perception of *liveness* (and consequent fatality) is a central force in my methodology.

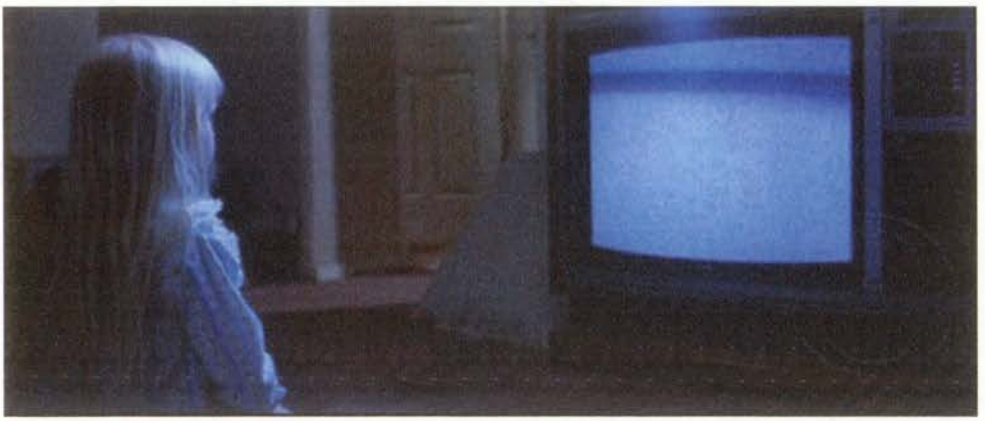

Fig 14. *Poltergeist*, 1982, Directed by Tobe Hooper, 1982, Still

The 1982 family horror film *Poltergeist*, directed by Tobe Hooper, is an interesting example of one of contemporary popular culture's haunted media narratives, which Sconce discusses in his book.[70] The film contains the famous depiction of the innocent family in peaceful slumber, sheltered from the electrical storm outside; their daughter, hearing voices from beyond in the flickering light of the television, staring into the static. This familiar scene depicts a paranoid mythology about television static creating a pathway to the unknown; the 'ghosted' image channelling entities that are not of this world. This audio-visual language of static and interference is accepted now as an expression of a sort of machinic agenda or violent take-over, as I have discussed in the previous chapter in relation to glitch art. What is important to point out here is that I, like Carol Anne, believe in this pathway to the unknown, staring into the static television in search for deeper meaning or connection.

70 The story follows a stereotypical working class American family. Their youngest daughter, Carol Anne, is contacted by a supernatural spirit via a seemingly 'dead' frequency on their television late at night. The spirit escapes from the televisual realm and enters the house, later kidnapping Carol Anne, holding her inside the television's static virtual channel. This spirit reveals itself to be that of an Native Indian tribe whose burial ground the family's house was built on top of.

Following this, I have been interested in exploring these kinds of anomalies in media transmission technologies, and how that behaviour might be integrated into my series of performing machines. An interesting addition to performance set-ups has been a radio cracklebox called the *Xpander Expanded* (2011) which uses the technique of *laying of hands*: a form of circuit bending that involves human touch, where a battery operated machine is opened up and its circuitry exposed to human touch.[71] Here, human flesh is used to interact with the electronic components of a radio Walkman and also a hand-held television, where the body transforms or collaborates with the nature of the machine's circuitry. Heat, sweat and electromagnetic occurrences in the body effect and augment the flow of electricity, and modify the machine's output. Nicolas Collins points out that "This principle of direct contact with circuitry is relatively rare among commercial electronic instruments, but has often been exploited by experimentalists (and is the soul of the infamous Cracklebox)."[72]

Different to my circuit bent telegraphic devises, Michel Waisvisz's *Cracklebox* or *Krakdoos* (c. 1970) is a single op-amp, which has been opened up to human touch through six touch pads. [73] James Fei explains that with the *Cracklebox* "The performer interacts with the instrument by bridging different points in the circuit with one's hands, eliciting noises that are sensitive to pressure, sweat and the declining health of the 9-volt battery powering it."[74] For someone who is familiar with the principles enclosed in this box, this instrument might seem crude and limited, but for those experiencing it from outside this body of technical knowledge, the experience can generate mysterious results that make the player feel a tangible connection to an outer-world. The feeling of

71 *Laying of hands* is a technique that has been attributed by Nicolas Collins to Michel Waisvisz with his invention of the *Cracklebox* in the 1960s, Collins, *Handmade Electronic Music*, 76.

72 Ibid.

73 Otherwise known as an 'operational amplifier'.

74 James Fei, "Real-Time Prototyping in Live Electronic Music: A Modular Crackle Instrument", *Leonardo Music Journal*, 17, (2007) 38.

collaboration between two bodies—the human and the machine—seems clear.

Fig 15. laying on of hands ceremony in the Pentecostal Church of God. Harlan County, Kentucky. USA

It is important to point out that the very name of the technique is adapted from the name of a religious healing ritual normally called the *laying on of hands.* It is most popularly practiced in Christianity but it is also associated with many other faiths. Typically the hands of a spiritual healer are 'laid' on a person who is sick and the healer acts as a sort of conduit, channelling spiritual powers that can heal. It is interesting that these two practices, in spiritual healing and in electronic hardware hacking share such a similar name. The reference seems obvious and could benefit from some more considered discussion I will not be able to engage with in this paper.

Through these activities I have arrived at some similar questions to those Sconce asks in his book:

> *What exactly is the status of the worlds created by radio, television and computers? Are there invisible entities adrift in the ether, entire other electronic realms coursing through the wired networks of the world? Sound and image, without material substance, the electronically mediated worlds of telecommunications often evoke the supernatural by creating virtual beings that appear to have no physical form.*[75]

I have found several artists who consider these possibilities highly plausible. American artist Spencer Finch reveals these ideologies about the inner or outer-world of machines in his work. An interdisciplinary artist, he has made numerous works around the idea of searching for extra-terrestrial life, using a mixture of familiar media machines and self-constructed inventions that display a scene in which an act of possible contact with an extra terrestrial (ET) has taken place, or is about to. His scenarios invite the viewer with the possibility of enacting a form of contact. *Blue (One Second Brainwave Transmitted to the Star Rigel)* (1993), pictured above, is one example. Another work of this nature, *My Own Personal SETI* (2001), was exhibited as a part of a formative 2005 exhibition entitled *Blur of the Otherworldly: Contemporary Art, Technology, and the Paranormal*.[76] In this installation, Finch:

> *gives us a seat in which to imagine ourselves searching for extraterrestrial intelligence. But we are not the scientists of the SETI project; instead we are living-room seekers, descendants of ET, Orwell's Mars invasion, and Mork and Mindy. The possible sound or vision of alien communication is conspicuously absent; all that is left is the place we might occupy in searching for the invisible.* [77]

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75 Jeffrey Sconce, *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham: Duke University Press, 2000) 4.

76 Originally exhibited at the Center for Art and Visual Culture, UMBC, Baltimore, where Jeffrey Sconce was a participant in a surrounding panel discussion.

77 Mark Alice Durant and Jane D. Marsching (ed.), *Blur of the Otherworldly: Contemporary Art, Technology, and the Paranormal* (Baltimore: Center for Art and Visual Culture, 2005) 158.

Fig 16. *Blue (One Second Brainwave Transmitted to the Star Rigel)*, by Spencer Finch, 1993

Audio-Visionaries, like Finch's installations, works to display my personal ideologies about machinic ontologies in which machines present their own spirit or extra-terrestrial connections. While Finch references these esoteric beliefs through his titles, my intention to share a sense of machinic affinity is established through audio-visual behaviour that can imply animistic liveness or spiritual or mystical possibilities; this is left up to the viewer to decide.

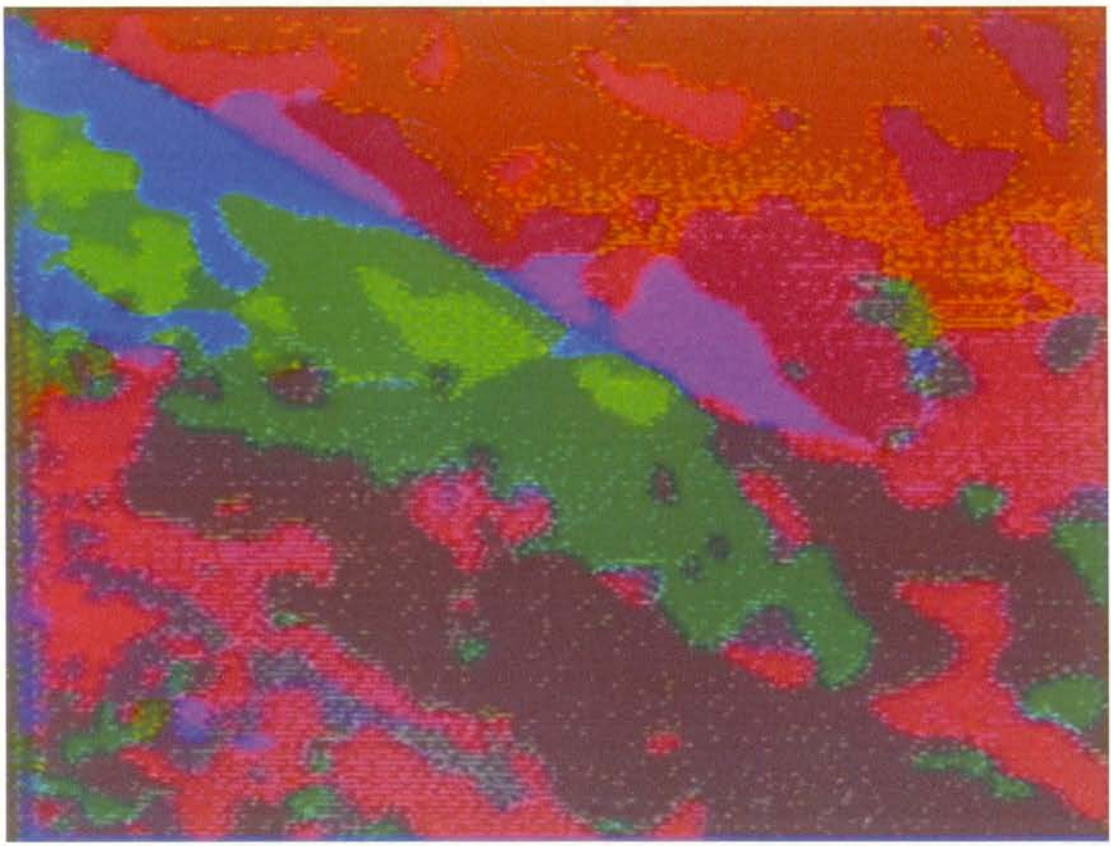

Fig 17. *Apparition Apparatus*, Pia van Gelder, 2012, Still image capture from audio-video installation of autonomous no-input vision mixer.

An example of how this behaviour is presented can be seen in *Apparition Apparatus* (2012), an autonomous audio-visual setup presented on a table-top installation. This work presents the no-input vision mixer's audio and visual performance through a speaker and CRT field monitor. The title indicates the mystical nature of the audio-visual outputs from the media-machine, in this case a *Panasonic WJ MX 12* (c. 1989), an early digital video mixer whose own video output is plugged into its input, and so to for the audio, resulting in a continuous stream of abstract electronic feedback phenomena. It is important to point out that this item of technology might be fetishised for its obscure link to the history of video art and to these people its outputs may contain nostalgia, like a ghost from video's past.

To return to Frank Walsh's act of television homicide and contemplate his underlying motivation, Jeffrey Sconce considers some serious psychological implications of an expanded relationship between machine and human that is known as the *technical delusion*, and defined as:

> *[The] electronic manifestation of 'thought insertion' or 'thought broadcasting'. This phenomenon occurs mainly in schizophrenic patients who develop delusions of technical control. In such cases, patients experience their thoughts, movements and feelings to be controlled by mysterious machines and contemporary technologies such as computers, the internet, X-rays and lasers.* [78]

In *On the Origins of the Origin of the Influencing Machine,* Sconce concentrates his essay on the first important clinical study of this condition, "On the Origin of the Influencing Machine in Schizophrenia" by Viktor Tausk. [79] Now considered a first rank symptom of schizophrenia, Sconce draws comparisons between this psychological 'dysfunction' and the history of media, suggesting the possible links between early fanatical criticism of television and its effects on society, like the 1978 essay "Four Arguments for the Elimination of Television" by Jerry Mander.[80]

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78 Jeffery Sconce, "On the Origins of the Origin of the Influencing Machine", (ed.), Erkki Huhtamo and Jussi Parikka, *Media Archaeology : Approaches, Applications, and Implications* (Berkley: University of California Press, 2011) 71.

79 Jeffery Sconce, "On the Origins of the Origin of the Influencing Machine", (ed.), Erkki Huhtamo and Jussi Parikka, *Media Archaeology : Approaches, Applications, and Implications* (Berkley: University of California Press, 2011)

"The schizophrenic influencing machine is a machine of mystical nature. The patients are able to give only vague hints of its construction. It consists of boxes, cranks, levers, wheels, buttons, wires, batteries, and the like. Patients endeavour to discover the construction of the apparatus by means of their technical knowledge, and it appears that with the progressive popularisation of the sciences, all the forces known to technology are utilised to explain the functioning of the apparatus. All the discoveries of mankind, however, are regarded as inadequate to explain the marvellous powers of this machine, by which the patients feel themselves persecuted."

Viktor Tausk, 'On the Origin of the 'Influencing Machine' in Schizophrenia', *The Psychoanalytic Reader*, ed. Robert Fliess (New York International University Press, 1948), pg 33 (first published as "Uber den Beeinflussungsappart in der Schizophrenie" (1919).

80 Jerry Mander, *Four Arguments for the Elimination of Television*, (Brighton : Harvester Press, 1980)

What I find interesting is that Tausk describes the patient's ignorance or inadequate knowledge mixed with feelings of sublime wonder towards the visual phenomena these machines create, to the point of complete obedience and devotion. I can't help but see a similarity here in my own experiences. Without having the technical expertise of an electrical engineer, in practicing circuit bending to augment technologies that are not my original designs, I set up situations that are unpredictable and unexplainable, facilitating and continuing a sense of wonder that might otherwise be diminished by in-depth technical study. This ignorance further harvests an animistic relationship with machines that can be found in both artists and also psychotics.[81]

81 Melitopoulos and Lazzarato, 'Machinic Animism'.

CHAPTER 04: EXPLORATORY PERFORMANCES WITH AUDIO-VIDEO MACHINES_

> *Artists who explored video as an electronic "material" were interested in the process of translating energy and time into waveforms, frequencies, voltages, and finally into video and audio images. Some artists stated their intentions to develop a new formal "vocabulary" for this electronic medium, collaborating with independent engineers to develop new analog and, eventually, digital imaging tools. Tapes were often documents of "dialogues with tools" (Vasulkas) or real-time performances of tools where a video signal would be routed through electronic instruments.*[82]
>
> Deirdre Boyle, Chris Hill, and Maria Troy,
> *Performance of Video Imaging Tools*

In this chapter I will return to ideas of the uncanny, inverted machine vision and the technological sublime in reference to a specific area of the *Audio Visionaries* work that involves live audio-video synthesis. I will discuss the techniques I have engaged with using new commercial equipment and how this work has engaged in an *exploratory* methodology that has been more prevalent within music. I will talk about how this field is situated in relation to a media-machine archaeology of analogue video technology and synthesis. In doing so I will also investigate how these machines engage in the field of visual music, particularly in relation to my own work.

Popular early examples of video synthesis include the work of Nam June Paik, and his work with engineer Shuya Abe, along with the Vasulkas, who both used commercial video synthesis equipment and contributed

82 Deirdre Boyle, Chris Hill, and Maria Troy, "Performance of Video Imaging Tools", Chris Hill ed, *Rewind: Video Art and Alternative Media in the United* State (Chicago: Video Data Bank, 1996).

to its commercial and artistic development. Australian artists and engineers have been contributing to the field from its beginning including video artist and historian Stephen Jones and inventors Peter Vogel and Kim Ryrie of Fairlight. [83] I have been interested in this history and the possibilities these elaborate and elegant analogue machines offered in live performance contexts for some time. However, since the introduction of digital technologies and computer generated visuals, there has been little development in video synthesis. It would be fair to say that there have been no new commercial video synthesisers produced in the last two decades (pre 2011).

Only a handful of contemporary Australian artists still work with video synthesis. One of them is Andrew Gadow, who has used a Fairlight CVI video synthesiser and a Moog Modular audio synthesiser in AV performances, translating by connecting audio to video and back again, creating hypnotic electronic compositions. Ian Andrews has also worked with a plethora of analogue video machines, including the Fairlight Paintbox. His collaborative work with John Jacobs, in AV collective *Video Subvertigo,* engaged in no-input vision mixing, performing live visuals in a variety of contexts including the Boiler Room at the Big Day Out music festival. [84] [85]

In 2007 Stephen Jones presented his own early original video synthesiser designs, including the *HV Synth* and the *Pattern Gen* (c. 1980) that predated the *SuperNova 12* (c. 1986), at a Dorkbot Sydney meeting.[86] Jones spoke on the principles of video synthesis, along with his experiences performing in seminal Australian electronic music outfit Severed Heads. Jones' contribution to the development of video

83 Fairlight, an Australian audio and video technology company responsible for producing the famous video imaging instrument called the Fairlight CVI (c. 1984).

84 Only a year later John Jacobs, an artist from this collective, presented his contact instrument based around Peter Blasser's 'Paper Circuits'

85 *Big Day Out*, 1994, Moore Park Show Ground, Sydney

86 *The SuperNova 12* was built by researcher Jeffrey Siedler in collaboration with Stephen Jones.

instrument technology in Australia, along with his recent book *Synthetics: Aspects of Art and Technology in Australia, 1956-1975,* have become a central inspiration to the direction of my practice, particularly the work I will discuss in this chapter.

Jones was a part of Bush Video, a video art group of the 1970s that was set up by experimental filmmaker Mick Glasheen who said he was:

> *was drawn to the organic nature of it. It seemed to me that video and electronic art is really an image of' energy! It's live light energy! Electromagnetic fields that are made visible. You know, there's this glowing cathode tube with an image there that was alive. So I just felt that there's life there, this new life-form, that could be felt when you're doing video feedback.*[87]

The work of Bush Video has more than one interesting parallel to my own work. Their eclectic and interdisciplinary theoretical motivations spanned through areas of science, architecture and new age philosophy. As Glasheen recounts, "they were searching for a new language for the new ideas that came with cybernetics, geodesic domes, Buckminster Fuller and Marshall McLuhan, and of course, the newly accessible electronic technologies."[88] It seems to me that their work was a form of praxis which implemented these ideologies through facilitating events, and developed creative practices that engaged with experimental technology driven research in their warehouse laboratory, as well as their touring geodesic dome.

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87 Mick Glasheen, *Conversation with Mick Glasheen recorded on 14 May 2005 at Palm Beach*, cited in Stephen Jones, "The Electronic Art of Bush Video", *Dhub* [web page] http://www.dhub.org/the-electronic-art-of-bush-video/ [accessed 06.04.2012].

88 Stephen Jones, "The Electronic Art of Bush Video", *Dhub* [web page] http://www.dhub.org/the-electronic-art-of-bush-video/ [accessed 06.04.2012].

The artists I have encountered so far had only used self-built equipment, or virtually inaccessible heirloom technology. I had started researching the possibility of building my own circuits when I began conceiving *Audio Visionaries* and fortunately in 2011 a small company called LZX released a series of video synthesiser modules for the Eurorack audio modular synthesiser standard.[89] I was quick to order everything I could afford, including a *video waveform generator*, a *colour video encoder* and a *sync video generator*.

Central to this assemblage are two video waveform generators, an analogue voltage controlled oscillator that generates interconnected audio and video: "What your ear may hear as a subtle difference, your eye may see as a huge one. Since the end results in video synthesis are visual: texture, pattern, and shape instead of audio, there are a number of features and controls in this VCO [voltage controlled oscillator] design that take into consideration this unique application."[90] Just as I had attempted to explore in *AV Harp: Rimington Scales* by using computer algorithms to develop pre-composed media (see Chapter 1), with the video waveform generator, I was able to generate live audio-visual media that was intrinsically linked. This module alone represented pure electrical of synergy between sound and image, treating them as one and the same. This was also perceptual machine, a machine with the ability to perceive the external world through video or audio input and interpret this perception with video or audio output. Additionally it seemed to have it's own designed synaesthetic linking of audio and video.

I fit this new assemblage into my modular audio synthesiser rack, introducing to my studio a machine I had been so curious about for

89 I later discovered through organising *Moduluxxx*; a 'mini modular synth festival', that LZX Industries is a team of two, one of whom is based in Sydney; electrical engineer, Ed Leckie.

90 LZX Industries, [web page] http://www.lzxindustries.net/modules/video-waveform-generator [accessed 6.4.12].

years.[91] This new machine set into motion the next series within *Audio-Visionaries* called *Sychresizer* (2011). This was a series of videos that documented exploratory performances with my new customised analogue AV synthesiser; like sketches or electronic journeys. The machine, now capable of translating electronic audio signals into video images, synthesised or invented its own synchresised language of electronically generated sound and moving image. With sounds that were both unfamiliar and yet representing the familiar at the same time. I experienced what Stephen Jones points out, that "the synthesized image comes out of “thin air,” so to speak, and bears no necessary relation to the figurative or the “real” world."[92] However I could not help but notice what Glasheen had pointed out, that the image was alive.

Synchresizer participates in a kind of visual music, exploring the relationship between music and the visual arts through utilising the ability to synthesise image and sound as a signal that is one and the same.[93] Exhibited as a series of video loops which form a DVD, *Synchresizer* is much like a music album, each piece a visual song, forming a series of visual music performance documents. These performance documents appeared reminiscent of early visual music films like the minimal visual aesthetics of Len Lye's early hand painted and scratch films like *Colour Box* (1935), which used what Lye called a “direct film” technique, painting imagery directly onto film to accompany a piece of Cuban dance music using his an invented sound to image synergy. Said to be apparent in Lye's films, was the medium of film itself, celluloid and its textural and mechanistic characteristics are part of each composition. Similar to this, *Synchresizer* revealed how electricity itself, modulated controlled voltages could generate audio

91 It is only recently that I learned that these new LZX modules are based on the *SuperNova 12*. This fact was revealed to me during the April edition of Dorkbot Sydney which ran in conjunction with a 'mini festival of modular synthesis' called *Moduluxxx* (2012) that I co-curated with electronic media artist Alex White, for which electronic engineer and musician Ed Leckie from LZX Industries, presented the LZX system. Present at this event was Jeffrey Siedler himself.
92 Stephen Jones, *Synthetics: Aspects of Art and Technology in Australia, 1956-1975* (Cambridge: MIT Press, 2011) 213.
93 Olivia Mattis in Kerry Brougher (ed.), *Visual Music: Synaesthesia in Art and Music Since 1900*, London: Thames & Hudson, 2005.

and video signals which described the nature or behaviour of the electricity.[94]

Fig 18. *Colour Box*, Len Lye, 1935. Single film frame.

The word 'exploratory' has many times been applied to the field of synthesis. It is often used in a musical context to imply an experimental nature for initial studies or sketches, emergent practices and skill learning and investigation. It is also important to recognise that modular synthesisers, as an interface, are exploratory in a literal sense. Building patches to alter the electrical path of audio or video signals generates a web, one patch cable at a time. In making *Synchresizer* I found that the more complex the web or patch, the more unpredictable the audio-visual behaviour that was generated. This was something Jones also experienced:

> *The equipment used to produce the images rarely predicted the image that was going to come from it. Unless you had a thorough understanding of the circuit and what such circuits could do, you had no*

94 It is important to point out that although the field of visual music has been an ongoing inspiration in my work I will not have the space in this paper to properly investigate this field.

means of knowing what the box might be capable of. Unlike a paintbrush or a cello, which somehow entails its productions, electronics is just electronics - circuits and wiring - the use of which could be applied to video, sound, mathematical problems, and so on, all with the same basic components and organization. [95]

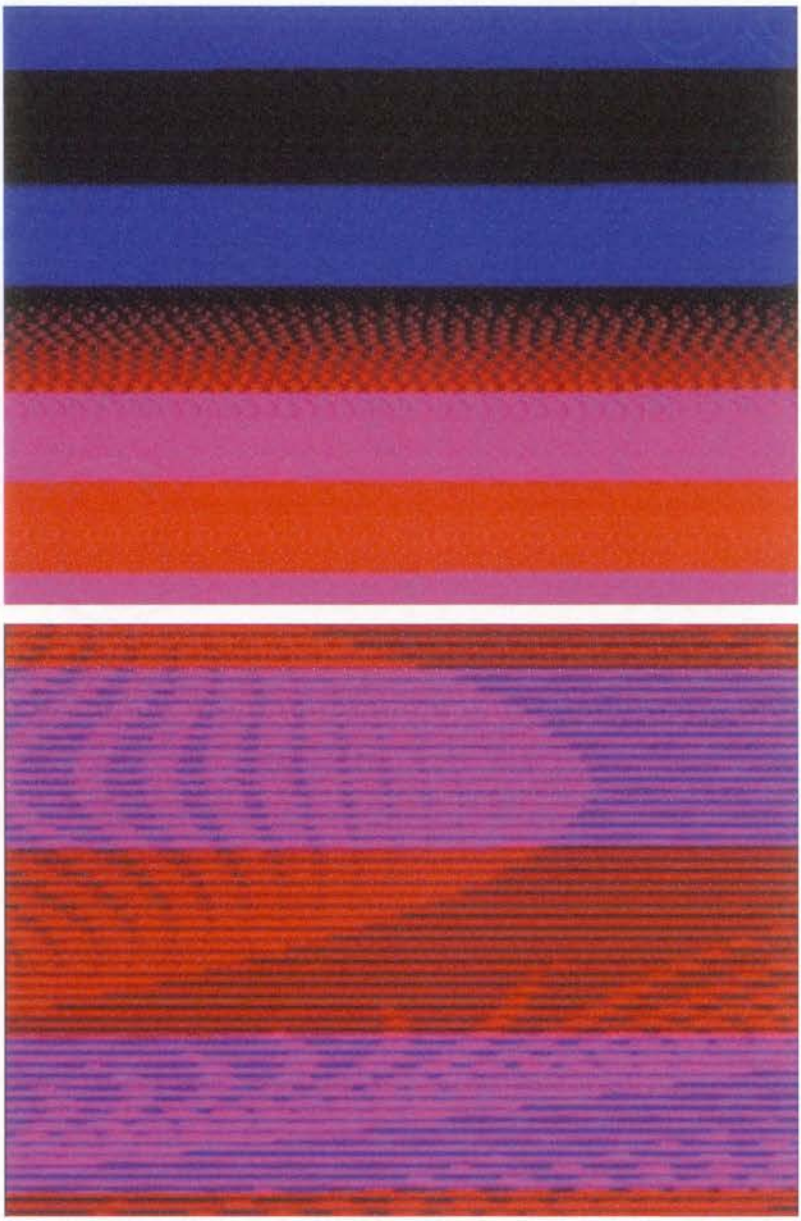

Fig 19. Synchresizer, Pia van Gelder, 2011. Still frame image captures.

95 Jones, *Synthetics*, 213.

Fig 20. AV synthesiser performance set-up, Pia van Gelder, 2011.

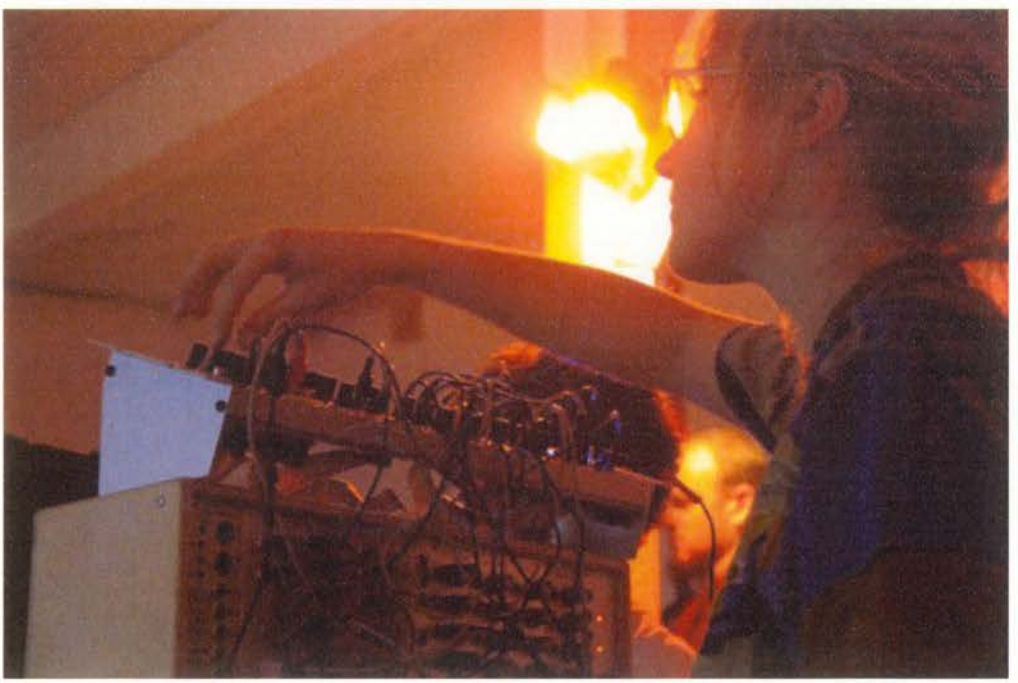

Fig 21. AV Synthesiser performance, Pia van Gelder, 2012, *Noiseball*, Serial Space. Photograph by Kate Blackmore

I have since carried on with these set-ups in performances. The live performances have been more successful than the exhibition of recorded performance documents for what seem to be obvious reasons: live performances convey the improvisational and collaborative nature of my affinity with these machines, my dialogue with machines. These performance set-ups have presented opportunities to incorporate other machines from *Audio Visionaries* with the AV synth, including the no-input vision mixer and the radio-crackle box (in Chapter Three). Each machine can plug into the other easily to create a reactive chain of tangled audio and video. Their unpredictable nature or disobedience is more obvious in front of an audience out in the open, witnessing how I embrace or provoke it.

In these dialogues with the machines the unexpected and unpredictable behaviour, which could be interpreted as a kind of disobedience, (refer to *AV Synth Performance Documentation* on the accompanying DVD) summon my feelings of the uncanny, their strange and unexpected behaviour suggesting an animistic liveness (refer to Figure 22). Their spectacular and otherworldly outcomes, inside this dialogue, could be described as kind of experience of the technological sublime.

Erik Davis traces the origins of the technological sublime to the historian Leo Marx defining it as "the awesome and frightening grandeur that the Romantic poets associated with nature... attached to new technologies."[96] I feel that *Audio Visionaries* suggests a kind of discrete technological sublime. Outputs are examined in a discrete or contained environment like the CRT monitor. Their majesty not dependent on the appreciation of these technologies as achievements of humans but it is instead more easily equated to the natural sublime, which appreciates a power beyond our comprehension, in this case, the power of the machine.

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96 Erik Davis, *Techgnosis: Myth, Magic and Mysticism in the Age of Information* (Updated Edn.; London: Serpent's Tail, 2004) 72.

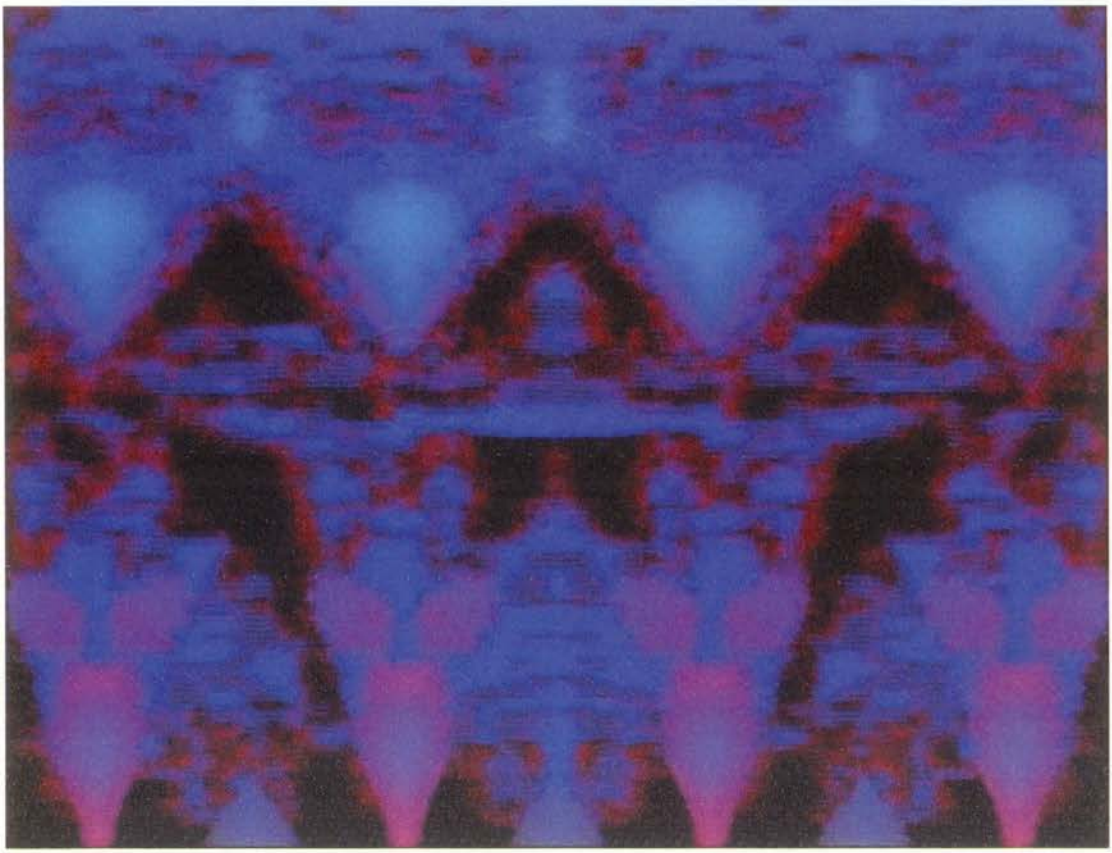

Fig 22 AV Synth Performance, Pia van Gelder, 2011, *Runway Opening*, Society, 2011. No-Input Vision Mixer combined with AV synth deteriorates the patterns sent from the synth into hypnotic noise.

I have found that these feelings often come about through improvisational patching. When working in this manner with analogue machines, outputs are not possible to predict or discretely monitor before displaying, as is the case when using computer technology and sound and graphics cards. Often a chain can be connected, and without being able to monitor the exact variables from output, I may be surprised at the experience of the result, which is simultaneously shared with the audience.

In search for a link between these two philosophies—of the uncanny and the sublime—I discovered Scott Bukatman's essay "Disobedient Machines: Animation and Autonomy" which uses examples of early animations such as *Gertie the Dinosaur* (1914) and Walt Disney's

Pinocchio (1940).[97] [98] These animations include depictions of characters that turn against their makers and run amok, revealing a kind of unruly and lively relationship between the artist and their creation. Bukatman examines how these works "tell of the creation of a being or beings that, at some moment, begin to act autonomously." [99] He points out the uncanny and animistic affinity that is developed between the artist and their subject and shared through the character's disobedience. Bukatman finds that the sublime "as a phenomenon is aligned with the gigantic, while the uncanny is more easily aligned with the miniature."[100] This differentiation through scale is interesting when applied to my work, particularly in performance set-ups when the video is projected onto whole walls and the sound is amplified to envelope the audience. Could these outputs be considered large enough in scale to be aligned with the sublime? To me this scale also occurs in the chaos or infinite nature of these machine's outputs, through the production of noise, feedback and of unpredictably complex visually spectacular and non-figurative outcomes. These outcomes, however, are not as gigantic as a bridge or a factory, which are more popular examples of the technological sublime and so I name them 'discrete'.

The direct application of animism that occurs in the field of animation, setting into motion the still image, is what Len Lye participated in with his hand painted films, applying this concept to abstract forms that gave character to the music which it accompanied - Jazz, an avant-garde music of the time involving improvisation and consequently the embrace of the unexpected and disobedient. Bukatman argues that the disobedience that occurs in the animations he studies, is what sets the characters free from their maker and leaves the audience to feel their

97 Winsor McCay, *Gertie the Dinosaur* [online digitised film animation] http://archive.org/details/Gertie, 1914 [accessed 15.05.2012].

98 Scott Bukatman, "Disobedient Machines; Animation and Autonomy", in Roald Hoffman and Iain Boyd Whyte (ed.), *Beyond the Finite: The Sublime in Art and Science* (New York: Oxford University Press, 2011).

99 Ibid, 128.

100 Ibid, 134.

liveness. He uses a quote from Sergei Eisenstein discussing the work of Walt Disney, which perfectly illustrates this unleashing:

> *We know that they are... drawings and not living beings.*
> *We know that they are... projections of drawings on a screen.*
> *We know that they are... miracles and tricks of technology, that such beings don't really exist.*
> *But at the same time:*
> *We sense them as alive.*
> *We sense them as moving, as active.*
> *We sense them as existing and even thinking!* [101]

What Eisenstein suggests that what we 'sense' is the animistic life of these drawings. It is important to point out that these feelings of the uncanny do not invoke a sense of unsettling danger that most often defines the feeling because the characters are not threatening, nor are the machines in *Audio Visionaries* or the images and sounds they create. So perhaps these instances of disobedience are an effort to liberate the character or machine. Perhaps, as Bukatman indicates, "it is precisely because something that simply follows its programmed instructions will never be anything more that an automaton. The space of life that separates the automaton from living being is precisely its assertion of autonomy. The creation that disobeys does not just come to life; it takes on a life of its own." [102]

Let me illustrate using a specific example from my own work: in *Synchresizer* (refer to figure 23 and to *Synchresizer* in the accompanying DVD), one sketch includes a very simple patch where the video waveform generator is receiving a control voltage from the random voltage control from an audio noise module. This affects the audio tone making its pitch vary erratically, along with the video, which generates

101 Sergei Eisenstein cited in Jay Leyda, *Eisenstein on Disney* (Calcutta, Utah: Seagull Books, 1986) 54-55.

102 Bukatman, "Disobedient Machines: Animation and Autonomy", 141.

synchronised unruly modulating lines. The resulting sound is often like a voice speaking a language you are unfamiliar with. The resulting image, in turn, illustrates the expression of this voice with a squiggly line jumping in and out of the screen in time to its strangely familiar and uncanny rambling.

Fig 23. Synchresizer, Pia van Gelder, 2011. Three sequential still image captures

In these synthesised audio and video explorations I have found what Stephen Jones describes as one of two activities video has "always engaged with...

> *The redevelopment of the visual image in areas where we had hardly been able to look before, that is, the manipulated or synthetic image. The technology of the times particularly the analog computer and its descendent, the audio (and by extension the video) synthesizer, could be applied to the televisual image; thus the magic (the capacity to carry*

> *meaning and kinds of meanings carried) behind the image could be subverted. That is, the 'illusion' could be broken.*[103]

In order to share these experiences more directly with the viewer I developed the interactive installation setup called *Eyes Without A Face* (2012). This is presented on a table, like a performance set-up, where a minimal AV synthesiser rack is pre-patched, its outputs displayed on a field monitor and a speaker. A CCTV camera is positioned above the table, which is lit. The view of the camera is shown on the monitor and fed into the synthesiser patch as a control voltage. When the viewer interrupts the frame (most likely with their hand) they vary the video signal therefore modifying it's output. A combination of the resultant video waveform generator's output and the CCTV camera are displayed (refer to Figure 24 and *Eyes Without A Face* on accompanying DVD).

103 Jones, *Synthetics*, 210.

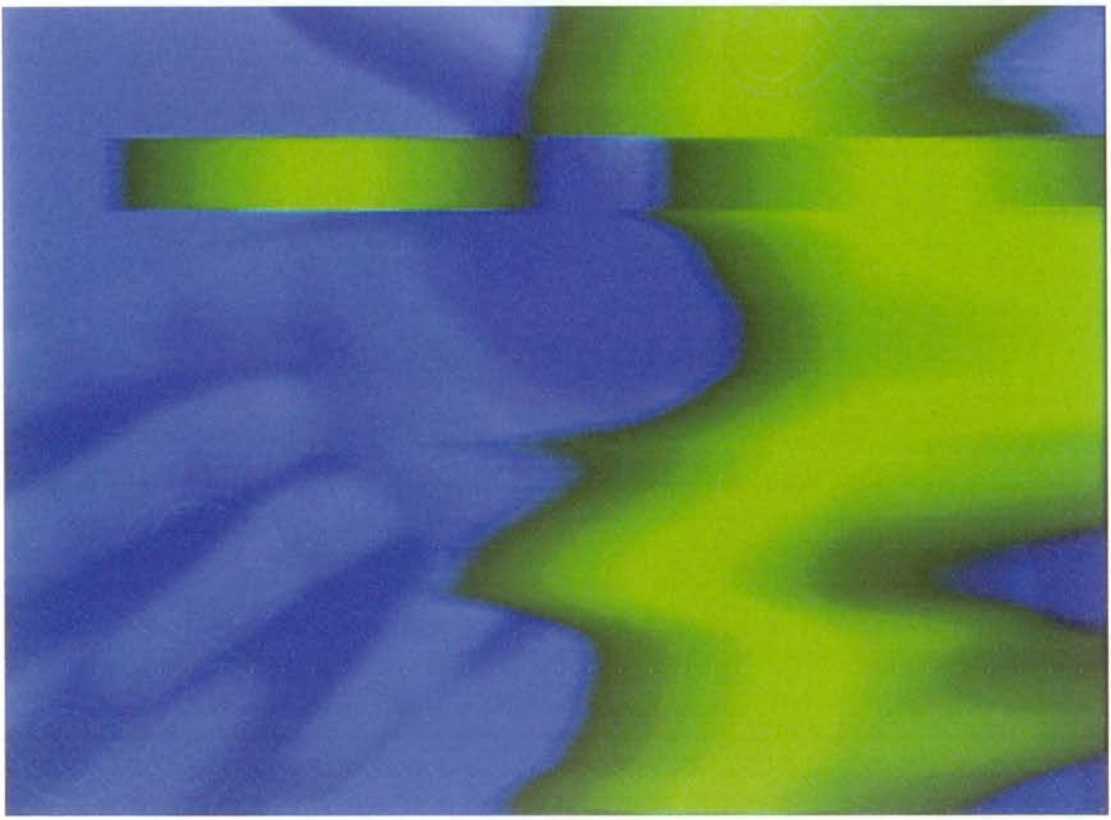

Fig 24. *Audio-Video Synthesiser Performance*, Pia van Gelder, 2012, *Moduluxxx Showcase Gig*, Serial Space. Video image captures of machine vision patch.

The first time I attempted this patch was for a live AV performance at the *Moduluxxx Showcase Gig*. Sending the audio control voltage from the video waveform generator to a low-pass filter which amplified the audio tones into baritone rumbles, I used several pieces of fruit and my hand to hold in front of the video camera to experiment with how the difference in colour, depth and shape might be perceived and responded to by the machine. These also seemed to be significant natural objects to use, referring to both the still life and Vasulka's *Artifacts* (1970) and also Steina and Woody Vasulka's *Home* (1973) which depicts how the forms of mundane kitchen objects and everyday actions can be perceived and expressed with video synthesis. [104]

104 *Home*, Woody and Steina Vasulka, 1973 [online video] http://www.fondation-langlois.org/html/e/video.php?NumObjet=68820 [accessed 10.05.2012]

Following on from this performance *Eyes Without A Face* is a very simple machine vision patch utilising changes within the video frame as a control voltage into the video waveform generator. It allows the viewer to experience how a machine might perceive its environment and interpret this environment with visual and audio expression. In this work I am accepting the machine, as if it were a part of the living, natural world, unleashing it from its human origins: unsubjecting it, giving it space to exist and to perceive and in turn perceptually communicate it's own language along with the character and liveness of other objects in its environment.

CONCLUSION:
WHAT I SEE INSIDE TECHNOLOGY_

In my research I have been looking inside technology to understand its possibilities in my artistic practice. What I see through my dialogues with machines are audio and video outputs that behave unexpectedly, disobediently and idiosyncratically. I have encouraged these behaviours by setting them up in performance and installation environments, exhibiting their outcomes as machinic expression or language. Through exploring the underlying motivations behind this dialogue I have developed a personal ideology about the ontology of machines. This investigation has uncovered a machinic affinity, which drives my practice.

This machinic affinity is based on an amalgam of interdisciplinary research spanning different contemporary and historical philosophies, psychology and the esoteric or techgnostic, along side histories of audio-visual performance, experimental music, film and video art, and an eccentric contribution to artificial intelligence. This methodology of melding of bodies of knowledge from disparate fields to examine future possibilities is one that makes the practice of media archaeology. This method of research has been applied both theoretically and practically in my work.

The result of this research has been an understanding of how my practice participates in the transgression of technology. It examines both theoretically and practically how machines can be more than tools or instruments, considering them more than just the sum of their parts, exhibiting how we might engage with them and this elevated status in the creation of art.

In *Audio Visionaries,* this transgression occurs in several ways: firstly through the augmentation and hacking of everyday media-machines in order to exhibit their own idiosyncrasies. Similarly, by re-contextualising these behaviours, which may have normally been censored by error correction circuitry, or simply disregarded by a user, these errors are exhibited as machinic expressions and appreciated for their aesthetic contributions. This process can be related to two specific fields: *composition inside electronics* and *glitch*, both of which desubject media machines, provoking their disobedience in order to explore machinic aesthetics. In this paper I have investigated the uncanny and haunted nature of these hacked ordinary machines' expressions.

Audio Visionaries practically engages with a kind of media-machine archaeology by using collected heirloom analogue video and audio technologies, such as the vintage video mixer and the analogue synthesiser. Like ghosts of media's past, these machines refer to the history of video art and live visual performance: their aesthetics are soaked in nostalgia and their bodies fetishized for their obscure significances and rareness. These machines are technologically transgressed through the facilitation of autonomous setups like the no-input vision mixer, along with complex entangled reactive and reflexive exploratory synth patches. These machine visions are exhibited in interactive installation contexts for the viewer to experience their mysterious and nostalgic outputs, facilitating an exchange of machinic affinities.

Within the work and research there are careful balances set up. Practically by connecting partially autonomous performing systems that create visual and audio expression through glitches, and other electrical disobediences, but at the same time ask for the viewer/artist participation to complete the circuit, literally and virtually. I have discussed how within balances like this an animistic liveness exists,

through noise and chaos, autonomy and the unpredictable, through improvisation and letting things take a life of their own. This experience of collaboration establishes machinic affinity through a dialogue with the machines. The creative expressions that are collaboratively developed, I find to be both beautiful and strange revealing the perception and expression of machines. I have also revealed how their surprising and incomprehensible outcomes can be regarded as both awesome and in turn discretely sublime, concluding that there is such thing as a 'composer' inside electronics which offers an inverted machine vision by revealing to us what machines see and hear.

I have found several artists who have spoken about this nature of collaboration including Woody Vasulka, David Tudor and Nicolas Collins, all of whom offer interesting perspectives on how to understand this relationship within a technologically immersed practice. Along with this careful balance of authorship, other equilibriums have been revealed in this paper: between scientific and mystical, between rational and irrational, between subject and object. I have discussed how some truths and the imagined can be comingled to develop personal ideologies that fuel my practice, using other artists who participate in their own similar techgnosis, including Botborg and Spencer Finch as examples.

This research has solidified my approach to engaging with technology to produce art, which has lead my practice in new directions and opened up possibilities for future research into fields of techno-mysticism or techgnosis, particularly Theosophically inspired trajectories and their historical and contemporary application in audio-visual and electronic art I like to call AV mysticism. More immediately, I plan to participate in some focused investigation into machinic animism, its cultural origins and how this might be integrated into other artists' practice.

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SELECTED RESUME: 2010-2012_

PUBLIC WORK

College of Fine Arts, University of New South Wales, Sydney 2008 - Current
Academic Sessional Staff - Time Based Art, School of Media Art

Serial Space Director, Serial Space Gallery 2009 - Current
Co-Director

Dorkbot Sydney 2006 - Current
Curator/Coordinator

RESIDENCIES

AsiaLink Performing Arts Residency, (Self Initiated), Tokyo (August) 2012
FirstDraft Artist Residency, FirstDraft Depot, Sydney Australia 2010

SOLO EXHIBITIONS

Synchresizer (video installation), Tin Sheds Gallery, Sydney (June, 2011)
Synauxß (performance, installation) FirstDraft Gallery, Sydney (May, 2010)

GROUP EXHIBITIONS + PERFORMANCES 2010-2012

2012

Moduluxxx Showcase Gig, Serial Space, Sydney – AV synthesiser performance
Noiseball, Serial Space, Sydney – AV synthesiser collaborative endurance performance
It'll be Awesome launch, Serial Space, Sydney - AV synthesiser performance
Laneways Festival, Sydney College of the Arts, Sydney – AV circuits + synthesizer performance
NOWnow Festival, Red Rattler, Sydney – AV circuits + synthesizer performance

2011

Runway Issue 20 Launch, Society, Sydney - AV circuits + synthesizer performance
Big In Japan, Paddington Town Hall, Sydney - AV circuits + synthesizer performance
Spectacle Obstacle, West Space, Melbourne - 'AV Bells - Rimington Scales', interactive installation
Liquid Architecture, Eugene Goosens Hall, ABC Studios, Sydney - 'AV Harp' audio/video performance
High Reflections, Red Rattler, Sydney - AV circuits + synthesizer performance
Spectacle Obstacle, Firstdraft Gallery, Sydney - 'AV Bells - Rimington Scales', interactive installation

2010

SIGNAUX, Electrofringe Festival, Newcastle, performance & presentation
Perceptual Machine Study, SNO Gallery, Sydney, AV installation,
Video Bell – Singing, in *Friends* - TCB Gallery, Melbourne, interactive installation
Video Harp High Reflections - Sandringham Hotel, Sydney, performance
Video Harp, in *Sound Series #5* - Hardware Gallery, Sydney, performance
X_NoMSG_X, in *Difficult Music Festival* - Locksmith Projects, Sydney, performance
My Orchestra of Machines, in *Hand Made Instrument Night* - Serial Space, Sydney, performance

RELEVANT CURATORIAL WORK

Dorkbot (Sydney), monthly event, Serial Space, Sydney, 2006 - Present
Time Machine Festival, Serial Space curatorial project, Sydney, July 2012
Moduluxxx: Mini Festival of Modular Synthesis, Serial Space, Sydney, 2012
2012 Dorkbot Sydney Group Show, curated group show, Serial Space, Sydney
Ghosts of 33 Wellington St, round circle discussion, Serial Space, Sydney, 2011
Robot Serial Killers, combat robot event, Serial Space, Sydney, 2011
Next Next: Festival of Exploratory Sound & Music, Serial Space, Sydney, 2011
SuperUsers – AV Extravaganza, performance night, Serial Space, Sydney, 2011
2011 Dorkbot Sydney Group Show, curated group show, Serial Space, Sydney
2010 Dorkbot Sydney Group Show, curated group show, Serial Space, Sydney

PUBLIC PRESENTATIONS

"The Supernatural Powers of Media Technology", Lecture, *Dorkbot Canberra,* Canberra Contemporary Art Space, Canberra, 2011
"The Supernatural Powers of Media Technology", Lecture, University of New South Wales, School of Art History and Theory, 2011
"Machine Dreams", Lecture, University of Sydney, School of Architecture, 2011
"Machine Dreams", Lecture, University of Wollongong, Creative Art Faculty, 2011
"Machine Vision", Artist Panel (with Ian Andrews & Andrew Gadow) *Electrofringe Festival,* Newcastle, 2010
"The Future of Art", *Tiny Stadiums Festival*, Public Talk/Debate, Erskineville Town Hall, 2010

SELECT BIBLIOGRAPHY - ARTICLES, PUBLICATIONS, BROADCASTS

Stephen Adams, *New Music Up Late*, [radio interview and performance broadcast], ABC Classic FM, July 2011
Ella Barclay, "Are 'Friends' Electric", *Runway Magazine, 20,* [print journal] November, 2011
Sean Bridgeman, "Musicians and boffins, tinkers and dreamers: Experimental musical instrument building in Australia" in (ed.), Gail Priest, *Experimental Music: Audio Explorations in Australia (*Sydney: UNSW Press, 2009)
Kim Fasher & Nick Keyes "One of the ghosts to whom the future most belongs – Featured Artist, June", *SuperKaleidoscope* [online blog] 2011 http://www.superkaleidoscope.com/featured-artist.php
Megan Garrett-Jones, "Spectacle/Obstacle", *Das500* [online journal], June 2011, http://www.rococoproductions.com/500/500_055.html
Somaya Langley, "Aligning Senses and Ethics", *RealTime,* 102 [print & online journal], 2011, http://www.realtimearts.net/article/102/10283
Somaya Langley, "Tooling the Art of Electronics", *RealTime*, 95 [online journal], Feb 2010 http://www.realtimearts.net/article/95/9774
Dan MacKinlay, "Media Art DIY: Clefts & Crevices", *RealTime 109* [print & online journal], 2012
Dan MacKinlay, 'Dorkbot Sydney', *Das500* (online), 2011, http://www.rococoproductions.com/500/500_030.html
Deborah Turnbull, "People Do Strange Things with Electricity?", *New Media Curation* [online blog], March 2011, http://www.newmediacuration.com/blog/entry/11/
Pia van Gelder, "My Machine Vision", *Firstdraft - Inside the Studio - Stories from the Emerging Artists Studio Program 1*, Blood & Thunder, 2010

CATALOGUE OF WORK PRESENTED FOR EXAMINATION_

Audio Visionaries:

You or Me?, 2011

Pinhole CCTV cameras, signal splitter, LCD monitor

Eyes Without A Face, 2012

Sony Trinitron CRT monitor, powered speaker, audio-video modular synthesiser, CCTV camera

Apparition Apparatus, 2012

Sony Trinitron CRT monitor, powered speaker, Panasonic WJ MX-12 Video Mixer

LIST OF ACCOMPANYING MEDIA_

Audio Visionaries:

Signaux

- *AV Harp*, 2010-2011
- *AV Bells – Rimington Scales*, 2011

You or Me?, 2011-2012

Synchresizer, 2011

Expander Expanded, 2011-2012

Expander Expanded, 2011

Apparition Apparatus, 2012

Eyes Without A Face, 2012

Selected AV Synth Performance Documentation, 2011-2012