An exploration of the uncanny in autonomous artworks.

An exegesis submitted to the
School of Communication Arts, University of Western Sydney
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Doctorate of Creative Arts.

Wade Marynowsky
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Supervision Panel:
Dr Garth Paine
Ian Stevenson
i. Dedications

I would like to dedicate this exegesis to my family who have continued to be supportive of my art practice: Peter, Susan and Tara Marynowsky.
Wade Marynowsky: An exploration of the uncanny in autonomous artworks.

ii. Acknowledgements

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iii. Statement of Authentication

The work presented in this thesis is, to my best knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

Wade Marynowsky

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v. Abstract

This exegesis details the research and development of three major artworks for solo exhibition as required by the Doctorate of Creative Arts guidelines (Electronic Arts, UWS, 2004). The three major works explore the central theme of the uncanny and its relationship to the automaton. The uncanny is an aesthetic feeling related to fear and dread but also closely linked to the supernatural. ‘Automaton’ was the word used before the introduction of the term ‘robot’ and means acting of one’s own free will. The uncanny automaton is explored and expressed through the creative use of media technologies. The technologies I have chosen to work with include networked computers, the Internet, video, sound, electronics and robotics. It should be noted that the exegesis is critical documentation of the physically experienced artworks.
Chapter 1  Introduction

Critical analysis of the uncanny has provided a wealth of theoretical literature from a broad range of contemporary researchers, artists, scientists and psychoanalysts alike. Cultural theorist Terry Castle has stated that “the eighteenth century invention of the automaton was also (in the most obvious sense) an invention of the uncanny” (Castle 1995, p.11). In 1906, psychoanalyst Jentsch stated that a very good instance of the uncanny casts “doubts [as to] whether an apparently animate being is really alive; or conversely, whether a lifeless object might not be in fact animate” (Jenstch 1906, p.11) [for example] “the impressions made by waxwork figures, ingeniously constructed dolls and automata” (Freud & Strachey 2001, p.226). In the 1920’s, the surrealists’ love of the automaton was unconsciously explored through repressed desire, which was linked to Freud’s investigation of the uncanny. This exploration of the aesthetic aspects of the uncanny is described in Hal Foster’s Compulsive Beauty (Foster 1995) and most importantly in Sigmund Freud’s essay “The Uncanny” (1919). In the 1970’s, robotics scientist Professor Mori developed the “Uncanny Valley” hypothesis. The hypothesis warned artists not to design robots as too human-like, otherwise the robot would repel the human viewer and thus fall into the uncanny valley, a state of fear and disbelief (Mori 1970) (Figure 4). The “Uncanny Valley” continues to be disputed by robotic designer David Hanson, who believes that the hypothesis limits the freedom of artistic exploration. Based on his own research, Hanson has renamed the “Uncanny Valley” the “Path of Engagement” (POE) (Hanson, Ismar, Pereira & Zielke 2005, p.7).

Encapsulating various representational strands of the uncanny the artist Mike Kelly curated the major exhibition, “The Uncanny”, at the Tate Gallery, Liverpool, in the United Kingdom (Kelley, Welchman, Grunenberg 2004). The exhibition demonstrates that figurative sculpture may embody the feeling of the uncanny through their scale and use of colour, form and material.

As briefly explained above and in further detail in Chapter 2, the eighteenth-century notion of the uncanny has continued to be a rich conceptual framework for research. By creating artworks that explore the notions of the uncanny automaton within a contemporary context, this research connects the history of the carnival to the contemporary art gallery in search of new uncanny moments.

The research questions proposed here are:
1. Can autonomous artworks help us to understand the nature the uncanny?
2. What is the nature of the contemporary response to autonomous artworks?

These questions are addressed through the production of three major works for solo exhibition. Each major work combines technological media, robotic elements and networks of computers. The works produced seek to address the research questions in an attempt to achieve the uncanny by using it as an aesthetic framework. Audience members have commented on their experiences and the qualities of the work and these responses, plus critical reviews and my own evaluation, form the basis of this exegesis.

1.1 Methodology: Art practice as research

The methods used in the development of this practice-based exegesis and its related body of work draw on a range of scholarly literature and technical papers, dialogues, methods and practices. In Art Practice as Research (Sullivan 2005), Graeme Sullivan uses the term “Visual Arts Knowing” to differentiate creative arts research processes from those of both positivist and qualitative research:

Visual Arts Knowing situates the imaginative and intellectual process that describes the way artists think as they make use of a cognitive coalition of ongoing dialogue between, within and around the self, artworks, viewers and settings, where each step is used to help create new understandings. This dynamic and reflexive meaning making is described as ‘transcognition’ and it captures the movement and purposeful searching of the artistic mind. Seen within the context of research, the alignments and areas of emphasis that artists search out, take in the perspectives of ‘others’, be that other artists, theorists, art writers, artworks, viewers or contexts and this ensemble provides a structure for referencing and reviewing (Sullivan 2005, p.190).
Sullivan’s four primary triangles (Figure 1) work together to form an overall framework for visual arts research. Interpretive discourse, art practice, empiricist inquiry and critical processes contribute to the creative arts as research process in order to develop new knowledge. Rather than working through a predetermined proposition or design problem, this exegesis document is an iterative process in which the various strands of discourse, practice and critical inquiry surrounding the uncanny automaton are unraveled and re-interpreted in my own autonomous artworks. These works are then critically reviewed and evaluated by my peers and myself, contributing to the development of the field and the academic knowledge base surrounding it.

1.2 Structural overview

Chapter 1 introduces the research and the methodology. Chapter 2 reviews the uncanny in popular culture, contemporary literature, and art, focusing on its relation to robots. I describe how the uncanny automaton has fascinated since antiquity by exploring examples of the uncanny in relation to mechanical musical instruments, automated recording devices, and automatic processes in electronic and
computer music. The review includes preceding artworks across history, finding comparisons, revisions and technological developments.

Chapter 3 is a critical deconstruction of the first major work, *Autonomous Improvisation v1*, 2007, which premiered at Artspace, Sydney. This work was reshown for *Primavera* 2009 at the Museum of Contemporary Art, Sydney. The work involves four networked computers that create a continuously evolving audio-visual composition. The installation operates over three projected screens and one automated Pianola.

Chapter 4 is a critical deconstruction of the second major work, *The Discreet Charm Of The Bourgeoisie Robot*, 2008. This work premiered at The Institute of Contemporary Art Newtown (I.C.A.N), and comprised an Internet-controlled robot that communicated to its audience through mediated conversation. This chapter also includes lead-up developmental works including: *Rococo Vortex*, *Olympia, the sneezing automaton* and *Forest Room*.

Chapter 5 is a critical deconstruction of the third major work, *The Hosts; A Masquerade of Improvising Automatons*, 2009. The work premiered at Performance Space at CarriageWorks, Sydney and consisted of five autonomous mobile robots, automated lighting and sound.

The appendix includes listing of the documentation provided on DVD, it also includes all press and published critical reviews.

The critical reviews are addressed in my analysis of each work, and in my conclusion presented in Chapter 7.

Chapter 6 details plans for future work.
Chapter 2  Context and Precedents

2.1  The popular uncanny

When defining the uncanny, the most distinguished reference and starting point is Sigmund Freud’s essay Das Unheimlich, translated in English as “The Uncanny” (1919). In the opening paragraph Freud states that it is “rare that a psychoanalyst feels impelled to investigate the subject of aesthetics, even when aesthetics is understood to mean not merely the theory of beauty but the theory of the qualities of feeling” (Freud & Strachey 2001, p.219). In an attempt to define his theory of uncanny qualities, Freud uses literary examples and begins with multiple dictionary citations, moving on to review Jentsch’s On the Psychology of the Uncanny (1906), of which he states that Jentsch does not get beyond defining the uncanny as an intellectual uncertainty. Freud concludes by suggesting that to write about the uncanny is “to lose one’s bearings, to find oneself immersed in the maddening logic of supplement, to engage with a hydra”¹ (Royle 2003, p.8). However lost, Freud does state that the uncanny is undoubtedly related to “what is frightening – to what arouses dread and horror; equally too, the word is not always used in a clearly definable sense” (Freud & Strachey 2001, p.219).

So how does this concept relate to robots and the uncanny within contemporary society? Robots have often been considered frightening, especially in Western civilisations, as they are perceived to threaten human obsolescence. The English adoption of the word ‘robot’ from the Czech ‘rabota’ translates as ‘worker serf’, and stems from Karel Capek’s expressionist play R.U.R, Rossum’s Universal Robots (1921)

¹ Classical Mythology: A water or marsh serpent with nine heads, each of which, if cut off, grew back as two; Hercules killed this serpent by cauterizing the necks as he cut off the heads.
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(Ichbiah & Kincaid 2005, p.40). “The play concerns the supplanting of humans by robots and has been discussed as a warning against Frankensteinian scientific hubris” (Dixon 2005, p.16).

Western literary and cinematic fiction is filled with out-of-control robots: HAL in *2001: A Space Odyssey* (Krubrick & Clarke, 1968), the robot Yul Bryner in *Westworld* (Crichton 1973) and Sonny in *I – Robot* (Proyas 2004). In all these examples Azimov’s first law of...
robotics is broken: “a robot may not injure a human being or, through inaction, allow a human being to come to harm” (Ichbiah & Kincaid 2005, p.50). In Japan people are less frightened of robots, which is partly due to a cultural history of positive images: Astroboty (Tezuka 1963), the robot boy who saves the world in each cartoon episode; Sony’s consumer robot dog Aibo2 who learns from its master; and Honda’s obedient robot son Asimo,3 to name just a few.

Professor Masahiro Mori goes so far as to say that robots have the Buddha-nature in them (that is, the potential for attaining buddahood) (Mori 1981). The question arises: can the West allow its fear of being replaced by robots to dissolve? Donna Haraway’s Cyborg Manifesto (Haraway 1991) proposes that we accept that we are already cyborgs, and that we should engage with technology in order to produce “newly configured humans, that resist conventional models of being formed in patriarchal notions of capital, gender, sexuality, biological evolution etc” (Grenville 2001, p.37). If we do away with our fear of becoming obsolete then what is left in the frightening part of the uncanny? Is it the ultimate human instinct, that of the fear of death? Freud states that “Most likely our fear still implies the old belief that the dead becomes the enemy of his survivor and seeks to carry him off to share his new life with him” (Freud & Strachey 2001, p.242).

2 Sony product Aibo now discontinued, viewed 10 June 2007, <http://www.sony.net/Products/aibo/index.html>
2.2 The Uncanny Valley

The issues outlined above are explored in the theories surrounding the Uncanny Valley. The Uncanny Valley is a hypothesis, considered by some to be an important design consideration for humanoid robotics. It was proposed by Dr Masahiro Mori, who graphed what he saw (Figure 4) as the relationship between human likeness and perceived familiarity: “familiarity increases with human likeness until a point is reached at which subtle differences in appearance and behaviour create an unnerving effect” (MacDorman 2005, p.3). Following in Dr Mori’s footsteps, Minato MacDorman theorised that the android in the Uncanny Valley elicits an eerie sensation because it is acting as a “reminder of mortality” (MacDorman 2005, p.2).

According to Dr Mori, movement amplifies this effect and he “cautioned robot designers not to make the second peak their goal – that is, total human likeness – but rather the first peak of humanoid appearance to avoid the risk of falling into the valley”

![Figure 4 The Uncanny Valley (Mori 1970) viewed 10 June 2007, <http://www.androidscience.com>](image-url)
Examples of this hypothesis in popular culture include the development of commercially funded robots, which are mechanical-looking humanoids, such as Honda’s *Asimo* (2000) and Sony’s *Qrio* (2000) (now discontinued).

![Figure 5 Sony’s Qrio, viewed 10 June 2007, <http://www.sony.net>](image)

The Uncanny Valley is also used as a plot point in the Steven Spielberg movie *A.I.: Artificial Intelligence* (Spielberg 2001), which centres on a future where many people are disturbed at how realistic the new line of androids are.
The artist Bill Vorn explicitly uses the Uncanny Valley in his robotic eco-systems by eluding in the human viewer the feeling of empathy for his robotic creations. These are not designed as humanoids, but suggest human or animal-like qualities, such as his *Hysterical machines* (2006). Each machine “has a spherical body and eight arms made of aluminium tubing. It has a sensing system, a motor system and a control system that functions as an autonomous nervous system (entirely reactive)” (Vorn 2006). The machines are suspended from the ceiling and, depending on the amount of stimuli received via on-board sensors, the machines react by moving their arms, twitching and firing lasers. In regards to the work the *Court of Miracles*, a collaborative work with L.P Demers (1997), Vorn states “our intent is to show the misery of machines. We hope that people will feel something for these poor robots by normal empathic reactions and anthropomorphism” (Whitelaw 2004, p.119).

Figure 6 Bill Vorn, *Hysterical machines*, 2006 viewed 10 August 2006, <http://ww.billvorn.com>

In the second part of Freud’s statement presented on Pg.14, (“the word is not always used in a clearly definable sense”), we are introduced to the ambiguity of the word. A very good instance of the uncanny “doubts [as to] whether an apparently animate being is really alive; or conversely, whether a lifeless object might not be in fact animate” (Jenstch 1906, p.11) [for example] “the impressions made by waxwork figures, ingeniously constructed dolls and automata” (Freud & Strachey 2001, p.226). Mike Kelly was “struck by this list and how much it corresponded to a recent sculptural trend, popularly referred to in art circles as mannequin art” (Kelley, Welchman & Grunenberg 2004, p.119).
2004, p.26), and began collecting images of this type of work, later forming a major
exhibition, *The Uncanny*, at the Tate Gallery, Liverpool, in 2004. The show consisted of
life-sized figurative sculpture from throughout the ages, all with a disturbing edge. Hans
Bellmer’s *Doll* (1936), the Andy Warhol robot (1981), Disney’s animated audio-animatronic
figure of Abraham Lincoln (1964), mannequin stand-ins for the techno band Kraftwerk (1978),
as well as medical models, and images of Jacques de Vaucanson’s automata, such as his defecating robot duck (1739).

As if to build tension in what Kelly declares to be uncanny, the artist also exhibited his
collection of marbles, comics, records, etc., describing his and other people’s desire to
collect in relation to lack: the collection that is never complete or, as in the uncanny,
clearly definable. This ambiguity can also be a useful mode of operation in the telling of
a story as Freud states:

“One of the most successful devices for easily creating uncanny effects is to leave
the reader in uncertainty, for example whether a particular figure is human or
automaton, and to do it in such a way that his attention is not focused directly upon
his uncertainty” (Freud & Strachey 2001, p.227).

This formula is used in E.T.A Hoffman’s short story *The Sandman* (1817), which is the
key text in Freud’s de-construction of the word. The story is about the psychotic
Nathaniel who falls in love with the lovely Olympia, a female automaton, who cannot
speak a word except to sneeze. A contemporary example of this is the film *Blade
Runner* (Deeley & Scott,1994) in which Deckard (Harrison Ford) falls in love with the
replicant Rachael (Sean Young). Rachael believes she is human because she has an
implanted memory borrowed from her creator Tyrell’s niece. There are also theories
that Deckard may also be a replicant. The film is loosely based on the novel *Do
Android’s Dream of Electric Sheep?* (Dick 1968). David Hanson has recently built an
android version of Phillip K. Dick (2005) that responds to questions by speech enabled
conversation (Hanson, Ismar, Pereira & Zielke 2005, p.1).
Hanson believes he has proven that there is no Uncanny Valley and that good humanoid robotic design is based on aesthetics. Hanson states, “The effect can be unsettling indeed, but public reaction seems generally to be that of awe and wonder, not derision or rejection” (Hanson, Ismar, Pereira & Zielke 2005, p.2). Hanson’s revised theory dubbed “Path of engagement” seeks to combine fine arts with science to develop a level of integrated social responsibility and aesthetic refinement. Hanson would suggest that the uncanny is a useful effect, so useful that he predicts a nine billion dollar growth in the development of his uncanny robotics in entertainment, education and, most of all, toys. Depending on the context of art, science or popular culture, the uncanny is a phenomenon that continues to be tested, explored and re-defined.
This almost completes a review of the uncanny and its relation to robots, but what remains is to review Freud’s main contribution, linking the uncanny to the familiar. Freud states that the “uncanny is in reality nothing new or alien, but something which is familiar and old, established in the mind and which has become alienated from it only through the process of repression” (Grenville 2001, p.10). Grenville uses this quotation as the starting point for the exhibition’ book, The Uncanny: Experiments in Cyborg Culture (Vancouver Gallery, Canada, 2002), where he argues “that the representation of the uncanny in the cyborg body allows for the return of the repressed in a controlled medium”. The cyborg here acts as “our double” or stand-in, allowing us to probe and project fears and fantasies surrounding the machine and its presence in modern culture (Grenville 2001, p.10). Examples of the cyborg body replacement in art can be seen in the work of Stelarc, who says, while laughing deviously, “the body has become obsolete” (Stelarc 2006). Stelarc believes the body to be obsolete because it has been integrated into a society that relies extensively and increasingly on technology to operate. In this sense we may accept (or reject) the notion that we are already cyborgs.

If Freud’s The Uncanny suggests that “preliminary results have satisfied psycho-analytic interests and what remains is aesthetic evaluation” (Freud & Strachey 2001, p.247), Compulsive Beauty (Foster 1995) details the uncanny as the core conceptual undercurrent in the Surrealist movement, thoroughly examining this issue via Duchamp’s Nude Descending a Staircase (1912). Nude Descending a Staircase is a representation of an uncanny human-machine in motion, considered at its time “not only a threat to popular aesthetics but also a threat to the popular public perception of the human body and its physical limits” (Grenville 2001, p.18).

This allows me to indicate another repressed fear, that humans are not as special as we would like to think but can be described as mere meat machines. This conception reaches back to antiquity: “The legendary doctor Galen (129 to ca. 199 B.C) outlined his pneumatic model of the human body after the hydraulic technology of his time” (Grau, O. & Custance, G 2003, p.320). Now we are considered by scientists to be “nothing more than a highly ordered collection of bio-molecules” (Brooks 2002, p.127). The artists and scientists working at Symbotica are directly engaged in notions of technologically induced life-forms. Their work Meart – the semi living artist, most
recently exhibited between Perth, Australia and Atlanta, USA (2006), combines hardware with wetware distributed over two geographically detached locations. “Its brain consists of cultured nerve cells that grow and lives in a neuro-engineering lab in the US and its body is a robotic arm that is capable of producing two dimensional drawings” (Vanouse, 2006). The brain and body communicate in real-time with each other via the Internet, for the duration of each exhibition. This represents Descarte’s (Descartes, Miller & Miller, 1983) mind/body split in a geographically displaced, and definitely not at home (unheimlich), manner. In this work Symbotica seeks to create the artist rather than the artwork.

As explored above, and as Royle states, “the uncanny has become a key reference point in discussions of art and literature, philosophy, film, cultural studies and sexual difference” (Royle 2003, p.vii). I therefore see no problem in using the uncanny as a conceptual undercurrent in the creation and exploration of autonomous artworks. I will now explore examples of the uncanny in relation to mechanical musical instruments, the automated recording device, and automatic processes in electronic and computer
music. I seek to draw key points from the references to illustrate that sound-based automata can have the same uncanny effect on people as a humanoid robot.

2.3 An uncanny history of sound-based automata

This desire to produce and study automata has always been expressed in terms of the living technique of the age. In the days of magic, we have the bizarre and the sinister concept of the Golem, that figure of clay into which the Rabbi of Prague breathed life. In the time of Newton, the automaton becomes the clockwork music box, with little effigies pirouetting on top. In the nineteenth century the automaton is a glorified heat engine (Wiener 1948, p.40).

This desire to produce automata in relation to the technology of the time is a thread I shall now follow, this is expressed in a non-linear structure in order to draw comparisons and linkages between that which has resurfaced from the past.

I personally experienced a version of the uncanny whilst viewing Guitarbot (Singer, Larke & Bianciardi, 2003) by Eric Singer at Electrofringe\(^5\) 2004. Guitarbot is a MIDI-controlled instrument, which has four strings mounted separately on metal bars. The bars are joined together allowing the instrument to be free-standing. The strings are plucked via a pick wheel that is controlled by a stepper motor. The motor speeds up and down the strings, plucking the strings on command.

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\(^5\) Electrofringe media art festival, annually during the first weekend of October, Newcastle, Australia, viewed 26 February 2007, <http://www.electrofringe.net/>
Once set in motion the instrument plays itself and struck me as awe-inspiring. It was loud and played convincingly while swinging back and forth on its stand; because of this I thought I was seeing the future replacement of bands such as Sonic Youth (a band that utilize multiple guitars and feedback). In 2006, Singer and his League of Electronic Musical Urban Robots re-constructed George Antheil’s *Ballet mécanique* (1924). The original work was scored for three xylophones, four bass drums, tam-tam, two pianists, seven (or so) electric bells, a siren, three airplane propellers and sixteen synchronised player-pianos. In the 2006 version the work was re-created and all controlled remotely using robotic instruments (Singer & Lehrman, 2006).
As the co-director of Electrofringe 2004, I programmed CeLL. “CeLL represents the evolution of mechanical music, a modern industrial strength version of the old time street organ. CeLL is a MIDI-controlled pneumatic orchestra, a self-playing installation mounted in a 6m shipping container” (Dorsen 2004). Strangely I did not sense the uncanny while viewing this modern mechanical musicbox. This I suspect is because of the scale of the work, closed off inside a shipping container. Along with other instruments there was a G.I. Joe figurine, which played percussively against the wall of the shipping container, making the work more like a large toy rather than a threatening presence. Charles Babbage, developer of the difference engine (Spufford & Uglow, 1996), who hated street music machines and organ grinders, had a special place in his heart for his precious automaton the Silver Lady. The dancing lady was never “just a gaudy trick but an alluring emblem of the aestheticized gaze of the impresarios of intelligence” (Spufford & Uglow 1996, p.65).

Tim Hawkinson’s Uberorgan (2000), a massive pipe organ consuming 16,000 square feet as shown at the Whitney, New York (2005), was created from multiple bus-sized balloons, each with horns tuned to play a different note in an octave and controlled by a
200-foot long music scroll of dots and dashes. The work “is so ungainly, so unwieldy, so downright preposterous, that if the spectator’s initial response is amusement and amazement, it soon comes to embrace something of the experience of the sublime – a response to the unfathomable, the unknowable, the infinite, Hawkinson engages with both science and pseudo-science and uncannily subverts rationality while drawing on its very attributes” (Rinder, Fox, Harvey & Hawkinson 2005, p.36).

In *Uberorgan* we are presented with a technique that is also present in early records of automata: the mechanical simulation of breathing, for example. Jacques de Vaucanson, considered a master of automata, constructed a mechanical flute player (1738). “Vaucanson’s android inevitably raised questions about what it meant to be human. It seems that its primary uncanny effect stemmed from the fact that it operated by breathing. Later that century Louis Jacquet-Droz constructed his famous musical lady, which not only played the keyboard but also simulated breathing and gaze direction” (Wood 2002, p.22).
In seeking the origins of the automated organ, we find that as early as 150 B.C.E. Ctesibius is attributed with inventing the first mechanically driven water organs named *Hydraulis* (Ctesibus, 2009). The water organ is a type of automatic pipe organ and is
the predecessor of the modern church or theatre organ (see Wurlitzer). Organs have continued to be automated to this day: for example, Godfried-Willem Raes has created over 25 different MIDI-controlled automatons including the Barrelorgan and Puff 2004-2005 (Raes, 2006).

In the paper "A History of Robotic Musical Instruments" Kapur refers to the modern autonomous instrument-makers as “renaissance men” because they have “reversed the equation to produce MIDI output devices” (Kapur 2005, p.1). This is found in the work of Trimpin, where he constructs computer-automated versions of acoustic instruments, for example his Contraption Instant Prepared Piano 71512 (1980), which “dramatically extends the whole harmonic spectrum by means of mechanically bowing, plucking, and other manipulations of the strings. It can be played by a human performer or a piano adaptor which strikes the keys automatically” (Kapur 2005, p.2). This is an extension of Votey’s invention, the Pianola (1897), of which Conlon Nancarrow is considered a master, receiving a MacArthur genius award (1982) for his Pianola compositions. Examples of this work can be seen as extending music beyond that physically possible by human players, creating super-human compositions that are played faultlessly and easily reproduced. This desire to create automata, as stated by Oliver Grau, is “the fantasy of overcoming the limitations of our own bodies...a desire to achieve immortality through machines” (Goldberg (ed.) 2000, p.229).

Thomas Edison shared this desire, calling the phonograph his “baby”, which would one day get old and look after him financially. The gramophone “casts its spell by reproducing, with absolute fidelity, the familiar sound of the human voice” (Spufford & Uglow 1996, p.85). Though Edison was a practical man he was also considered a “techno-spiritulist”, who “attempted to build a radio device capable of capturing the voices of the dead” (Young 2002, p19). A precursor to the phonograph is the “talking head of Magnus”, that provided answers to philosophic questions of the day (via piped voices in a distant room). The talking sculpture caused such a disturbance that “Thomas Aquinas, the Italian theologian, allegedly smashed it to pieces” (Ord-Hume 1973, p.52).

This strong emotive response in regards to a displaced sound is called schizophonia (Schafer 1977). Schizophonia refers to the split between an original sound and its electro-acoustic reproduction or, in my case, its uncanny doppelgänger. The sound falls
into the Uncanny Valley by failing to convince the viewer of its acquaintance with the original, producing uncanny effects like fear, explained as “sound phobia” (Truax, 2001). Where a person dislikes a sound for a particular reason – for example, a new electronic sound that has replaced an old familiar sound – they might have “sound romance” (Truax, 2001), which is nostalgia for an old familiar sound. Sound displacement is now ever-present in our electromagnetic spectrum; one of the spectrum’s bandwidths transfers telephone signals, allowing telecommunication.

The telephone is considered the “ultimate animist technology” by Erik Davis, in his book *Techgnosis*. Davis connects his work with *The Telephone Book* by Avital Ronell, observing that “Ronell links Freud’s technological uncanny with Alexander Graham Bell’s revolutionary device” (Davis 1999, p.65). Both Ronell and Davis explore the diaries of Bell’s shadowy double, Thomas Watson, who was an occult spiritualist who believed in re-incarnation. The diaries present Watson’s first telephonic conversation in which “morning glories suddenly began to talk to him” (Ronell 1989, p.241). In the telephonic and televisual transmission we have the associated terms ‘live’ and ‘dead’. ‘Dead’ when there is no dial tone, and ‘live’ as when watching a telecast. Ken Rinaldo’s autonomous sound installations – or as he calls them ‘emergent systems’ – for example, *The Flock* (1993), use telephone tones that allow robotic arms made from a grapevine to communicate. “Visitors can hear the arms signing to each other, but their song operates as a kind of private language” (Whitelaw 2004, p.112).

Some notable examples of personally selected languages in autonomous musical composition include the *I Ching* used by John Cage (1944) (Kostelanetz, 1988). In the same year Percy Grainger patented a machine that freed music from the “constraints of conventional tuning systems and rhythmic inadequacies of human performers” (Young 2002, p240). The idea that the composers were not in control of their works and as such were no longer considered their creators (Taylor, 2001) continues into *Musique Concrète* (Pierre Schaeffer, 1950). The evolution of the computer has transferred autonomous composition into the digital domain, bringing a wealth of possibilities and allowing the machine to be a part of the decision-making process. Automata, as stated in *The Computer Music Tutorial*, include “deterministic and stochastic automata, cellular automata and neural networks” (Roads 1995, p.857). The output of the automata depends on its internal state and its input. These parameters may be mapped to actuate any one or multiple digital processes, from the pitch of an oscillator to a realtime video filter or to actuate real instruments.
Iannis Xenakis (who extensively explored algorithmic computer composition) states in the book *Formalized Music* (1971) that “a musical work can be analyzed as a multitude of mental machines...these mental machines are something very restrictive and deterministic and sometimes vague and indecisive” (Xenakis 1971, p.133). Although there is no mention of animism but lenience towards pure scientific fact in Xenakis’s work, I propose that the uncanny can also be associated with autonomous digital processes. Xenakis does acknowledge that “certain mental mechanisms may correspond to certain mechanisms of nature” such as Conway’s ‘Game of Life’, also called cellular automata, which can also be found in the patterns of Conus and Cymbiola seashells. The desire to explore complexity within autonomous systems stems from the emergence of the often-unexpected outcomes. Emergence refers to something novel or unanticipated, which is produced by a system as a whole: for example, David Rokeby’s *n-cha(n)t* (2001), in which a network of computers listen to each other’s syntax and then speak it aloud. As each one picks up the other’s term, it associates that term in its database of words, selecting the closest related term, which it speaks and passes to the next computer. If the communication is not interrupted by human interference (voice), the computers collectively find common ground and begin repeating the word to produce a chant.

2.4 Contextual summary: Context and precedents

Autonomous art can be considered uncanny for a number of reasons. The work is new to the viewer and/or produces awe and wonderment as in Hanson’s speaking robotics (see 2.2), the creation of animistic installations, such as Ken Rinaldo’s communicating robotic arms (Whitelaw 2004, p.112), or my first experience of Eric Singer’s *GuitarBot* (Singer, Larke & Bianciardi, 2003). New sounds can also be awe-inspiring, but they can soon become romantic too, for example the techno-fetishistic sounds of computer musicians (from Kraftwerk to Robin Fox). These musicians often use the computer’s

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6 The Game of Life is a ‘cellular automaton’, and was invented by Cambridge mathematician John Conway. See Wolfram, S., A New Kind of Science Online. <http://www.wolframscience/nksonline/>


8 The use of the words ‘speak’ and ‘speaks’ is in itself an interesting anthropomorphism.


signature sound (granular synthesis and digital signal processing, etc.) to evoke in their listeners the powers of an intelligent system.

An autonomous artwork may also be considered uncanny if it evokes in the viewer the fear of obsolescence. Here the autonomous framework replaces the human and the human is no longer needed, acting as a reminder of our own mortality. The humanoid in the Uncanny Valley hypothesis, for example (Figure.4), is an attempt at human replication but is unconvincing, looking dead rather than alive. The key here is not to design a human replica but an object that possesses human-like qualities, as evidenced in the work of Bill Vorn. Vorn makes the first peak of the Uncanny Valley his goal, and this adds to the evocation of empathy in the viewer from his misery and hysterical machines (Vorn 2006).

As Jentsch has outlined, it is useful to leave the viewer in uncertainty (Jentsch 1906) and to evoke questions about whether the work is real or a simulacrum (Baudrillard 1994). One example of such uncertainty and the fear that can arise is illustrated by the Lumiere brother’s’ film *Arrival of the Train at Lat Ciotat* (1895), which frightened cinema viewers out of their seats because of the illusion that the train might run them over. In time the uncanny medium becomes accepted, developing into an art of its own form, such as cinema, recorded sound, interactive and autonomous installation, or automata and humanoid robotics.

The artform may also use the effects of the uncanny as its subject: for example, the Uncanny Valley expressed as shizophonia (Schafer 1977), in which a recreated sound fails to convince its listener of its ability to represent a real sound, creating soundphobia in the listener, disturbing his or her preconceived notions of the soundscape. In designing emergent systems that use artificial intelligence or life, the uncanny may be expressed in the unexpected results produced by the system. These results may be inherent in nature, enforcing our connection to the results that unexpectedly arise.

Through the research of context and precedents, I have found key insights into the nature of the uncanny. These insights have influenced my exploration and creation of autonomous artworks. In particular, the origins of the uncanny, the invention of the 18th century European automata.
What was it like to experience automata at that time? And What is the nature of the contemporary response to autonomous artworks?

By referencing the historical within my exploration I am seeking to connect the present to the past. The following chapters de-contrast my attempts to create contemporary uncanny moments, the works were exhibited publicly and through feedback discussions, reviews and critiques I form the reflective analysis. The reflective analysis is used to inform the development of each new work in the portfolio, thereby exploring the uncanny through a process of artistic invention and audience feedback.
Chapter 3  *Autonomous Improvisation v1*

3.1  Introduction

*Autonomous Improvisation v1* is the first in a series of new works, which I considered to be a departure point from previous work. In this new work I extended my previous practice of live video and sound by developing new, automated processes and a physically automated device, the Pianola\(^\text{11}\). This allowed me to explore and develop further knowledge of physical and networked computing, and automation, which has informed the autonomous artworks explained later in this exegesis.

3.2  Description; program notes

*Autonomous Improvisation v1* is a video anthology of some of Sydney’s most (in)famous solo musicians and performers. The work captures a range of performance approaches from burlesque to sound art, by video recording artists in the same studio configuration. The performances were enacted only for the camera and then reconfigured and presented in the gallery within the work. In the work, a prepared Pianola is controlled by a network of computers, which are also programmed to orchestrate the video sequences, creating an everchanging composition. This is presented via three channels of audiovisual projection.

Through indeterminate recomposition, the work questions if it is possible for improvisation to be programmed, or if this is simply a paradoxical endeavour. More significantly, *Autonomous Improvisation v1* asks us to consider what is uncanny about autonomous systems and the patterns that arise from these systems. *Autonomous Improvisation v1* asks us to consider the constraints imposed on human autonomy in an increasingly computer-mediated society.

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\(^{11}\) A self playing piano containing pneumatic or electro-mechanical mechanisms that operate the piano via a pre-programmed digital composition or music perforated paper.
3.3 Production and aesthetic decisions

The first component of the work was the collection and analysis of examples of contemporary performance approaches. I sought to complete a video survey that documented some of Sydney’s most (in)famous musicians and performers. The second
component coupled my research into automata with my audiovisual practice through the programming of an automated, prepared and networked Pianola.

Figure 15 Autonomous Improvisation v1, production still, Adrian Bertram, Pizzo (George Tillianakis), Brian Fuata.

3.3.1 Selection and analysis of performance approaches

The main criteria for selection of the performers was that the performer have a strong performance presence. Significant aspects of performance presence that I was interested in included movement and gesture including minimal movement or micro-gesture. The final selection included serious performers for whom performance style was not differentiated from the person’s everyday life, as well as the eccentric type who plays out an alter ego. The most important quality that I was trying to record, and the only thing I asked of all the recorded performers, was that they attempt to enter the zone. The term zone comes from the TV show The Twilight Zone (CBS, 1959–64) in which a mysterious event is played out, often in relation to the technology of the time (Sconce 2000). The zone for me is a place in which the performer might lose themselves in the music/performance, something that may not be repeated, also something that was not pre-planned. It is a state in which one may become possessed by the internal soul or even an external character. Jim Denley describes his interpretation of the zone as follows:

"Musicians always talk about these near-religious experiences. It can be that good, you can have moments in the music that you’re so exalted by what’s happening that it’s a fantastic trance-like effect, and it’s everything between that and the most mundane and banal event in the universe as well" (Denley 2003).
It is this trance-like experience in which the performers body may be considered to be acting autonomously, as if pre-programmed. I am interested here in the autonomous body within the autonomous video playback system, storing a live event on a dead medium that is then re-animated.

![Figure 16 Autonomous Improvisation v1, production still, Lucas Abela, Jim Denley, Matt Steggs.](image)

In my sample group of performance approaches I wanted a balance of cultures, genders, and instruments, as well as a balance between acoustic and electronic sound. I was aiming for 88 performers – one for each key of the Pianola. In the end I had a collection of 37. The contributing artists were Adrian Bertram, Dallas Dellaforce, Lucas Abela, Robbie Avenaim, Peter Blamey, The_Geek_From_Swampy_Creek, Monika Pazniewska, Jim Denley, Peter Farrar, Robin Fox, Brian Fuata, Dale Gorfinkel, Singing Sadie, Rev. Kriss Hades, Kristina Harrison, Ian Pieterse, Marty Jay, Josh Shipton, Hirofumi Uchino, Somaya Langley, Trent Mardan, Charlie McMahon, Dave Noyze, Shannon O’Neill, Gail Priest, Rory Brown, Mark Selway, Milica Stefanovic, Matthew Stegh, Amanda Stewart, Pizzo (George Tillianakis), Clayton Thomas, Toecutter, Toydeath, Trash Vaudeville, Jon Wah, and Dave Slave.

Each performer was recorded on the same black backdrop to allow the finished combination to look as though they could be playing together. The black void also placed the performances in a timeless world, which I felt had a quality similar to that of dreams or nightmares. Performers were lit from the side, eliminating light on the backdrop and providing an even light which modelled the performer’s features and enhanced the appearance of the performers floating in a timeless void.

The aim of the collection was to represent, for analysis, different modes of performance practice currently explored in various Sydney experimental scenes. These different
modes of practice were then combined and presented over the three screens to create strange and unexpected trios. The trio combinations were often unexpected because of the divergent identities or political character associated with the various experimental performance scenes presented. For example, someone from the sound art scene would never do an improvised performance with someone from the drag scene. The people who consider themselves to be serious musicians generally do not dress up in costumes. Techo producers don't play with classical musicians, death metallists with burlesque dancers, etc. In my opinion, the politics and conventions of these different scenes exclude each other to the point where a scene may be in danger of becoming boring and repetitious. I wanted to subvert and pervert these politics so that the works, when combined unexpectedly, provided new, ever-evolving and arresting results. I hoped that these combinations and the automated process of recombination may convey some aspects of the uncanny. The stereotypical uncanny performers include transgendered dancers, clowns, and masked performers, the rest are not considered uncanny but normal. It was intended that the uncanny in the work was the computer-automated combinations of the everyday and the unexpected.

I will now talk about each individual artist and why they were chosen to participate, if the uncanny is not mentioned then the performer was chosen because of their performance presence and contribution to the overall composition.

Adrian Bertram is a classically trained saxophonist and sound artist. Together with Shannon O'Neill, he performs live and also live-to-air on 2MBS radio under the pseudonym *Wake Up and Listen*. Adrian created the solo act *Lieutenant Colonel Spastic Howitzer* in which he plays extreme saxophone fed through guitar pedals. A backing CD of break-core and distorted theme songs enhances the extreme music. Adrian also performs with the cover band *Winner*. *Winner* dress up like glam rockers after a heavy night of partying. Adrian was the first person I asked to record because I had worked with him before, during my time as the Electrofringe co-director, and because of his performance style, which involves a lot of movement. His signature saxophone style is extreme and you can tell he is pushing himself to his limit when you see a vein protruding from his forehead covered in sweat.

Dallas Dellaforce is a transgender performer and costume designer. I first saw Dallas perform at an event called *Manjamm*, the all-male performance and striptease night.
The night was created in response to the all-female night entitled *Girleqsue*. *Girleqsue* was a striptease and performance night for women with a strict door policy, only females could enter. When *Manjamm* started everyone was allowed to see the shows and now the burlesque scene has come together to celebrate multiple genders, cross genders, benders, etc. I spoke with Dallas about the work and he suggested creating a new purple tinsel wig, which covered his naked body. During his performance a leaf-blower was used to slowly and then forcefully reveal what was underneath the full-length body wig; a male body in drag, complete with a penis tuck and stuck on breasts. The uncanny here “involves feelings of uncertainty, in particular regarding the reality of who one is and what is being experienced. Suddenly one’s sense of oneself (of one’s so-called ‘personality’ or ‘sexuality’ for example) seems strangely questionable” (Royle 2003, p.1).

![Image](image_url)

Figure 17 *Autonomous Improvisation v1*, production still, Singing Sadie, Robbie Avenaim, Jon Wah.

Lucas Abela, aka *Justice Yeldam and his dynamic ribbon device*, is a world-renowned extreme noise artist. Lucas’s travelling performance act involves playing a piece of glass with his mouth; the glass has a contact microphone attached to it, which is fed into a series of guitar pedals and amplified. Lucas plays the mouth to glass noise instrument by changing the parameters on the pedals and varying his voice. The piece’s coda involves eating some of the glass then bleeding over its surface, which is pressed against his face. The piece finishes when Lucas breaks the remaining glass over his head. I chose to record Lucas because of his extreme performance style and intense visual presence.

Robbie Avenaim is a solo percussionist, known for his improvisational collaborations with a host of international and local artists. His exploration of percussion includes the use of vibrators and mechanical devices, which add to his frenetic drumming technique. Robbie started and co-directed the *What is Music?* festival with Oren Ambarchi. *What is*
Music? had a strong influence on my knowledge of and approach to experimental music. Robbie is an elder statesman of Australian experimental music and therefore needed to be included in my survey.

Peter Blamey is an improvisational noise artist who explores the sound of a faulty audio mixing console with no inputs. The output of the mixer is fed back into an input to produce a wide range of static, clicks, pops and sine tones. I wanted to record Peter, as his performance approach is extremely minimal. The only signs of playing are the movement of his hands and fingers; this is contrasted with his sound and its potential to be intense and ferocious, yet also subtle and delicate.

![Figure 18 Autonomous Improvisation v1, production still, The_Geek_From_Swampy_Creek, REV. KRISS HADES, Jim Denley.](image)

The_Geek_From_Swampy_Creek believes that laptop performance is generally boring to watch, no matter what sound is coming out of the machine. The_Geek seeks to parody the laptop performer by dressing as a quintessential nerd, complete with a brown suit, thick glasses, an extended mega brain helmet and projected visuals. The_Geek entertains through the combination of theatrics and audiovisual projection. The sounds The_Geek explores are endlessly decaying computer bleeps and the sounds of nature, particularly that of the swamp from which he was formed. B-grade monster and science fiction films have inspired The_Geek. The_Geek is an alter-ego of myself and therefore was included in order to balance out the serious-looking laptop performers.

Monika Pazniewska is a laptop and accordion sound artist in what is often a predominately male genre. Monika performs solo and in collaborative improvisations at many of the Sydney sound art events, including the NOW now (a festival of spontaneous music and experimental film), *impermanent audio*, *Disorientation* and
University of Western Sydney events. Monika’s works explore melodic, tonal soundscapes and noise-based interference. For the camera Monika performed minimally and it looks as though she did not move at all during the recording because the laptop screen covers her hands.

Jim Denley is an experimental musician specialising in wind instruments and electronics. Jim has experimented with many electro-acoustic techniques that explore the expressive use of breath via controlled intensities. The pressure of the breath is used in ways of not playing the sax, thus bringing new sounds to the instrument. Jim is highly active in the Sydney improvisation scene, currently organising the NOW now series of events and his record label splitrec. Jim is also a member of Australian experimental band Machine for Making Sense.

Peter Farrar is a free jazz and improvisational musician performing with alto saxophone and soprano saxophone. Peter is influenced by the work of Jim Denley, and has performed with Amanda Stewart and Dale Gorfinkel at the NOW now 2007. Peter was also apart of the Splinter Orchestra, a group of over 50 musicians. I chose to work with Peter to add a different take on the experimental saxophone collection.

Robin Fox is a digital media artist and composer most famous for his work with projected audio and visuals. For his backscatter project, Robin performs live computer music made for oscilloscope. The result “fuses sound and light at the level of electrical current. The electrical signal that moves the speaker cones gives life to an electron beam housed in a cathode ray tube. The result is phenomena bordering on synaesthesia experience” (Thomas 2006). Robin has collaborative works released with Anthony Pateras, Coagulate (synesthesia), and Clayton Thomas, Substation (Room 40). Although Robin is based in Melbourne he has performed extensively in Sydney and
is definitely part of the Sydney improvisation scene. Robin’s laptop performance is minimal but entertaining, he uses track-pads and knob boxes to perform his works, and his signature performance style involves wearing his sunglasses, which compliments his long beard. This has led people to develop the nickname ZZ laptop.

Brian Fuata is a performance artist, writer and theatre maker. Brian’s work explores cross-cultural and crossgender roles from his point of view as a Samoan/Australian gay man (Fa’afafine, The Performance Space Sydney, 2001). Brian has continued to tease out political issues by exploring immigration issues in the work Pacific Washup, with Rachael Rakena and Fez Fa’anana (2003). For Autonomous Improvisation v1 I worked with Brian to develop a streetbusking character. The character is based on a real person whom I consider one of the most avant-garde musicians on the planet. The busker plays a single note of a recorder repeatedly over the course of a day. He sits on a milk crate and collects a steady income. Brian decided to get naked during his performance for reasons I am unaware of.

Clayton Thomas is a solo and collaborative improvisational double bass musician, interested in pushing the bass into the next level. Co-director of the NOW now, Clayton has organised experimental and free music events for the past seven years. During that time Clayton has released a duo recording with Robin Fox, entitled Substation (Room 40) and performed extensively. Clayton is the organiser of the group the Splinter Orchestra and could be described as the man behind the new breed of improvisation in Sydney. After I recorded Clayton I had a large list of Splinter Orchestra members to contact and record.
from the instrument. “Instead of the standard polite use of mallets, he utilises the motorised drive shaft usually responsible for tone control as a way of agitating objects placed between the bars of the instrument” (ABCTV, 2006). Dale performs with improvisational collaborators including the *Farfinkel Pugowski*, *Splinter Orchestra* and with Robbie Avenaim. Dale was recommend to me by Clayton Thomas.

Singing Sadie sings humorous and dirty lyrics over golden oldies from the rag time era. She tapdances and mingles with the audience, producing a vaudeville show at a time when sound art is often equal to aural annihilation. Sadie has a compact disk released on Dual Plover, entitled *Songs for Swingers* (2005). For the shoot with Sadie I prepared a wood panel with matte black paint so that she could tap-dance on it, the panel was placed on top of a desk so that I could shoot with the correct continuous lighting. Sadie added a distorted Broadway show-time element into the collection.

![Autonomous Improvisation v1, production still, Dale Gorfinkel, Matthew Stegh, Milica Stefanovic.](image)

Rev. Kriss Hades is an extreme metal guitarist who has performed solo since the dismantling of the black metal band *Sadistik Exekution* (1991–2002). The Reverend performs comes complete with horns, Dracula teeth, black hooded cape, make-up, an upside-down Jesus necklace, massive knee high boots, smoke machine, strobe light, an angle grinder to produce sparks, an axe with which he destroys his guitar and often projected visuals. Reverend describes himself as the “Number one extreme metal avant garde electric guitarist of the world” (Hades 2007). I wanted to work with Kriss because the effort that goes into one of his performances is immense (compared to a straight-up sound art performance), and I had to wait four months as he re-constructed the guitar he destroyed at his last performance. It was well worth the wait as he performed for over 2 hours, and introduced me to Dave Slave.
Dave Slave is the co-founder of the infamous death metal band Sadistik Exekution. In Sadistik Dave played bass and wrote most of the band’s material. Since the end of Sadistik Dave has produced esoteric electronica, entitled Digital Fiction 3000, a creation of Dave’s pseudonym Mr. Mooon Alien from Outer Space. Dave is one of the fastest and craziest bass players with extremely high technical capabilities. He also plays percussion on his face with his hands. I was lucky enough to record this particular talent as well as a section of his solo bass.

Kristina Harrison is a performance artist and dancer who has trained extensively under the Bodyweather program directed by Tess de Quincey. “Bodyweather was founded by butoh dancer Min Tanaka and his Mai-Juku performance company, Japan” (De Quincey 2000). The De Quincey Co. is Australia’s leading Bodyweather company. Kristina joined the De Quincey Co. in 2000 and has worked in different productions and art laboratories produced by the company in Sydney, the Central Desert and Kolkata, India. The recording I made with Kristina is an excerpt of a piece she did with the company in which three of the performance troupe bent over backwards and recited telephone numbers. I wanted to record this particular event because of the reference to the human memory of numbers. This has correlations with the algorithms used in the autonomous selection of video clips.

Ian Pieterse is an experimental musician who plays the baritone sax in different live bands, such as Ricatetus, and also in improvised situations such as with the Splinter Orchestra and for the NOW now series of events. I met Ian for the first time on the night of recording and haven’t seen him since. I thought that one more saxophonist would not hurt and a baritone sax would add to the lower frequencies of the final work. It felt good to include people who were unfamiliar to me. The process of recording itself became a weird way of meeting someone.
Marty Jay is a performer and costume-maker who has worked on many of the *Manjamm* burlesque nights, Circus Bizarre at Adelaide Fringe Festival (2006), and a host of performance nights that involve clowns and dog costumes. For the work I asked Marty to be his alter ego, dj Bozo, an experimental disc jockey who dresses as a clown. Having a clown added to the sideshow aesthetic the work sought to achieve. Dj bozo’s sound also added a much needed comic presence to the serious sound artists.

Josh Shipton is a vocalist for the bands Triangle, Box Freezer Romance, Marquis De Sound and Lecter Macabre. He also organises the event Sideshow Alley at the Excelsior Hotel in Surry Hills. Josh uses multiple microphones fed through guitar pedals to process his voice. He describes Lecter Macabre’s sound as “ambient, astral reconnaissance, extreme noise terror, radio emissions from the heat death at the centre of the universe, psychic turmoil at the edge of sleep, unknowable and primal” (Shipton 2006).

Josh Shipton recommended Mark Selway, as he is the other half of the duo Lecter Macabre. Mark plays a theremin fed through multiple guitar pedals and a Korg kaos2 pad. Josh tells me that Mark is new to performance and that he had been in hibernation previously, perfecting his other-world sound. The sound adds an interesting science fictional dimension to the final work.

Hirofumi Uchino aka Defectro is a Japanese noise artist who has made his own guitar-like instrument from metal. He also makes custom-built guitar pedals for an income and for personal use under the alias Lastgasp Art Laboratories. Defectro has multiple releases with Lastgasp, most recently the *Destructive Reconstruction* Compact Disc. After recording Hirofumi I decided to edit some of the louder/noisier parts of his performance in order for his work to mix at the same level of others. I was interested in recording Defectro in order to further explore stereotypes in noise music, such as the way Japan has now been recognised as the place for noise music because of musicians such as Merzbow, etc.

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Somaya Langley is a sound and new media artist exploring wearable technologies, including the “suspect backpack” project (Langley 2007) and ID-i/o, a live, wearable, sensor-based electronic audiovisual instrument (amongst a host of other projects). For my work I asked Somaya to perform with her ID-i/o instrument. In the performance she used subtle hand movement and gesture to control playback and processing of a dense sound-scape. In technical terms, accelerometers sensors, which are connected to a microcontroller, send data wirelessly to a custom-built Max/Msp\(^{13}\) patch via Bluetooth. I wanted to work with Somaya as she extends ideas around the micro gesture without the need to sit at the computer.

Charlie McMahon is a legendary representative of the Australian/Aboriginal sound and is the one of the world’s most acclaimed didjeridu players. Charlie has created his own didgeridus, which include the face bass (the seismic audio system) and the Didjeribone (a slide didjeridu). Charlie has toured internationally with bands such as Midnight Oil, Jane’s Addiction, and also as a solo act. Charlie has released albums from 1983 (Terra Incognita) with Gondwanaland, up until the recent releases Xenophon (1998) and Boneman (2002), under the Gondwana alias. I wanted to work with Charlie because of his unique sound and performance style. At the stage of recording I hoped to cover a range of culturally specific sounds within Australia, such as jazz, folk, street buskers, hip hop, etc.

Dave Noyze is a generative artist/scientist involved in technology and electronic music since the late 1970s. His PhD thesis, ‘Generative Music & Cellular Automata’, “developed fundamental new concepts, arising out of generative music practice, to a key problem in complex systems” (Burraston 2007). I have performed live video for Dave’s music in the act Bang Lassie, live at Disorientation, Lanfranci’s, Sydney (2004) and at the Big Day Out, Sydney (2005). For the recording Dave decided to be highly un-performative by reclining with keyboard on the couch. I thought this was a good change to the standard sitting pose and liked the reference to the reclining nude genre in painting.


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\(^{13}\) Object orientated programming language Max/Msp, viewed 30 July 2007, <http://www.cycling74.com>
(2000–2001) and the NOW Now video program (2006). Shannon teaches media arts and production at the University of Technology, Sydney, and is a PhD candidate at the University of Wollongong, where he is researching appropriated media. For my work I recorded Shannon playing his favourite synthesiser, the Korg MS-20. This instrument is what he had been using in the Splinter Orchestra performances. I thought that this would mix well with other recordings. Shannon’s visual gestures are minimal and he looks like a mad scientist twiddling knobs that have some sort of global effect on the world.

Figure 23 Autonomous Improvisation v1, production still, Robin Fox, Hirofumi Uchino, John Wah.

“Gail Priest is a Sydney based sound artist. Her practice involves sound design/composition for performance, installation and electro-improvisation. She is also a curator, writer and commentator on sound and new media arts” (Preist 2007). I chose to work with Gail because of her delicate sound, which I had heard at her CD launch for *imaginary conversations in reverberant rooms* (Metal Bitch Recordings, 2006) at Lanfranchi’s Sydney. For Gail’s recording I chose to put *RealTime* magazine pages on top of the desk to give the audience insight into what Gail does as the magazine’s associate editor.

Rory Brown is a musician and sound artist exploring recycled technological waste combined with prepared double bass and slide guitar. Clayton Thomas, the ringleader of the Splinter Orchestra, recommended Rory to me so I assume he was a part of the Splinter’s performances. Most recently I saw that Rory participated in the Blue Mountains extreme psychodelic noise band Sun of the Seventh Sister. Rory played a quiet and minimal set for my camera.

Milica Stefanovic is a musician and sound artist exploring different ways of performing with the electric bass guitar. For example, during the recording Milica dragged chains
as along the strings of the bass, explored the sounds of scratching the pick on the strings, and feedback. Milica improvises in the Splinter Orchestra and plays funk/roots/soul in the pop band Extendend Family.

Matthew Stegh is a professional stylist by day and a burlesque performer by night. He is the co-founder and organiser of the Manjamm burlesque nights (2004–2005). He has continued to organise mixed gender events, including Homosex-ploitation 34b, Oxford St, Sydney (2006), and You Little Stripper at Lanfranci’s, Sydney (2007). During the performance nights Matt performs with performance partner Matt Hornblower. Their work is highly camp, absurd and often has a political edge. The piece I recorded is an excerpt of the act Bombs from Above in which Matt turns from evil monster into a US marine/mutant. The marine/mutant inserts his penis/missile into an inflated globe, symbolically deflating the earth in his quest for power. For this performance Matt dances and does a strip routine to the backing track Iron Maiden’s *Children of the Dead*. I decided to remove the backing track so that it looks as though Matt was performing to the current video selection within the installation.

Amanda Stewart is a poet and sound artist. Her work centres around language and its relationship to the voice. “Her performance explodes outside text to include utterances, rhythms and non-verbal implications” (Stewart 2007). In 1989 she co-founded the Australian text-sound ensemble Machine for Making Sense, with whom she continues to collaborate. For my work I documented the’ sound and poetry works Amanda was then developing. For the recording I hired two professional stereo microphones.

Pizzo (George Tillianakis) is an artist and musician exploring notions of individualism and popular culture. He created the punk band Politikal Graffiti while studying at the University of Western Sydney and most recently moved in to electronica with the performance duo Rizzo and Pizzo. I recorded George rapping Rizzo and Pizzo tracks in a gold gimp mask and matching lamé dress. George added a perverse twist to the collection with his quirky interpretations of popular rap culture mixed with camp sophistication.

Toecutter is a break-core producer with intense enthusiasm for music and performance. Toecutter is a core member of the System Corrupt group of techno misfits who put on
free parties and release music and art. Toecutter threw his laptop into the audience at the Dual Plover end-of-the-financial year gig, claiming it was useless as a live instrument. He now performs with a sampler, an effects unit and a microphone. Toecutter’s performance involves jumping around, headbanging and tweaking his instruments in an overtly gestural manner. For the recording he wore a psychedelic T-shirt and came with his signature custom haircut: long at the back and shaved on top.

Toydeath is a band whose members dress up as life-sized toys and play music on modified and amplified children’s toys. The band is usually a three piece and they play originally composed pop tunes on simple toy instruments, jump around and dance like big kids on stage to audiences of hundreds. The director of the group, Nick Wishart, is a trained saxophonist and runs workshops on electronics for artists. Nick dresses as G.I. Joe in the band whilst other members have more obscure outfits, such as giant mutant rave bunny and monster cowboy robot. The instruments include modified Hulk hands, Barbie dolls, Elmo dolls, speak and spells, rock guitars, toy telephones, etc. For the work two of Toydeath’s members performed by cycling through many of their instruments. Recording Toydeath almost balanced serious sound artists with the more wacky dress-up type.

Trash Vaudeville “is another truly unique cabaret/club creature, whose shows have straddled the underground exotic and hybrid animation performance, arthouse, and even circus, his iconic acid-camp style, hallucinogenic visuals and corrosive satire, bedazzling audiences throughout Sydney’s indie performance scene” (Darlinghurst theatre 2006). I had seen Trash perform at many events and it was an honour to work with the cabaret star. Trash turned up with a new eyeball costume and his hula-hoop and preceded to do his thing. I only had to hit record.

Jon Wah is an artist often exploring the extremities of personal space through the use of the abject and shock tactics. For example, when John became his alter ego John Wah, front man of the band The Bloody Cunts, he also became obscene, using offensive language and piercing feedback. For the performance John paints his naked body with red paint and abuses the audience by spitting and defecating paint on stage.
I deleted some performance recordings from my final selection for aesthetic reasons. These include poor sound recording or inadequate performances. Some performers commented on the strangeness of performing for the camera, with only myself in the space rather than an audience. I think this affected some performers’ attempt to free themselves of inhibition and my visions of them entering the zone.

3.3.2 Prepared Pianola

Figure 23 The Pianola strings prepared with paper clips, bells, screws, keys and thumbtacks on the hammers.

In my initial research into robotics, automata and automatic instruments I became fascinated by the player piano, an invention of Edwin S. Votey’ (1897)\textsuperscript{14}. The Pianola produces the illusion that an invisible performer is playing the instrument, literally a ghost at the machine. The Pianola reads perforated paper music rolls through pneumatic tubing pumped by foot bellows. To bring something new to the Pianola I converted it into a computer-controlled, self-playing instrument; this brought a non-repetitiveness and instability to something that had previously been stiff and regulated. I also added the functionality of triggering video sequences over a network of three computers. Pianos and Foto players (as demonstrated in the Powerhouse Museum’s

\textsuperscript{14} The Pianola institute viewed 30 July 2007 <http://www.pianola.org/history/history_inventors.cfm>
1998 exhibition *Kings Cinema* were used in cinema (picture shows) before the talkies were introduced in the 1930s. A pianist would play the film’s score on piano as an accompaniment to the film, creating a musical interpretation of what was happening onscreen. In the case of my work I wanted the Pianola to be a performer, an instrument and film editor all in one. It did this by executing an ever-evolving, random audio and video composition programmed in the graphical programming application Max/MSP\(^\text{15}\). It became not simply a mechanism that played copies in a linear format, as in the picture-shows, but a mutant form of generative cinema.

To do this I purchased an old Wurlitzer Pianola from Bonnyrigg that I had found in the *Trading Post* newspaper. I took an instant liking to that particular Pianola because of its anthropomorphic woodwork, which includes eagles’ claws at the base of its legs and at the bottom of its front face panel. I had the Pianola delivered to my studio in Surry Hills and began (after a few attempts of manually pumping the bellows) to dismantle it. I took all pneumatic components out of the Pianola so that it was simply a piano. I removed all 88 keys, lined up and drew makers for 88 holes, to house 88 solenoids. An electronic circuit built by Dr Angelo Fraietta was used to actuate the solenoids. The circuit converts MIDI note values into 88 digital control voltages, the output of which actuate 88 individual solenoids. I created an interface to the circuit and soldered 176 wires from the solenoids to the RCA interface board.

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\(^{15}\) Object orientated programming language Max/Msp, viewed 30 July 2007, <http:www.cycling74.com>
The solenoids are the push type and are installed underneath the Pianola keys. Once triggered the key is pushed up at the back driving the hammer to strike the string and sound the particular note. The Pianola is also prepared with screws, paper clips, bells, paper, plastic and thumb tacks on the hammers. I prepared the Pianola in a manner similar to that used in John Cage’s *Prepared Piano Works* (Pritchett 1993), seeking to take his ideas further by automating the Pianola via generative software. The practice of making unexpected sound from what is normally expected from a particular instrument is a common theme amongst the contemporary sound artists recorded and described above. This practice represents an aspect of the uncanny explored by Canadian composer and theorist R Murray Schafer’s concept of schizophonia (Schafer 1977). Schizophonia refers to the disjunction or split between an original sound and its electro-acoustic reproduction in another time or place. In the case of *Autonomous Improvisation* the disjunction comes from unexpected or strange sound coming from an expected source or instrument (see 2.3).
The computer inside the Pianola (an Apple Mac mini) ran a customised modification of one of Karl Essel’s *Real Time Composition Library*\(^\text{16}\) patches titled *Super Rhythm*. Once the patch was activated (via the control computer) *Super Rhythm* generates stochastically selected MIDI notes, which are sent to the solenoids, actuating the prepared instrument and video files. There were 37 different video files of performers, which were on each of the three projecting computers. Custom-built Max/Jitter software selected a random video file and a random start time within the video file. A series of counters generate new random selections within an escalating timeframe. The timeframe ranges from 30 seconds to 6 milliseconds, creating fast-cut selections and sections where new combinations will play for the maximum 30 seconds. Each time a new random selection is made the Pianola’s keys play, suggesting the Pianola is the control mechanism of the video projections. The Pianola also has a timeline on which it plays a random composition every two minutes, fading out one to three of the screens, playing with a single video performer or in solo.

The installation consisted of three screens and a Pianola. Behind the screens were a pair of stereo speakers, one sub-woofer and three networked computers, which controlled the audio-visual projection. Inside the Pianola (in place of the mechanism that held the perforated paper rolls) I placed a computer monitor on which displayed a video of a mirrored candle with rising smoke behind it. When the Pianola played the MIDI note number (divided into the number of frames in the video file) it also played random frames numbers within the clip, creating synchronisation between the keys and the live video edit. This musical editing effect controlled one of the projected videos every two minutes, and the pause in playing was made to surprise the audience who had just entered and previously not seen the Pianola playing itself. There was one soft light on the Pianola, to highlight its presence in the space. The Pianola taken out of its domestic context in the home and placed in the gallery also references a literal English translation of Freud’s term for the uncanny, *unheimlich*, in English: unhomelike.

### 3.4 Objectives

The objectives of the work were to create an engaging autonomous installation that people could revisit, seeing and hearing things they had not previously, a work that still surprised myself, the creator, with unexpected combinations. To achieve a sense of the

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I created a prepared and automated Pianola, which automated random video sequences. In doing so I sought to create the sense that the Pianola, or a ghost in the Pianola, was in control of playing itself as well as the video performances. The use of an obsolete and antique Pianola with candles in the place of the music scroll was created to suggest occult or magical powers inside the Pianola, also referencing the theory that the uncanny is directly related to the invention of the automaton (Castle 1995).

3.5 Audience response

During the month-long exhibition at Arstpace 1154 audience members visited the work. Feedback discussions were held with various audience members in order to develop critical discourse around the work and what aspects of the uncanny were present if any. This discourse was used to form the reflective analysis and a framework for future works. It was noted that the work did not evoke fear or dread but explored the nature of unpredictability. When the autonomous system formed moments of perceived aesthetic composition it was considered strange or creepy. This was because it evoked thoughts of who or what was in control, a programmed machine, a ghost or the artist. The human aspect of the meditated video and automatically playing Pianola created interplay between recorded media and physical form, a world where ghosts within the machine literally became present. Audience members reflected that this was exemplified by monstrous characters (death metalists, clowns, transgendered burlesque) which once recorded became apart of an archive. A ‘live’ performance is experienced ‘live’ and a recorded experience becomes an archive that lives beyond the person’s life and so it may be thought of as a ‘dead’ performance. This video is linked to an old world Pianola with embedded candleabra to further connect notions of history, the archive and people recorded, in the past. The Pianola also referenced early automata and the invention of the uncanny. Audience members were able to experience a mediated ‘live’ performance of a range of sub–cultures within the safety of the gallery. The ‘liveness’ was the system at play. The loud sound and darkened space was too much for some viewers, but most were engaged with the strange combinations and autonomous compositions.

3.6 Reflective analysis

I thought the installation’s layout within the space worked by inviting viewers into the space and offering seating within the darkened environment. The automated editing of
clips and the resultant unexpected compositional combinations kept people intrigued, with audience members staying for long periods of time, of up to and over 30 minutes. This was because people were either waiting for the loop to finish as in standard video works, or because they were intrigued to see what random combination came up next. This illustrated that they were engaged with the work and interested in the autonomous system. Technically the system worked well, with only two restarts needed from the Mac mini over the course of the month. Everything else was automated and gallery assistants just had to turn on the amplifier and projectors.

Comments were made that the sound could have been louder and that it lacked adequate spatialisation. Adding spatialisation would allow people to acknowledge the location of the sound with a reference to the particular performer, allowing for stronger connection to that performer. The use of a clearly defined sound field would create a stronger sense of immersion for the viewer. This was addressed in the second exhibition of the work at the MCA for the show *Primavera*. In this version I installed a stereo pair behind each of the three screens and one sub-woofer loudspeaker.

While the unexpected combinations of performance styles may have been arresting in some circumstances, the work did not address all of the aspects of the uncanny which I would like to achieve. There was no question of whether the work was alive or not, it was in essence, merely an autonomous system which alluded to the uncanny within the long history of automata. In alluding to the uncanny in this work I am addressing ‘the uncanny aesthetic’ as described by Michael Arnzen in Appendix C. Jeff Khan has located this aesthetic genre within the history of ‘nineteenth-century gothic horror’ (*Khan Primavera* catalogue, 2009). Khan here has understood my reference to the uncanny and its relation to the automaton. In addressing my first research question: ‘Can autonomous artworks help us to understand the nature of the uncanny’ I believe that yes this autonomous artwork has created a platform and aesthetic framework in which the uncanny was explored. As Sean Lowry states in the review *Alien Jukebox* (Appendix B), “Just as cinema once provided a new and strange way of experiencing life, the computer is now seemingly and endlessly extending our experience of the uncanny” (Lowry 2008, pg.119). Importantly, Lowry also raises questions about whether or not improvisation can be programmed or not. He suggests that because of the programmatic limitations I have embedded in the system, its structured limitations do not allow any really autonomy. I agree that the automation within this work was limited
both in terms of the sequencing of material and in that it is anchored to a fixed position. Therefore, in subsequent works, I propose to explore untethered physical movement within space. I also propose to introduce aspects of artificial intelligence in order to address idea of autonomous beings acting on their own accord. This is a key aspect of the uncanny as discussed the next work The Discreet Charm Of The Bourgeoisie Robot.

Chapter 4 The Discreet Charm Of The Bourgeoisie Robot

4.1 Introduction

As Eduardo Kac has stated:

“Artists continue to push the very limits of art […] they introduce robotics as a new medium at the same time they challenge our understanding of robots – questioning therefore our premises in conceiving, building and employing these electronic creatures. The fascination robots exert on the population at large has unexplored social, political and emotional implications” (Kac 1997, p.60).

In line with Eduardo Kac’s comments, I sought to address the unexplored social, political and emotional implications of robotics. I did so through the public exhibition of my robotic works, the second of which, The Discreet Charm Of The Bourgeoisie Robot, 2008, is critically de-constructed in this chapter. The work took over a year of research in Australia, Canada (during a residency at Hexagram Robotics Lab) and Japan (a residency at ICC Interarts Creative Centre), during which I developed knowledge of microcontrollers, motors, motor drivers, sensors, electronics, computer and microprocessor programming. The focus of this research was to develop a new work using multiple mobile robots. I did so because I believed that through an extension of the use of distributed artificial intelligence networks, combined with the physical inhabitation of space by life-size robots, I could achieve a stronger sense of the uncanny than had been achieved in the first work presented in this portfolio, Autonomous Improvisation v1. A number of trials and small exhibitions were undertaken, deploying more than one robot (Forest Room and Rocco Vortex, described below). However in order to directly engage the audience, a conversational model was
both in terms of the sequencing of material and in that it is anchored to a fixed position. Therefore, in subsequent works, I propose to explore untethered physical movement within space. I also propose to introduce aspects of artificial intelligence in order to address idea of autonomous beings acting on their own accord. This is a key aspect of the uncanny as discussed the next work \textit{The Discreet Charm Of The Bourgeoisie Robot}.

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deployed in a single robot in the exhibition space of the Institute of Contemporary Art Newtown (I.C.A.N.). This conversational approach enabled the robot to converse with its audience and directly move towards or away from them thus exploring a new range of uncanny behaviours.

An iterative development cycle produced the prototype autonomous robots (*Number 1, Sputnick Number 3*) and a series of animated objects (*Self Destruction Machine, Naughty Robot, Hotate Spanking Machine, Mating Season and Eyeball Man*). These objects were exhibited in installations entitled *Forest Room* and *Rocco Vortex* respectively. Subsequently, a remote-controlled robotic performance (*Olympia, the sneezing automaton*) was developed. From the production of these developmental works I produced *The Discreet Charm Of The Bourgeoisie Robot*, exhibited in December 2008 at The Institute of Contemporary Art Newtown (I.C.A.N.). This work was further developed for the third and final work (*The Hosts*, see Chapter 5).

Conceptually, the work raised some interesting questions in relation to the uncanny and aspects of autonomy. Firstly, a stronger sense of the uncanny effect was achieved by the introduction of evocative movement in space, which often caused people to jump back in shock. An aspect of the uncanny also became apparent through the suggestion of artificial intelligence, created by the ability of the robot to hold a conversation with the audience. This created uncertainty amongst some audience members. The audience members were not uncertain as to whether the robot was alive or not, but rather as to how smart it was and how it could be so smart (see 4.5).

The notion of autonomy was brought into question due to the fact that I wanted to work with mobile robots rather than tethered ones. The word “autonomy” is derived from the Greek words ‘auto’ (self) and ‘nomos’ (law, rule). So an autonomous system is a self-governing system. In robotics “autonomy” is often used to describe mobile robots that operate without the need for an electrical cord, but this definition is a little too simplistic for our purposes due to two factors: 1) the robot needs to be adaptive to its environment; and 2) the robot needs to manage its own power resources. In this work the robot is not adaptive as it is completely human-controlled; it also had to be recharged daily and relied on humans to do so. Dependency becomes an interesting flipside to the notion of autonomy.
4.1.1 Development of prototypes

From August to November 2007, I participated in a research exchange program between the University of Western Sydney and Concordia University, Canada. The residency took place at the Hexagram Institute for Research/Creation in Media Arts and Technologies, in Montréal. The focus of the exchange was specifically to work with robotic artist, Professor Bill Vorn, who has been working in the field of robotic art since 1992. Whilst at Hexagram I began researching microcontrollers and settled on the Arduino\textsuperscript{17} platform, due to its extensive, community-supported firmware library and because it supports cross-platform development. "Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software" (Banzi, Cuartielles, Igoe, Martino & Mellis, 2005). The Arduino can be programmed to receive information from its inputs and or regulate the control of its outputs, which may include sensors, motors, lights or sound. For my first Arduino project I created a small mobile robot named Number 1. Number 1 utilised an Arduino to sense its environment via two ultrasonic rangefinders\textsuperscript{18} and one infra-red (IR) sensor.\textsuperscript{19} The sensors were used as proximity detectors for collision detection and navigation. The Arduino reads the sensor data and applies it to control two wheel motor drivers.\textsuperscript{20} The motor drivers control the electrical power signal to two planetary gear motors which in turn drive the wheels.\textsuperscript{21} The software on the Arduino implemented the following logic: start by driving straight ahead, if the sensor data is below a certain threshold reverse for \(\frac{1}{2}\) a second, spin 90\%, go forward, repeat. I had success with this method in empty spaces, however the sensor's view was limited and if there were too many obstacles at different heights the robot ran straight into them and attempted to keep driving forwards. From this I realised that the robot needed many more sensors to prevent further collisions. I therefore decided to add bump sensors to the next version.

Mobile robots have a limited life span due to the fact that they use batteries for their power source. This issue is often resolved using automated homing and docking stations for the re-charging of batteries. I created an electronic circuit for an IR homing system based on a schematic by Chris and Dawn Schure (Schure 2007). The system


18 For ultrasonic sensors (SRF05) see robot electronics, viewed 30 August 2007, <http://www.robot-electronics.co.uk/htm/srf05tech.htm>


20 For motor driver component (MD03) see robot electronics, viewed 30 August 2007, <http://www.robot-electronics.co.uk/htm/md03tech.htm>

21 For robotic motors see banebots, viewed 30 August 2007, <http://banebots.com/c/MP-36XXX-545>
used an IR transmitter, a receiver circuit and a battery level monitoring circuit. The plan was that when Number 1’s battery was low, it would go to the recharging station co-located with the IR transmitter. It worked a few times but the range of the IR transmitter I used was limited and I discovered that I needed to develop a deeper knowledge of the C programming language (Kernighan & Ritchie 1988) in order to implement more precise navigation algorithms. Number 1 served as a great introduction into robotics and was used to develop the next prototype, Sputnick (Number 3), in Australia. In order to further develop Sputnick Number 3, I researched tele-operation of mobile robots and found a cheap solution that I was able to develop by myself. I made use of the built-in Bluetooth port in my Apple Macintosh laptop and the Arduino BT (Bluetooth) module. This allowed me to remotely drive Sputnick via a custom-built Max patch. I installed a wireless AV security camera on Sputnick, which sent audio and video into a digital video camera and then into my laptop. I could now navigate Sputnick without having to physically see the space in which it was moving. I envisioned driving through the landscape surrounding my studio, something akin to what it must be like to explore Mars with a NASA tele-operated robot, such as the Mars Pathfinder Sojourner Rover (NASA 1996).

With the exception of a few significant robotic art works including those by Stelarc and Symbotica, the bulk of robotic art developed over the past 20 years has been created overseas. A useful review of this work is presented in the book The Robot in the Garden edited by Ken Goldberg (Goldberg 2000). Important predecessors to my tele-robotic work included within the book are Ken Feingold’s where I can see my house from here so we are (1993-95) and Eric Paulos’s PReP, Personal Roving Presence (1994-2001). To encourage dialogue and to stimulate interest in robotic artworks in Sydney I curated the Dorkbot-Sydney event in February 2008. For this event I invited Mari Velonaki who, in 2006, with Dr David Rye, co-founded the Centre for Social Robotics within the Australian Centre for Field Robotics, at the University of Sydney. Velonaki and Rye presented their robotic artwork Fish-Bird (Rye 2006). Kate Richards with Mr

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24 Symbotica is a research laboratory dedicated to the artistic exploration of scientific knowledge through bio-technologies, viewed 25 July 2006, <http://www.symbiotica.uwa.edu.au>


Snow also presented the work *Wayfarer*\(^{28}\), created with Jon Drummond and Martyn Coutts this piece was a live improvised and mixed reality game event presented at the Performance Space in 2007.

Figure 25 Basic working prototype, *Sputnik Number 3*, Overview, 25 February 2008.

Figure 26 Basic working prototype, *Sputnik Number 3*, Detail, 25 February 2008.

\(^{28}\) *Wayfarer* by Kate Richards, viewed 10 February 2008, [http://katerichards.net/art/wayfarer/]
At Dorkbot-Sydney I presented my prototype Sputnick Number 3. During the presentation I explained that I was having signal drop-out problems with the Bluetooth communication to the laptop, and also having problems with the wireless AV feed. People in the audience were helpful in suggesting alternatives to these methods and from this event I developed working networks with new collaborators, Mr Snow and Aras Vaichas. Together with my new collaborators I developed plans for an Internet-controlled robot, the idea being that the WiFi\(^\text{29}\) protocol would replace Bluetooth as a more robust solution. The plans for the robot grew with enthusiasm and we decided that it should move and speak in response to human visitors (see 4.2). Whilst plans for the final work were in development I continued to further research the cultural perspectives on robotics in Japan, during a residency at the Inter Cross Creative Centre, Sapporo. Here I focused on the fundamentals of early European automata and their similarities with the Japanese equivalent, *Karakuri*.

![Figure 27 Tea automata and mechanism, nineteenth-century Japan, Tokyo National Science Museum.](image)

\(^{29}\) WiFi is a trademark of the WiFi Alliance, founded in 1999 as Wireless Ethernet Compatibility Alliance (WECA).
“Karakuri ningyō (からくり人形) are mechanised puppets or automata from Japan from the 18th century to 19th century. The word ‘karakuri’ means a mechanical device to tease, trick, or take a person by surprise. It implies hidden magic, or an element of mystery. In Japanese ningyō is written as two separate characters, meaning person and shape. It may be translated as puppet, but also by doll or effigy. The dolls’ gestures provided a form of entertainment” (Boyle 2002).

The description above, specifically “to take a person by surprise”, has striking similarities with notions of the uncanny.

4.1.2 Forest room

In Japan I created small, simple animatronic studies similar in size to *Karakuri*. Each animatronic study used the Arduino microcontroller, a collection of servomotors and organic materials. I programmed the microcontrollers to control the different positions of the servomotors. I often used random number generators to determine the motors positions in order to get unexpected results within the limitations of the servos movement. Once the five animatronic studies were switched on, the sound of the motors resembled a strange mechanical eco-system. The installation was entitled the *Forest Room*.
Wade Marynowsky; An exploration of the uncanny in autonomous artworks.

Figure 28 Naughty Robot, 2008.

Figure 29 Mating Season, 2008.
The title *Self-Destruct Machine* (Fig 31) is a reference to the artist Jean Tinguely, who is most famous for his self-destructing machine performances, for example *Homage to New York* (1960) (Hultaon & Tinguely 1987). In *Self-Destructing Machine*, if the work were left to run, over time it would cut through itself and begin destroying the wall. This work also had a previous title, *Barakumin*. I was advised not to use this title, as it is a
taboo subject in Japan. This is because *barakumin* are descendants of outcast communities of the feudal era and are one of the main minority groups in Japan. Their occupations are often associated with death, for example executioners, undertakers or leather workers. In relation to the uncanny they may be considered the harbingers of death. The work *Mating Season* (Fig 39) is in part inspired by the artist Rebecca Horn’s works, using feathers and machines, for example *Peacock Machine* (1981) (Horn & Haenlein 2000).

4.1.3 Rococo Vortex

For my next developmental research study, I continued to explore the aesthetic of the uncanny with reference to the eighteenth-century notions of the automaton for the work *Rococo Vortex*. The installation was shown at Don’t Look Gallery, Sydney, from 21–30 August 2008. The work used the hardware and software I had developed in *Sputnick Number 3* but limited the robot’s movement to a fixed position; the robot could only spin left or right on the spot. This was due to the small scale of the exhibition space. The basis of the installation was a robotic platform comprising microcontrollers, electronics, batteries, motors and wheels mounted to a circular wooden base. On top of the base I attached wire crinoline frames and dresses constructed by dressmaker Susan Marynowsky. Installed in the space was a computer with custom-built software, amplified speakers and sound. The work sought to highlight notions surrounding national identity, antiquity, and bourgeois society.

The work consisted of two spinning rococo-styled robotic crinolines in the gallery shop front. The robotics were made to spin as if they were in continual dance. The spin and rest times were chosen randomly via an on-board microcontroller. This data was sent wirelessly to a computer, which translated it into an audio signal by mapping it to the pitch of a synthesised sine wave generator, which played for one second each time it was triggered. The number was also mapped visually in the form of a graph on a display monitor. The graph was split into two rectangles and coloured in the same colours as the dresses, turquoise and pink. The presence of the graph suggested that there was a technological connection between the spinning dresses and the computer, a pseudo-scientific and cross-historical reference.
A background audio loop contained a varying mix including a slowed church organ and digitally extended viola strings. This created a melancholic and slightly menacing atmosphere. From sitting with the work, while staffing the gallery, it felt as if the robotic dresses were attempting to leave this time, to return to the eighteenth-century. Of course this attempt is futile and the audience is left to witness the misery of this endless failure. For me this represents sections of Australian society, which still wish to be a part of a European tradition, often expressed as Kitsch. This idea of the eighteenth-century styled crinoline came to me in a dream while in Montréal. It is a direct response to Bill Vorn’s macho/industrial approach to robotics; I wanted to feminise industrial robots in order to create elegant form and movement, not clunky machine-styled gestures. The crinoline form has continued to evolve into the final work (explained in Chapter 5).

Figure 42 Rococo Vortex, installation view, 2008.
After this exhibition I realised I was unhappy with the sound of the wheel motors; they were too loud. I transferred further development to the Parallax\textsuperscript{30} Motor Mount & Wheel Kit, which is matched to the HB-25 Motor Controller\textsuperscript{31}. I ordered a set of two, one for myself, and one for my collaborator Aras to work with. I had felt confident with the Bluetooth signal due to the space limitations of the Don’t Look Gallery and agreed to stage a one-hour performance of the robots titled \textit{Olympia, the sneezing automaton} at Artspace Sydney. The performance was my contribution to the event 24/25\textsuperscript{32}.

4.1.4 \textit{Olympia, the sneezing automaton}

\begin{flushleft}
30 For robotic parts see Parallax, viewed 10 July 2008, <http://www.parallax.com>
\end{flushleft}
Artspace 24/25 was a series of 24 one-hour ‘exhibitions’ held over the weekend of November 1 and 2, to celebrate 25 years of Artspace. *Olympia, the sneezing automaton* performance used sections of E.T.A. Hoffman’s short story *The Sandman* (1817) (Hoffmann and Bleiler 1967) as a departure point, specifically the sections that include Olympia, a female automaton. Olympia, who is first presented publicly in a social dance, convinces most people that although cold and stiff, she is actually alive. The psychotic Nathaniel, who dances with her the most, falls in love with her, although she cannot speak a word, except to sneeze.

*The Sandman* is a key-feature of Freud’s essay *The Uncanny* (1919). Since Freud’s association between the uncanny and the automaton, the uncanny has continued to be a key term in robotics. This is exemplified by the concept of the Uncanny Valley developed by Japanese robotic scientist Professor Masahiro Mori (Mori 1970), who also believed that robots have the Buddha nature in them (Mori 1982). In this absurdist investigation of the desire to create artificial life there were three dancing automatons; the audience was asked: can you tell which one is alive? Or would you consider them all alive in some way? Would you like to dance with or consider falling in love with an...
For this one-hour performance I used the two robots from *Rococo Vortex* in combination with a black box robot that had four gramophone horns mounted to its side faces.

![Image](image.jpg)

*Figure 35 Olympia, the sneezing automaton, Artspace 24/25, Sydney, 2008.*

The four horns had small speakers installed inside them, emanating voice recordings and electronic bleeps. In a Charlie Chaplin-style costume (black suit, white shirt, bow tie, bowler hat and a white face) I performed with two laptops, one to command the robots’ navigation and the other to perform a live mix of the prepared audio composition. The composition included voice recordings of a death metal vocalist who whispered and screamed short sections of text (*The Sandman*) and my own digitally created experimental audio. A section of this audio sampled the soundtrack to the Fellini film *Casanova* (Fellini 1976): at the end of the film Casanova falls in love with an automaton. Fellini believed that Casanova was heartless and that his real match in love was the autonomous wooden lady. I believe this to be a definite reference to *The Sandman*. I also believe *The Sandman* references Jacquet Droz’s musical automaton *The Musician* (Figure 12). The three robots where controlled wirelessly using the Arduino BT. During testing and on the day I again found this protocol to be rather unreliable. I had trouble connecting to all three Bluetooth devices from the laptop.
computer and when I finally did connect, I had trouble navigating the robots. I had set up virtual buttons for forward and reverse, stop and spin at different speeds, both clockwise and counter-clockwise. Upon using the buttons, I drove the two dressed robots around the space almost running into people. Accidently, the pink robot ran straight into a hardwood pillar; people laughed. The robot was not the same after the accident and started to flop over to one side. I managed to get all the robots back to their original position after one jaunt around the space. I was now aiming to get the two dressed robots to come together and spin suggesting that they might be dancing. I commanded the pink one to spin and it did for a while until it ran over its own dress and stopped. I tried to give it a helping hand by propping it up but again it hunched over and dragged half of its body around the floor as it spun.

As this was a totally unexpected event, both the audience and myself were dumbfounded. I stood back and watched the robot spin out of control until finally, it stopped working. The dress frame collapsed, the control platform became exposed with the wire frame and the inside of the dress lay out under display for the audience to see. The two remaining robots spun around on the spot for the rest of the duration, while the sound became more menacing. I left the space for a few moments and people became confused as to who was now in control of the robots. At the end I faded out the sound,
stopped the robots and received applause. The performance could not have been planned better. Due to the unexpected outcome of the performance I felt that it had a stronger emotional resonance with people. From the comments I received from the audience I felt that the performance was humorous yet more significantly tormented. The work used the uncanny as a reference point to poke fun at the notion that one might be scared of or even fall in love with technology. Small sections of the event were screened on Sunday Arts on the ABC, 16 November 2008.

Figure 37 Olympia, the sneezing automaton, Artspace 24/25, Sydney, 2008.

4.2 Description; program notes

*The Discreet Charm Of The Bourgeoisie Robot*, The Institute of Contemporary Art Newtown (I.C.A.N), 9–21 December (Thursday–Sunday) 2008, 12–5pm. Electrical engineering: Aras Vaichas; software design: Mr Snow; dressmaker: Susan Marynowsky. Supported by the University of Western Sydney's postgraduate research fund.
By appropriating the title of the film *The Discreet Charm Of The Bourgeoisie* (Buñuel 1972), I pay homage to the surrealist film director Luis Buñuel. The film is about a group of upper middle-class people attempting, despite continual interruptions, to dine together. So what is Buñuel trying to say? That the bourgeoisie are charming because they have nothing to worry about except how and when they will dine together? Or, that they are in fact hideous creatures with nothing better to do than waffle about?

Taking this question into the gallery, the *Bourgeoisie Robot* is operated by invited mystery guests over the Internet, for the duration of the exhibition. The charming robot avatar waits for visitors to enter the space and then converses with them in a polite and pleasant manner. The robot is interested in talking about food, robots, dancing and other general bourgeois banter. In doing so the robot questions the role of the gallery as a place of contemplation.

The robot wears a hooped dress, which recalls the beginnings of automata, in the eighteenth century; for example, Jacques de Vaucanson’s mechanical flute player and defecating duck (1738). Vaucanson’s automata stunned European eyes of the era, producing the first uncanny moments in robotic art. The fact that the bourgeois robot’s voice is male and that he wears a dress highlights the camp sensibility of robots. As
Steve Dixon states in his essay “Metal Performance”, “Robotic movement mimics and exaggerates but never achieves the human, just as camp movement mimics and exaggerates but never achieves womanhood” (Dixon 2005, p.17).

Through physical inhabitation of a real-life avatar, the work is concerned with the evolution of mediated communication technologies and their influence on the nature of conversation.

4.3 Production and aesthetic decisions

4.3.1 The aesthetic

The installation consisted of eight gramophone horns mounted to the side walls of the gallery. The horns were mounted to face the entrance so as to invite the audience in, and to suggest a regal announcement, placing the robot in a privileged position. Through the use of gramophone horns I was making a reference to the first speaking machines invented by Thomas Edison (1877). Gramophones, also called phonographs, were the first machines that could record and play back sound (see 2.3). The gramophone “casts its spell by reproducing, with absolute fidelity, the familiar sound of the human voice” (Spufford & Uglow 1996, p.85). This reference in relationship to the
work suggested that the robot was a type of programmed play-back mechanism, which of course it was not. It was in fact an Internet-controlled robot that I spoke through. The horns had small speakers mounted inside, white cables from the speakers came out from each horn’s sound tube to a central position near the floor, and then to the back room. In the back room was a Mac mini, which supplied the speakers with a continually evolving but limited Sheppard tone. The sound was made from a custom-built Max-MSP patch that used additive synthesis. Within the patch were four harmonic oscillators, each with sixteen sine or saw waves randomly mixing in volume. The base pitch of the oscillators was set off-tune to produce an eerie and otherworldly atmosphere.

The robot was made from a robotic base, a new stronger wire frame and a new dress created by Susan Marynowsky. Together we designed a dress in eighteenth-century style that evoked a masquerade ball gown, complete with bustle and lace frills. The eighteenth-century masquerade ball was an event where princesses could dance with common people, women could dress as men, and vice versa. Costume was (and still is) used to reinforce class and gender confusion. We chose to use only black and white as the camera I chose was black and white. The camera was housed in a tinted dome, which referenced various popular culture robots, such as Robby the Robot from the film *Forbidden Planet* (Wilcox 1956). The robot's dome used in this way is also a reference to analogue vacuum tubes, which were used in electronics before the invention of the
transistor in 1947. Domes of this kind are now used commonly in shopping centres, banks, etc. to house CCTV surveillance cameras. I used a camera lengthener to increase the height of the camera from the base to make it look as if it came from within the body of the dress, rather than just sitting on top of the head platform. I asked Susan to create a collar for the protruding camera to make it look more like a human neck. As the camera suggested itself as an eyeball and the dress suggested a woman’s body, the robot was described by one passer by as “a grandmother Cyclops”, or as another suggested “a Darlek in drag”. The aesthetic I was trying to achieve cross-referenced popular notions of specific historical periods, namely the eighteenth-century and the future, as defined by works of science fiction. Combining the two periods suggests a non-linear structure to history, or that the robot is a time traveller.

Figure 41 The Discreet Charm Of The Bourgeoisie Robot, Opening night, I.C.A.N 2008.

With the exception of the opening night, the robot was operated by myself over the Internet for the duration of the exhibition. It was not, as explained in the program notes, “operated by invited mystery guests over the Internet”. To drive the robot safely one had to practice. On the opening night I asked Sam Bruce to operate so to confuse the audience as to who was in control of the robot, and so that I could attend the evening. I wanted a snobbish English accent for the robot’s communication with its audience. Sam did an amazing job not to run into people and he continually communicated for two

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33 Darlek’s are Robots that appear in the BBC television series Dr Who (1963-).
hours to audience groups ranging from three to five. This was particularly hard due to audience chatter and at this stage we had not fine-tuned his voice to the correct audio filter. There were comments that the voice was distorted and, although Sam did his best, from then on I wanted to perform the Bourgeoisie Robot myself. I got my chance and for the next three weeks, I was the Bourgeoisie Robot for four days a week, five hours a day. I wanted other people to operate on the Sunday but could not find any one who had the time to practice or time to dedicate. Controlling the robot telematically produced feelings of disembodiment due to the nature of tele-operation.

4.3.2 The voice

Originally the voice we proposed to use was a synthesised computer voice, based on a speech synthesis system called MBROLA.\(^{34}\) To use this voice the operator must type the desired text into the system, the text is then sent over the Internet to the robot’s computer to process. The lag time to process and speak this voice is around five seconds, which seemed a distraction to the flow of conversation. The other option was to speak directly to the audience using the operator’s own voice. As I did not want a human voice but a robot one I decided on processing the voice using a custom-built audio processing patch made in Max-MSP. The patch I created utilised a chain of audio processes, including an equalizer, granualtor,\(^ {35}\) delay, reverb, ring modulation and decimation. By finely tuning the processors to the frequencies in my voice (whilst acting), the arrogant English robot voice produced the desired effect. It was a robot voice that referenced robot voices in popular culture while placing that voice within the eighteenth-century class system of English society.

I prepared texts for the work in order for the operator to respond with specific phrases. The first text used selections of the dialogue from the film The Discreet Charm Of The Bourgeoisie (1972). The second used selections of Oscar Wilde quotes sourced from the Internet and by reading Wilde’s novel The Picture of Dorian Gray (1890). The two texts were useful to begin with but I developed my own set of phrases that were more specific to the installation, such as “have a bourgeois day!” This was always said with a tinge of satire.


\(^{35}\) A third party granular synthesis object by Eric Lyon, viewed 15 December 2008, <http://www.sarc.qub.ac.uk/~elyon/LyonSoftware/MaxMSP/>
4.3.3 The technical production

The work was created with University of Western Sydney postgraduate research funding, which allowed me to collaborate with the professionals Aras Vaichas (an electrical engineer) and Mr Snow (an Internet software designer).
In the design stages, it was quickly established that the Arduino lacked the input/output capability required for the robot and therefore a custom system was needed. Aras designed and constructed a custom-built microcontroller board, similar to the Arduino but with double the RAM and quadruple the application storage size. Even though this custom board did not use all the input/outputs, the robot application grew in complexity to be larger than what could have been accommodated in an Arduino’s memory space. This extra memory allows for future expansion.

Aras Vaichas designed and constructed the printed circuit board for power distribution, regulation and control. This unit includes safe working protocols such as fuses, circuit breakers, a safety key and a multi-input interlock for controlling the power to the motors. A recharge switch turns off all electrical current to the circuit during recharge; it also uses a connector not commonly found in gallery spaces, to avoid accidental plugging of incorrect equipment. This was implemented in order to make the life of gallery assistants easier and safer. Aras wrote software for the microcontroller that commands and controls the speed, direction and amount of rotation of the motors. Thus the motors can be commanded to move a certain distance and then stop at the correct location.
The software also maintains readings of the sensor inputs such as battery levels; bump switches, a digital compass and a set of six ultrasonic range finders. The software continuously monitors these inputs and checks to see if they are within certain bounds, if they are not, then the software can be configured to alert the user or the robot to an “out of bounds” condition.

For the purposes of this work, we did not require the use of the compass and we limited the use of the range finders to two. This was due to the fact that most of the control of operation came from a human. The command set written by Aras for the microcontroller was given to Mr Snow, who then configured the flow of information from the Internet to the Asus EEE notebook PC, housed within the robot, which passed this data to the microcontroller.

![Custom software that allows the remote operation of the robot by Mr Snow.](image)

Mr Snow customised the EEE PC, which came with a Linux operating system based on Xandros[^36]. The system has been augmented to allow speech via the speech synthesis systems Festival[^37] and MBROLA and to allow motion control of a Logitech Orbit AF[^38].

camera using the libwebcam drivers\textsuperscript{39}. A suite of Python\textsuperscript{40} scripts were written to interface the various robot-side interfaces (motion, sensors, vision, speech, safety) with a web interface. Transactions occur between the website and the scripts using an Adobe Flash-based\textsuperscript{41} XML socket. The web interface has been extended to allow the user to store custom values against the action of each of the buttons. For example, the default forward movement may be 100mm, but if the operator were to request a movement of one metre all subsequent movements might be of that magnitude. Regions also allow for the sending of arbitrary commands that can be stored for later use. Commands that were not understood by the system were treated as speech instructions and therefore spoken in the MBROLA English male voice. Apart from the Flash socket object, the MBROLA voice and Skype\textsuperscript{42} (which facilitated robo-audio/vision), all software components were drawn from the open source community, most of which are licensed under the Gnu Public License (GPL)\textsuperscript{43} or similar licences (LGPL, Python, X11).

Explain in basic terms, the operator could move the camera left or right and up and down at different speeds. The operator could read information from the various sensors, drive left, right, turn (spin) and reverse at variable distances. The operator could see and hear the space and also project sound back into the space. The technical operation of the robot worked faultlessly and work with the collaborators was highly successful.

Technically the \textit{Bourgeoisie Robot} was not really a robot nor was it autonomous. It was an Internet-controlled puppet. The only things implemented to be autonomous were the safety control systems. For example, if the ultrasonic sensor data indicated an obstruction below a set threshold (30cm) the robot stopped. The most interesting aspect to this experiment was the relationship between an anthropomorphic robotic puppet and its human visitors.

\begin{itemize}
\item Camera drivers, viewed 10 December 2008, <http://www.quickcamteam.net/software/libwebcam>
\item Python programming language, viewed 10 December 2008, <http://www.python.org/>
\end{itemize}
4.4 Objectives

The objective of the work was to obtain a suspension of disbelief, to suggest intelligence through a non-organic life form. I attempted to use the aesthetics of the uncanny to trick people into believing in technological magic. As Arthur C. Clarke said, “Any sufficiently advanced technology is indistinguishable from magic” (Clarke 1973, p.14). This was achieved by performing the uncanny through the robot. One of the most interesting ways the audience responded to the work was to treat it as a real life version of the Turing test (developed by Alan Turing in 1950). The core notion of the Turing test was an imitation game in which a human interrogator submitted written questions to a computer, which would in turn reply with written answers. If, on the basis of its replies alone, the computer was indistinguishable from a human being, then Turing considered the computer to be “intelligent” or “thinking” (Regis 2008, p.45).

The audience spoke with the robot in an attempt to understand how intelligent it was or how it worked (was it operated by a human or pre-programmed?). The robot responded to the audience’s questions and commands and in fact the robot appeared to be in charge of the direction of the conversation. The robot started the conversations by saying “Good day, do come in,” or “Pleased to meet you.” The audience could then be enticed to enter the space to view the installation and to speak further with the robot.

Figure 45 The Discreet Charm Of The Bourgeoisie Robot, installation view, I.C.A.N 2008.
The robot was also in charge of the space. In the gallery there is usually a gallery attendant, one who stops people from touching or stealing the artworks. Sometimes they talk to the audience about the work, either in an educational format or as a retail sales assistant. In this case the robot replaced the gallery attendant, working as a watchdog within the space. It was the one who spoke to the audience about the work, as it was the artwork itself. The very notion that I was performing as a Bourgeoisie Robot in an art gallery (more significantly an artist-run space) raises some critical points about the state of contemporary art within an increasingly commercial art scene. The art world is an elite and often closed section of society that is frequently associated with wealth. If you are wealthy are you charmingly bourgeois? Or are you arrogant? Why does the art world consider itself elite? In this work I draw out these unspoken heresies to allow the audience to question elitism through the use of satire. The name of the gallery, The Institute of Contemporary Art Newtown (I.C.A.N), is also a satirical comment on the nature of contemporary art in Sydney. It speaks of how certain institutions claim credibility because they are government-funded or because they are a commercial gallery. The directors of the (I.C.A.N) gallery have said that they hope to secure more government funding by adopting a formal, institutional name.

I performed the Bourgeoisie Robot in order to play with these notions of the institutional and the identities that comprise the artworld. I also sought to address people’s relationship to technology within this institutional context, specifically to discover if they were scared, tricked or engaged. The work considers that perhaps context, in all its multi-layered social complexity, is a crucial factor in the rendering of the uncanny.

4.5 Audience response

As the work was a tele-remote performance I was able to see exactly how many people saw the work and how they responded to it. After each visit I made notes. I kept a log of the comments and questions made and the way in which the audience interacted with the robot. Approximately 300 people were in some way engaged with the Bourgeoisie Robot. Not included in this number were people who walked past and simply looked into the space or those with passing comments. Those who stood at the door and spoke with the robot are included although the people who made some sort of commitment to converse with the robot and the space were of most importance. Of the 300,
approximately 150 visitors were engaged in short, five-minute conversations with the robot, 50 simply stood at the door, and the rest had a longer conversation. This indicates that the majority of the audience were ambivalent towards having an in-depth interaction with technology or specifically the Bourgeoisie Robot.

Children were particularly intrigued by the robot, one young man asked if I was around during the time of the dinosaurs after I told him I was one million years old. On another occasion I had five screaming toddlers surround me, yelling at me to spin around or to chase them around the space. Middle and mature-aged audiences had a wide range of questions and inane conversations with the robot. Some people played along with the masquerade, for example an older woman put her scarf around the robot’s head, dressing it up to her liking. I asked her to take a photo of me and she asked her friend to take a photo of her with the robot. Other people were generally intrigued and puzzled as to what was going on, i.e. whether the robot was intelligently programmed or human operated. For example when D.V. Rogers conversed with the Bourgeoisie Robot he said “What is going on here?” (see Appendix A). Rogers is a technical artist and peer of mine in the field of robotic art – specifically, he works in large-scale earth works. His most recent project is an Internet-controlled earthquake simulator installed in the Californian desert. It was a great achievement for me to have D.V. in confusion as to what was happening in the work. It was the response I was after.

At times I became bored and thought up different ways of letting the passers-by know I was an artwork for their viewing pleasure. This often caused alarming results, for example if I moved the robot to the back of the space and waited until I could hear people coming, then by entering 3000mm into the move forward field, the robot drove straight towards the door (which entered on to the street) and stopped exactly before the footpath step. This frightened a few young women enough to induce screaming. After the shock had worn off they came back for further investigation, this repulsive / attraction technique has similarities to notions of the ‘double take’ or the uncanny expressed as fear.

4.6 Reflective analysis

After the exhibition I became aware of similar works of parody and trickery in the history of artificial intelligence. As Dan McKinlay noted in his review (Appendix D), “the
conversation invokes and inverts that old new-media parody, the ELIZA psychoanalysis program” (McKinlay, 2009). ELIZA is an artificial intelligence program that encourages conversation with its patient, by analysing the question and reflecting the key statements back to him or her. The program was so successful at the time that a number of practicing psychiatrists seriously believed the program could grow into a near-complete form of automatic psychotherapy. ELIZA, made to parody Rogerian psychotherapy, was named after Eliza Doolittle of Pygmalion (Shaw, G.B. 1916) fame, because it could be taught to “speak” increasingly well (Weizenbaum, 1976).

As outlined above the nature of the contemporary response to this tele-autonomous artwork has provided further insights in my formulation of concepts of the uncanny. Through the suggestion of intelligence, the Bourgeoisie Robot created a scenario in which I could perform the uncanny. This caused uncertainty amongst some audience members. There was not uncertainty as to whether the robot was alive or not, but how intelligent it was and how it could be so intelligent. The interaction in the work became a game of interrogation between robot and human. Another sense of the uncanny effect was achieved by the introduction of evocative movement in space, which often caused people to jump back in shock. The unexpected in this case happens within the context of the gallery. People expect galleries to show sculpture, still or moving images, but what they get is a conversation with a robot.

Due to the fact that it was particularly hard to be online for five hours a day and be continually on watch in case of audience visiting the work, I decided that the next work should be autonomous. I believed that autonomy is conceptually closer to the core of my research. I felt that I needed to explore tele-autonomous robotics in order to come to this conclusion. Originally, I had planned for the next work to involve multiple tele-remote operators controlling up to eight robots. This would allow people from around the world to login and remotely control different robot avatars. Instead, my collaborators and I developed five autonomous robots that responded, in design, to the scale of the Carriageworks space. The title of the next work is The Hosts: A Masquerade of Improvising Automatons.
Chapter 5  The Hosts: A Masquerade of Improvising Automatons

5.1 Introduction


The Hosts installation consisted of five larger-than-life-sized autonomous robots (an extended version of The Bourgeoisie Robot without the camera), 5 loud speakers, installed theatre lights, a control computer with a programmed sequence and hardware control switches. The work presented is the third and final solo exhibition as required by the DCA. It is the most ambitious, most challenging and developed work to date. It was made possible by the research facilitated during this doctoral research and the practice driven exploration of previous works in the portfolio. I believe that the work achieved a stronger sense of the uncanny which was however different from previous works. This was achieved through the physical size of the robots, their movement in space and the sound and light within the space. The autonomous robotic form and its presence
created a direct experience between robot and viewer; this experience (expressed to me via word of mouth and through written critique) is explained when discussing audience response (see 5.5) and in my reflective analysis (see 5.7).

I started talking with Performance Space associate director Bec Dean in early 2007. With a letter of support from Bec, I was able to secure Australia Council funding for the project. This allowed me to work with collaborators and to purchase equipment. At an initial meeting (February 2009) with Mr Snow and Aras Vaichas, I decided that the robots would be autonomous and not Internet-controlled. This meant coding behaviours in Python, a task taken up by programmer Jeremy Apthorp. Sally Jackson was hired to create the costumes and Mirabelle Wouters joined the team to advise on lighting and choreography. The final team consisted of media artist/artistic director: myself, electrical engineer: Aras Vaichas, programmer: Jeremy Apthorp, lighting: Mirabelle Wouters and costume: Sally Jackson. For full biographies see Appendix J.

I undertook the construction of the robots, testing of sensors and purchasing equipment. Aras designed circuit diagrams and had them manufactured into printed circuit boards (PCBs) and Jeremy programmed a simulation of the robots in the space. A month before the show we were on track but had never tested a working autonomous robot, due to time and space limitations. The five robots were constructed and programmed in the exhibition space over two and a half weeks; there had been some basic sensor testing done but we were unsure how the robots would function. Specifically, we did not know how the ultrasonic rangefinders would respond if they were pointed at each other, and whether this would cause interference. We were therefore relieved when Jeremy’s Avoid and Wander simulation behaviour worked perfectly; (they did not bump into any thing) from there, we developed Spin, Compass and Figure8 behaviours. The sensors were not interfering with each other and the robots were quite robust. We were hoping to develop other behaviours such as follow or line up but were limited due to time restraints. This leaves us with a platform for future development and further research (Chapter 6).

Sally Jackson did an amazing job on the costume design and creation, fitting and dressing them in time so that I could complete the sound design, and finalise lighting and choreography with Mirabelle Wouters.
As the title suggests, the work is a masquerade ball for robots. This extends the work *Olympia, the sneezing automaton*, Artspace 24/25, Sydney, 2008 with its reference to Hoffman’s *The Sandman* (1817) (Hoffmann and Bleiler, 1967), in which Nathaniel falls in love with the automaton Olympia after dancing with her at a ball. The difference in this work is that all the dancers are automatons, rather than the lone Olympia. In this version all visitors to the space are uninvited guests at the robotic performance. They become objects to avoid as the automatons improvise their dance through the space. The title also alludes to the masquerade or trick within the history of artificial intelligence /life that machines can improvise or think, when in fact they are simply programmed to act that way (detailed previously in 4.6). *The Hosts* also has multiple meanings: a person who receives or entertains guests, for example a servant robot. In my case the automatons may look like friendly hosts but in fact they ignore the viewer, preferring to do their own thing. A host is also a main or controlling computer connected to other computers via a network, and this is literally how the system works. A main computer hidden in the control booth sends and receives messages to the five robot computers.
via WiFi. This is visually represented by the steam punk-style\(^4\) light, which over looks the entire space. It was important for me that the audience was free to walk amongst the robots and experience the post-human theatre, as this allows for intimate interaction with the robots. There is a ten-minute long programmed sequence, which controls the theatrical lighting, surround sound and the different robot behaviours. The sequence starts completely in the dark, with only the robots’ eyes pulsing random blue light. The sound fades up, as well as the house lights. One by one the robots randomly come to life by starting their Avoid and Wander behaviour. The robots are programmed to behave individually and to act as a group. Further into the sequence all of the robots Spin, which is similar to a whirling dervish\(^5\) trance-like state, matched with intense light and sound. Other behaviours include Figure8, attempting ice skating-like manoeuvres, and Compass in which they travel in the same direction. The sequence was designed so that new viewers to the work would experience the sequence from the start and in the dark. This created tension and anxiety amongst the audience as they waited for the work to unfold. The sequence revealed the robotic choreography through sections of random autonomy and sections of syncipation.

The main response to the work was that the robots responded to people personally, which in reality they did not. They simply Avoided them whilst Wandering. This raises the question of people’s pre-misconception with robots, that they should serve humans or at least react to them (explained further in 5.5).

\(^4\) Steampunk is a sub-genre of fantasy and speculative fiction that came into prominence in the 1980s and early 1990s. The term denotes works set in an era or world where steam power is still widely used – usually the nineteenth century, and often Victorian-era England – but with prominent elements of either science fiction or fantasy, such as fictional technological inventions like those found in the works of H.G. Wells and Jules Verne, or real technological developments like the computer occurring at an earlier date, viewed October 2009, <http://en.wikipedia.org/wiki/Steampunk>

\(^5\) The Mevlevi Order are a Sufi order founded in Konya (in present-day Turkey). They are also known as the Whirling Dervishes due to their famous practice of whirling as a form of dhikr (remembrance of God). Dervish is a common term for an initiate of the Sufi path; the whirling is part of the formal Sema ceremony, viewed 30 October 2009, <http://www.hayatidede.org/popups/about_sema.htm>
5.3 Production and aesthetic decisions

The scale of the robots was developed in response to previous works and in relation to the exhibition space, 17m long x 15m wide x 5.5m high. The robots’ size was 2.3m high and 1.3m wide at the base. In designing larger-than-human-sized robots, I sought to work with the height of the large space and to overpower the human audience, creating a slightly intimidating presence. The design further extended previous works Rococo Vortex (see 4.1.3) and the Bourgeoisie Robot (see 4.1.3) by making the wire frame in two parts, the dress and the bodice. The bodice extended the original form, creating a bottle- or bell-like shape. On the top of the bodice I mounted a platform, which secured the lights and the IR module; covering these was a plastic dome similar to that of the Bourgeoisie Robot Housed underneath the dome were two programmable LED lights (Blinkms\textsuperscript{46}), a spotlight and IR module. The lights in the dome represent the eyes of the robot. The IR module was designed to allow the robots to communicate with each other. Although the IR beacons were not used in the final programming, they served to create subtle pulsing light effects. If the module detected another robot, a small LED flashed blue; if not, they flashed red. This visually represented intercommunication between the robots.

\textsuperscript{46} Blinkm by Thingm, viewed October 2009, <http://thingm.com/products/blinkm>
The outer shell covering the electronics is an oversized wire frame crinoline that is fancily dressed, referencing the beginnings of European automata in the eighteenth century. Underneath the dress was a petticoat lined with foam, concealing the visible wire frame, which was visible in *Rococo Vortex* and the *Bourgeoisie Robot*. In this version I wanted to conceal the hoop frame as it distracted from the form. The costumes, consisting of a dress and bodice, were designed with the title in mind (*A Masquerade of Improvising Automatons*). Designed in consultation with Sally Jackson, the costumes were a response to masquerade ball costume archetypes. The archetypes include Princess, Clown, Rodeo, Military and Frankenstein. The overly feminine influence within the pack is Princess. Princess’s bodice was glamorously laced by pink ribbon upon a structured corset; on the front was a machine embroidered pink floral design and the dress had multiple frills on a tiered, ruffled ball gown.

It is interesting to note that princesses like to have it their way, often becoming a lot of work for the people surrounding them – who might describe them as high maintenance. In my case Princess became high maintenance because for a while she was faulty and began running into walls. I would comment “Princess is drunk,” when in fact I needed to replace a Blinkm component which interfered with the sensor communication bus. This emphasised human empathy for non-organic matter through humanisation.
Each dress was made with calico. This inexpensive natural fabric allows the base costumes of each robot to appear uniform, yet flexible enough for the different character variations within their designs. For Military this included an ammunition belt, complete with bullet shell holders, pockets portraying cargo constraining multiple buttons and military stripes. 

Rodeo’s costume, signified by the tiny cowboy hat, would be naked without lasso rope, fringing and appliqued stars, tea-dyed then hand-stitched to create contrast for a rustic Wild West appearance. 

Frankenstein’s costume revealed a textural multi-coloured surface through laces, essentially to give the impression of a skin defect with backyard surgical mending, though doomed to contaminate those who come in contact with it. Giant gnashing metallic teeth circle the structure for a terrifying monster-like appearance.

Clown has the classic harlequin patterned skirt, hypnotising black diamond shapes, and pom-poms, trimmed with an oversized ruff and bow tie for comic relief. Clowns are considered the offspring of Arlecchino (Harlequin), first presented in the seventeenth-century Italian commedia dell’arte, along with other recognisable characters such as Pedrolino (Pierrot) and Pulcinella (Punch). Although now considered comic, Harlequin originated as an evil character known under the name of Hellequin. In medieval French miracle plays, he is portrayed as the messenger of the Devil, coming straight from the inside of the earth (hence his blackened face) and leading a boisterous gang of evil spirits, la maisnie hellequin. Contemporary culture has brought back this repressed image of the clown as the messenger of the Devil, for example the killer clown, John Wayne Gacy, or as in Stephen King’s book IT (King, 1986).

5.3.2 Sound and light

Each robot had a small speaker inside the dress that was mounted to the top of the middle stand at around head height. The speakers were powered and connected to the Asus EEE pc laptop which stored sound. Each robot had a collection of twenty short vocal samples loosely matched to the costumes of the robot. Five of these samples were randomly triggered from within the four main behaviours. During Wander, the first five vocal samples are randomly triggered and the spotlight triggers at random times.
and lengths. If an object is detected (Avoid), the spotlight and sounds are also triggered. In each behaviour the LED lights were programmed to be different colours and patterns. In Avoid and Wander the LED’s pulse random blues; in Spin they glow magenta; in Compass they glow orange; and in Figure8 they flash white. This provides visual feedback that the program switch has been successful and adds to the aesthetics of distributed AI. Kristina Harrison was recorded as the voice talent for the Clown’s laughter and Princess’s ecstatic moans and upper-class gibberish. Military whispers sections of The Sandman, as previously used in Olympia, the sneezing automaton. Frankenstein also whispers sections of The Sandman spoken by the artist Debra Petrovich. Rodeo speaks abstract voice effects by Kusum Normoyale and also whispers to be quiet (voice by Ella Barclay). The voice samples ranged from abstract sounds to spoken word, some of which were further processed to emphasise their electronic nature. Frankenstein’s text was directly related to the concepts surrounding the work; for example, the robot said, “Do you love me?” as in The Sandman. When Frankenstein says “the sleep of death”, it is announcing itself as a moving corpse and thus reminds the viewer of his or her own mortality.

At ceiling height, at each corner of the space I installed a quadraphonic speaker array, with the speakers facing down; there was also a subwoofer speaker on the floor in the left rear corner. The five speakers connected to a fireface\(^{49}\) surround sound computer interface, which allowed the sound to be programmed in the round. The atmospheric audio was created in the lead-up to the installation and was scored into six parts. The audio was then programmed to match the choreographed sequences. The sounds were created in custom-built Max patches to form the other worldly/sci-fi soundscape with a slightly menacing tone. The structure of the two five-minute sections built up slowly to a climatic crescendo, matching extreme lighting and whirling robotic movement.

The lighting of the space was designed to complement the industrial aesthetic of the space in an attempt to avoid theatre-style lighting. Irregular internal fan shapes masked halogen dimmers installed in the air conditioning ducts. This created a multi-layered triangle mosaic on the floor. The control room was visually represented by a large 1920’s photographic light that overlooked the entire space. This was dubbed the Godhead as it was the all seeing eye looking down from above. The control room was also lit with two spotlights covered with cyan gels to emphasise its role as the hub of

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communication. The lighting was programmed with the assistance of Mirabelle Wouters. The lighting was programmed to match the various scenes within the sequence. The states were *Off*, during which the space was completely dark except for the robot’s blue eyes; *Introduction*, which faded up the control room and roof lights to an accepted visible state; *Pulse*, during which all house lighting faded up and down. This was used during the first spinning robot sequence. In the *final* state we used only the Godhead to pulse up and down brighter than it had previously. This was used for the second spinning robot sequence and was matched with intense sound. This represented a trance-like state and suggested that the light was messaging to the robots to leave the space and to return to their robot world. This state was also a climatic closure as it ended with a cut, returning to the *Off* state of complete darkness. Through the use of a Lanbox\(^50\) I was able to connect and program the DMX\(^51\) lighting rack via Max.

5.3.3 Technical production

Each of the five robots had the same technical construction and software, the only differences were in the costumes and their sounds. The base was made from plywood and MDF, the stand from aluminium and the hooped frame from steel.

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\(^{50}\) DMX/Ethernet interface by lanbox, viewed September 2009, <http://www.lanbox.com/

\(^{51}\) DMX is a standard protocol for digitally networked equipment, it is mainly used in the entertainment industry to control lighting.
There are two wooden bases, one octagonal and one circular. The two are bolted together using the Parallax motor mount kit. The kit is matched with the Parallax HB-25 motor drivers. The bases house a 12V 40Ah Sealed Lead Acid battery; the battery is used to power the system and was recharged every night before the exhibition opened. After recharge the robots ran for approximately 12 hours. The battery is connected to the power supply unit (PSU), which regulates the power to the various electrical components. This can be manually controlled via four switches: mains, motor drivers (12V), microcontroller (5V), and laptop (9.5V, EEE pc’s). Aras custom designed and built the PSU, the infrared beacons, printed circuit boards for sensor mounts and the microcontroller. He also programmed the microcontroller in C. The microcontroller has connection points for the various sensors via a 3 port I2C shield. The ports are used to

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connect a network of thirteen SRF02\textsuperscript{53} ultrasonic rangefinders, a CMPS03\textsuperscript{54} digital compass, two Blinkm LED lights and an IR module. The I2C shield also has connection ports for the switchable LED spotlights.\textsuperscript{55} The SRF02 ultrasonic rangefinders can detect distances of up to 7 metres and are read via the I2C protocol. This allows sensors to be connected to the microcontroller using just 2 wires in a daisy chain. The constant reading of the sensors is the main sense the robots have for navigation. The command list below is a breakdown of the code on the microcontroller. Jeremy Apthorp used the command list to develop the robots’ behaviours.

Figure 51 The Hosts: A Masquerade of Improvising Automatons, undressed, 2009.

<table>
<thead>
<tr>
<th>Mr</th>
<th>Move Rightwheel: x[mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>Move Leftwheel: x[mm]</td>
</tr>
</tbody>
</table>

\textsuperscript{53} Ultrasonic rangefinder SRF02, viewed 8 September 2009, \url{http://www.robot-electronics.co.uk/htm/srf02tech.htm}

\textsuperscript{54} Digital compass CMPS03, viewed 8 September 2009, \url{http://www.robot-electronics.co.uk/htm/cmps3tech.htm}

\textsuperscript{55} LED lights used, viewed 8 September 2009, \url{http://www.besthongkong.com/product_info.php?cPath=9_54&products_id=631&osCsid=14861a0b9306ca268365ed4df7b3258f1}
Wade Marynowsky; An exploration of the uncanny in autonomous artworks.

Mw  Move Wheels: left[mm] right[mm]
Mt  Move Turn by: a[degrees]
Mf  Move Forward: x[mm]
Mcc Move Circle Clockwise: distance[mm] radius[mm]
Mc  Move Circle Anticlockwise: distance[mm] radius[mm]
Mh  Move Halt - slow stop
Me  Move Emergency Stop - sudden stop
Ms  Move Speed: left[mm/sec] right[mm/sec]
Ma  Move Acceleration: a[mm/sec^2]
Maa Move Arrival Alert: enable[0|1] tolerance[0-255]
Rr  Readings Range -> R1 ... Rn in [mm]
Rb  Readings Bump -> B1 ... Bn in [0|1]
Ri  Readings IR Beacon -> F:[3,7, etc] L:[...] B:[...] R:[...] T:[...]
Rh  Readings Heading -> heading[degrees]
Rv  Readings Voltage -> Vb[mV]
Rs  Readings Speed -> left[mm/sec] right[mm/sec]
Rp  Readings Motor Position -> left[ticks] right[ticks]
Lc  Lights Control: channel[1|2] enable[0|1]
Lf  Lights blinkm Fade: red green blue
Ls  Lights blinkm Script: script[script#]
Trs Trigger Range Stop: enable[0|1] range[mm]
Tra Trigger Range Alert: enable[0|1] Range[mm]
Tru Trigger Range Update: enable[0|1] dRange[mm]
Tbs Trigger Bump Stop: enable[0|1]
Tis Trigger IR beacon Stop: enable[0|1] ID[bitmap16]
Tia Trigger IR beacon Alert: enable[0|1] ID[bitmap16]
Tiu Trigger IR beacon Update: enable[0|1]
The behaviours include *Off, Manual, Avoid and Wander, Spin, Compass* and *Figure8*. The main behaviours used are explained as follows:

**Wander** polls the sensors and takes the output from sensors 9 and 3. It takes the difference sensor[9] - sensor[3], then divides that by 20. The speed of the left wheel is set to $300 + \text{diff}$, and the speed of the right wheel to $300 - \text{diff}$. Both these speeds are bound within the range $200 \leq \text{speed} \leq 600$: if the speed is over 600, it is set to 600; if it is under 200, it is set to 200.

**Avoid** checks if any of the sensors are reporting values less than a threshold value (1m). If they are, it stops and turns in a random direction until the sensors don’t report that something is close. Included in Jeremy’s code are watchdog wrapper applications which check that the main application has not crashed; if it has it relaunches. Jeremy’s code resides on the EEE pc (which is connected to the microcontroller) and automatically launches on start up. The EEE pc’s also connect to the installed WLAN on start-up. I programmed the central control computer (Max/msp) to talk to the different robots’ computers via the WLAN. As a safety precaution the central computer listens for individual robots’ heart beats (sent and received data); if the central computer goes down the robots are programmed to stop.

The control computer receives battery levels for each robot and displays this value on screen; this allows gallery assistants to monitor their performance. Central control also sends the various behaviour commands from within the ten-minute looped sequence, which also controls the lighting and sound. In case there is no audience, gallery
assistants can manually trip a kill switch at the door, saving battery life. This stops all movement, sound and dims the lights. The sequence is also reset. A reed switch mounted to the door and connected to the control computer triggers the sequence to start again, once the door is closed.

5.4 Objectives

Performative media is a strand in the broad field of live art. Live art creates systems from which unexpected events can occur. I sought to create a new live art experience, by allowing audiences to walk freely amongst my robots. I have never experienced an artwork in which untethered robots come towards the viewer and respond to them in some way. So I too wanted to experience that which often only exists in popular media. In experiencing the work I sought to invoke questions about notions of life. For example, if the work is autonomous, is there anything live about the performance? Can there be unexpected events? Also, what is alive and what is not? And why do we fear something that confuses this? The experience asked for the acceptance of autonomous objects as embodied or living, to accept the Taoist philosophy that everything is alive while at the same time exploring our repressed fears in relation to automata. The underlying objectives of the work were to see if I could create a new uncanny experience and to test Masahiro Mori’s Uncanny Valley hypothesis. The hypothesis states that one should not design robots too humanlike as they will become unnerving. I sought to test if an unnerving effect could still be reached if the robots where designed not to be too humanlike, to reach the Uncanny Valley with abstracted humanlike forms. This was successfully achieved, as stated by Bridie Connell: “*The Hosts* demonstrates that whilst it is true that robots that look ‘human’ are creepy, Marynowsky’s alternate offerings – robots that look like ‘robots’ but engage in simulated human social activities – are equally unsettling!” (Connell 2009, p.28).
There was not an intended response to the work but a system in which inter/reaction was able to take place. There were certain ambitious ideas, such as surrounding human visitors, which in the end could not happen due to time restraints and technological developments (see Chapter 6). If these objectives were met, a totally different response would have been observed. Although the reaction between the robots and the viewers was not interactive, the autonomous nature created an interesting audience response. The opening night drew a crowd of approximately 400 people. The space was managed by volunteers who were instructed to let a limited number of, approximately twenty people in at one time. This caused a large queue outside the entrance to the space. The queue created anxiety and suspense so that once inside the excited audience members crowded the robots, looking for some kind of response. Some stood in front of the robots waving theirs hands at the robots’ heads, thinking that there were cameras detecting their movement. The crowding of the robots limited their movement within the space and the crowds began to talk, disrupting the ambient sound for other more contemplative viewers. This encouraged some audience members to revisit the work at other times and to enjoy it in smaller groups. Many people were also able to experience the work by themselves.
The most interesting aspect of this work was the feedback that people gave, almost all of which noted how the robots responded to them personally.

“The robots were coming towards me”,

“I went to lift the robot’s skirt and it drove away”,

“The robot called me a wicked man, how did it know?”,

“Three robots surrounded me and then stopped and switched their eye lights on at me!”,

“They all turned and gathered around me. I felt psychically powerful, like a child with extrasensory perception (ESP), but then they started spinning madly and I realised I was meddling with forces I could never understand.”

The main question people asked me was, “Did the robots respond to me”? The answer they received was “No, they do not care for humans.” This raises the question of people’s misconceptions of the work, which could be based on knowledge of my previous work or their own ideas of how robots should behave. In the program notes it stated that the work extended my development of custom-built robotics and interactive, performative media. In my previous work I spoke with the audience through a robot; this was obviously interactive. The Hosts are simply reactive, they respond to the proximity of objects, they do not know the difference between a human, a robot or a wall. The audience wanted to be the center of the robots’ attention, they wanted to have conversations with the machines. They wanted to be followed by them, to dance with them. I am pleased that they are not interactive as this creates the illusion that they have a mind of their own, that they are “autonomous beings, improvising” (Dean, 2009).

The feedback from the associate director of Performance Space, Bec Dean, was that the work was very accessible; for example, she took a class of kindergarten children through the work. I have also observed senior citizens viewing the work, as well as wheelchair-bound people. I also witnessed large numbers of children enjoying the work, although some were also afraid. A friend commented that he experienced a five-minute spine tingling sensation; this was the kind of response I was after.

Over the duration of the month-long exhibit I received an overwhelming range of responses. Word had spread that this was one exhibition everyone should see, and according to headcounts approximately 2500 people did. The main association people made was that the robots reminded them of Daleks, or Daleks in drag. The second most popular comment was that the robot reminded them of the whirling dervishes.

In conversation with the artist Melody Willis.
had not intended to make my robots look like Daleks and I do not believe that they do. I did not intend that my robots reference whirling dervishes but I do, however, imply that they may enter a trance-like state by whirling, in a way not concerned with religion.

5.6 Reflective analysis

The scale of the robots worked to create a stronger sense of unease in the viewer, rendering them inferiorly small in comparison. Autonomous movement in space helped to create the illusion of artificial intelligence, both programmed and random. Eerie sound and light alluded to the desired uncanny response. This included moments of complete darkness and sections of intense sound and light. The technology worked well with only a few technical issues, which we were able to fix quickly. The batteries were strong enough to last up to 12 hours a day.

The reverberation in the space was massive; people and the dresses absorbed some of the sound, but at times it was difficult to hear the individual robot voices. This may have been addressed by installing curtains on the walls, but curtains would have to stop a few feet above the floor to allow for correct sensor readings as it has been noted that the ultrasonic sensor readings can be absorbed in thick material. Original ideas for the space included transforming it into an interior similar to that of a ball room (achieved
through the use of tacky wall paper and chandeliers). Another idea was to install mirrors throughout, referencing the Hall of Mirrors in Versailles. This would have added to the robots’ narcissism. Instead I chose to leave the space as it was and attempted to emphasise its industrial and futuristic qualities. The main features of the space are its large concrete walls: the two side walls were covered in wood painted black, and the rest were left as concrete, except for black door covers. This created tension between historical periods, the lusciously dressed eighteenth-century styled robots in the 1990’s industrial CarriageWorks conversion.
Chapter 6 Future work

In the *The Hosts: a Masquerade of Improvising Automatons*, 2009, I was able to develop a work, which could only be made by working in collaboration and across art forms. Although successful, the work was not developed to its full potential. This was due to fact that we only had two weeks in the space to build, create and test the robot's behaviours, and to create relationships between sound, lighting and choreography. The robotic artwork's full potential was limited due to timing, budget and lack of rehearsal space for testing. The significant outcome of this project is that we now have a strong robotic platform for research and development as well as a strong collaborative team.

I would like to state that while this is still a new collaborative team it has great potential yet to be exploited as an ongoing collective. In addition to the current team I plan to work with programmer Mr. Snow and physical theatre company Branch Nebula, which consists of Lee Wilson and Mirabelle Wouters.

In the short time available to develop *The Hosts* we were able to create a basic set of sequenced choreographic and reactive behaviours. The main behaviour used was *Avoid and Wander*, this allowed the robots to randomly navigate the space without bumping into walls or audience members. This essentially reactive behaviour gave the audience, sharing the space with the robots, a sense of interactivity. To take the work to the next stage (and beyond) it needs extensive research and development through rigorous experimentation across art forms to enhance the interactive nature of the work and explore new possibilities. This can only be achieved with access to appropriate rehearsal space and by working intensively within the collaborative team environment for an extended period.

The main area of this research is the development of live-networked robotic performance systems and the development of new audience experiences. Of critical importance here is enhanced inter-activity (rather than reactivity) and mixed reality environments where the boundaries between viewer and performer become blurred.

The stages of research and development I seek to explore in the future are: the development of inter-communication between robots allowing them to interact with each other; the development of the robot detection of humans and other objects; the
development of artificial intelligence for poetic communication between robots and or humans; exploration of the theatrical potential of combining real performers with robotic ones; and exploration of the evocative nature of changing states or scenes through the use of automated lighting, sound, robotic movement and set changes.

1) Robot inter-communication.
Inter-communication between robots would be used to further explore dance – like choreography. Such as a behaviour that allows robots to follow each other creating choreographed ring or star formations. This would require a system of absolute positioning so that the robots could let other robots know of their position in space.

2) Robot detection of humans.
Detection of humans allows for interactivity between robots and humans. Previously the robot reacted (via movement, sound and light) to objects in its path, it did not know the difference between a wall, a robot or human. Human detection combined with intercommunication could see the development of a swarm behaviour in which robots surround human(s). It could also allow robots to follow humans. If the robot knew the difference between a human, a wall and another robot they could decide from multiple next step operations.

3) Artificial intelligence
With the introduction of artificial intelligence through the use of, for example, NLPT (Natural Language Processing Toolkit\(^\text{57}\)) robots could audibly respond to humans in poetic ways. AI would also allow for the development of various emergent behaviours to become present. This would allow for a stronger connection between audience and robot because of the quasi-intelligent response.

4) Real performers
The potential to blur the boundaries between audience and performer could be addressed directly through the use of human plants dressed as robots. This would most definitely confuse the boundaries of what might be considered alive and artificial.

\(^{57}\) Natural Language Processing Toolkit, viewed 2 December, 2009, <http://www.nltk.org/>
5) By exploring the evocative nature of changing ‘states’ or scenes through the use of automated lighting, sound, robotic movement and set changes we seek to explore the potential of fully automated robotic theatre. An experience in which audience can enter at any stage and become apart of the evolving performance/artwork.

Sections 1)-3) will be researched in detail with the technical team, which includes Aras Vaichas, Jeremy Apthrop, Mr.Snow and Wade Marynowsky. Mr.Snow will specifically work collaboratively to realise Section 3) Artificial intelligence through the use of the Natural Language Processing Toolkit.

The physical theatre group Branch Nebula and Wade Marynowsky will research in detail sections 4) and 5). The whole team will also be involved in meetings in order to cross- pollinate ideas, develop research processes and to discuss inter- collaboration.

To develop the technical aspects of the research a series of collective sketches and prototypes will be created. This involves small meetings, online conferencing and workshops. A series of open robotic workshops will take place at Sydney Hackerspace 58 of which Jeremy Apthrop is the current treasurer. The Hackerspace is a non-profit workshop space dedicated to the collaboration and experimentation between electronic and technical minded enthusiasts. In opening up the workshops we hope to encourage community interest, discussion and skill sharing.

The inclusion of Branch Nebula within the team will push the boundaries of the roaming spectator experience, and will be invaluable in the investigation of a more theatrical experience of the robotic platform. In the creative process Branch Nebula’s role is to act as a conduit to the audience experience, offering themselves alternatively as guinea pig audience members, or playing as live beings alongside the robots. Branch Nebula will extend the spatial movement of the robots’ trajectory with a choreographic inquiry and explore the possibilities of human-robot dialogue. Branch Nebula will also contribute to the creative process and exploration of the idea of ‘states’. The investigation of these ‘states’ will be multi-levelled, not only with lighting, sound, set and design, but also how in a psychological sense, these ‘states’ can be evoked by the robotic presence and their actions.

The interdisciplinary research and development will take place over a two-year period in and around the Sydney area. In addition to the Hackerspace sessions a series of residencies have been confirmed at Bundanon 2010, Artspace 2010 and the Performance Space 2011. Bundanon is booked for April 2010 its focus will be on dynamic and reflexive meaning making through group meetings. A series of human to human and human to robot physical experiments will be conducted by Branch Nebula. During the Artspace residency the group will continue to experiment with the technical, conceptual and physical interactions, this will include an open studio event. The final residency will take place at the Performance Space. During this residency we will have the appropriately sized space for robot and human interaction assessment and access to lights and sound systems for exploring different theatrical ‘states’. This setting will allow the appropriate format of the public showing. The final open studio showing will again be used as feedback into further research.

Chapter 7  Conclusion

Through this exegesis and associated portfolio of work, I have explored the origins, developments and current explorations of the uncanny. I have made autonomous artworks that sought to incorporate the uncanny as an aesthetic, in order to create new uncanny moments. I must admit I did not experience the uncanny in my own artworks. I have however had one truly uncanny moment to date, this happened during the start of this research in 2006:

I was riding my bike down a lane way and saw a lady pushing a pram, she was also carrying a doll by her side. The way that she carried the doll down low by her waist suggested it was very light; the doll was staring into the void with glazed eyes. I thought to myself that’s an amazing looking doll, they make them so realistic these days. Then it flipped, the doll blinked, it was not a doll at all but a real child. I felt a mental sensation I had never experienced in my life, it was like my brain had a short melt down. It twisted and reversed its circuitry to reassess the situation. Was this the repressed resurfacing from my childhood where I learnt the difference between what is alive and what is not?

Although I have not experienced the uncanny in my own artwork other people have
The interdisciplinary research and development will take place over a two-year period in and around the Sydney area. In addition to the Hackerspace sessions a series of residencies have been confirmed at Bundanon 2010, Artspace 2010 and the Performance Space 2011. Bundanon is booked for April 2010 its focus will be on dynamic and reflexive meaning making through group meetings. A series of human to human and human to robot physical experiments will be conducted by Branch Nebula. During the Artspace residency the group will continue to experiment with the technical, conceptual and physical interactions, this will include an open studio event. The final residency will take place at the Performance Space. During this residency we will have the appropriately sized space for robot and human interaction assessment and access to lights and sound systems for exploring different theatrical ‘states’. This setting will allow the appropriate format of the public showing. The final open studio showing will again be used as feedback into further research.

Chapter 7  Conclusion

Through this exegesis and associated portfolio of work, I have explored the origins, developments and current explorations of the uncanny. I have made autonomous artworks that sought to incorporate the uncanny as an aesthetic, in order to create new uncanny moments. I must admit I did not experience the uncanny in my own artworks. I have however had one truly uncanny moment to date, this happened during the start of this research in 2006:

I was riding my bike down a lane way and saw a lady pushing a pram, she was also carrying a doll by her side. The way that she carried the doll down low by her waist suggested it was very light; the doll was staring into the void with glazed eyes. I thought to myself that’s an amazing looking doll, they make them so realistic these days. Then it flipped, the doll blinked, it was not a doll at all but a real child. I felt a mental sensation I had never experienced in my life, it was like my brain had a short melt down. It twisted and reversed its circuitry to reassess the situation. Was this the repressed resurfacing from my childhood where I learnt the difference between what is alive and what is not?

Although I have not experienced the uncanny in my own artwork other people have
expressed variants of the uncanny to me after viewing my works. These experiences include spine tingling sensations and states of fear and confusion. By allowing the uncanny's definition to broaden we accept that it is not one definable thing or feeling. When defining feelings words are often not enough, this is where art and aesthetics comes in.

In the process of conducting practice based art research (Visual Arts Knowing, Chapter 1.1 (Sullivan, 2005)) I was able to interpret the surrounding discourse, through the research of context and predecessors (Chapter 2). This body of knowledge formed a basis for my journey of exploration. It was a starting point for ongoing dialogue, discourse between myself and the audience, participants and theorists has continued through each consecutive artwork through critical feedback and personal assessment. This “dynamic and reflective meaning making” is described by Sullivan as ‘trancognition’ “a cognitive coalition of ongoing dialogue between, within and around the self, artworks, viewers and settings, where each step is used to help create new understandings” (Sullivan 2005, p.190). My research and knowledge of current robotic technologies also grew with each consecutive artwork. This allowed the final work The Hosts to be technically advanced well beyond that which I could have achieved without the research and collaborative team.

I conclude that contemporary uncanny moments can still be produced, and will continue to be produced also that they may still not be clearly definable. I believe that I was able to produce them to varying degrees in different people through the documented artworks but my own take on the uncanny was often mixed with humour rather than fear. I believe that the uncanny in a contemporary response can be akin to that of the early accounts of this phenomenon outlined in chapter 2.

Accounts of the uncanny have been expressed through the critiques of my work, which have been published in various art journals and magazines. Sean Lowry talks of the technological uncanny when critiquing Autonomous Improvisation v1, stating, “Just as cinema once provided a new and strange way of experiencing life, the computer is now seemingly and endlessly extending our experience of the uncanny” (Lowry 2008, p.113). I would add that computers are extending our understanding of the uncanny because they can be programmed to be so, i.e. the author makes the artwork uncanny through a combination of code and aesthetics. As Micheal Arzen states,
“The Autonomous Improvisation v1 exhibit employs stock icons of the uncanny in random patterns (e.g. images flicker on the wall like ghosts, projecting masked singers who look like dolls, mix-mastering clowns working turntables, etc., while the old-fashioned pianola works like a player piano with candles aglow in its heart), but the real effect of the uncanny is felt when all of this “clicks” into an accidental surprise where it seems like the object is actually making music and working in some kind of uncanny harmony” (Arnzen, 2008).

Reinforcing my conclusion that (in my research) the uncanny is a combination of technology and aesthetics, Ryszard Dabek states (critiquing The Bourgeoisie Robot), “The sense of unease that one felt when conversing with this robot alter-ego was as deeply rooted in the performance itself as it was in the technology that Marynowsky employed as his performative apparatus” (Dabek 2009, p.46). Bruce Barber goes so far to state that the uncanny could be achieved without the computer; in his critique of Olympia, the sneezing automaton (2008) he writes, “Brilliantly uncanny, this performance was spectacular even without the computer intelligence and the artist directing their movements” (Barber 2009, p.71). While exploring various levels of the uncanny in developmental work (The Bourgeoisie Robot), Ryszard Dabek has contextualised my research as follows:

“For Sigmund Freud the latent power of the automaton to invoke feelings of the uncanny was in part located in the way it rendered the familiar movements of the body unfamiliar, the very gap of representation. Japanese roboticist Masahiro Mori more recently observed that the narrower the gap between human and robot behaviour the more profound this sense of unease. He identified a range of such manifestations as precipitating the Uncanny Valley, a type of psychic no-mans land occupied at its deepest point by animated corpses. By a sleight of hand, or more precisely, a performative rigour underpinned by a complex technical system, Marynowsky managed to steer his pseudo-automaton if not into this valley at least to its very edge” (Dabek 2009, p.47).

In my final work I was able to combine my research to control additional sound and light elements, which undoubtedly created new uncanny moments. As Birdie Connell has stated, “The Hosts demonstrates that whilst it is true that robots that look ‘human’ are
creepy, Marynowsky’s alternate offerings – robots that look like ‘robots’ but engage in simulated human social activities – are equally unsettling!” (Connell 2009, p.28). This statement suggests that Masahiro Mori’s Uncanny Valley hypothesis is limiting artistic freedom, the freedom to explore the uncanny as an aesthetic in its own right. This notion of the uncanny aesthetic is explored in David Hanson’s research, The “Path of Engagement” (POE) (Hanson, Ismar, Pereira & Zielke 2005, p.7). As an artist I am more interested in what Haraway refers to as “pleasure in the confusion of boundaries” (Haraway 1991, p.150). As Margaret Seymour states in her paper, Cyborgs and robots: imitation or provocation?:

“Marynowsky is interested in the point at which one thing flips over into it’s opposite – an uncanny moment when the familiar becomes strange. The Hosts perform this crossing over on many levels. They are at the same time both figure and machine, intelligent and programmed, male and female - Marynowsky describes The Hosts as transgendered” (Seymour 2009, p.6).

What lies ahead, which will turn my whole question on its head, can happen only when a fully cognitive robot says to the human “What makes you so uncanny?” As Dan MacKinlay questions in his review of The Hosts (“Dancing Machine”), “Are we anticipating the time that our contraptions will accuse us of being mere imitations?” (MacKinlay, 2009b).

Appendices

Appendix A  DVD Documentation – Exhibited Works.

Appendix B

Alien Jukebox: Wade Marynowsky’s Autonomous Improvisation v1
Sean Lowry, Column 1; Artspace Publications (Lowry 2008, p.113).
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What lies ahead, which will turn my whole question on its head, can happen only when a fully cognitive robot says to the human “What makes you so uncanny?” As Dan MacKinlay questions in his review of *The Hosts* (“Dancing Machine”), “Are we anticipating the time that our contraptions will accuse us of being mere imitations?” (MacKinlay, 2009b).

Appendices

**Appendix A**  DVD Documentation – Exhibited Works.

Track 3: *Autonomous Improvisation v1*, 2007.

**Appendix B**

Alien Jukebox: Wade Marynowsky’s *Autonomous Improvisation v1*  
Sean Lowry, Column 1; Artspace Publications (Lowry 2008, p.113).
A customised automated Pianola and a series of hidden networked computers programmed to control the selection and duration of pre-recorded video performances together present an ever changing audio-visual ‘mash-up’ of Sydney’s improvised music/performance scene. The intermittent sound of the Pianola itself collides unpredictably with the strangely inhuman rhythms created by the random juxtaposition of thirty-seven pre-recorded performers projected across three video channels. Where else might you witness transgender burlesque, death metal, techno/toy gadgetry mixed up with a bit of classical avant-garde and didgibone? Welcome to the world of Wade Marynowsky’s *Autonomous Improvisation v1*, exhibited at Artspace from April 20 to May 19, 2007, a curious automated installation featuring various Sydney based performance artists and musicians pre-recorded to video in a controlled studio environment. In this strange automated audio-visual world, body paint, clown suits and gimp masks cut in and out unpredictably together with ‘serious’ laptop musicians, knob-twiddlers and Theremin gesticulators.

Wade Marynowsky is a Sydney based new media artist who uses custom-built programs across a range of media (and under aliases such as The Pink Gimp, The_Geek_From_Swampy_Creek, AC/3P and Spanky). *Autonomous Improvisation v1* is arguably Marynowsky’s first major work, and was developed in conjunction with the Artspace residency program especially for exhibition at Artspace. For those familiar with Sydney’s contemporary performance and sound art world, the video footage Marynowsky has produced for *Autonomous Improvisation v1* also serves as an unprecedented archive of the work of artists Dave Noyze, Toydeath, Charlie McMahon, Adrian Bertram, Kristina Harrison, The_Geek_From_Swampy_Creek, Lucas Abela, Robbie Avenaim, Peter Blamey, Monika Pazniewska, Dallas Dellaforce, Jim Denley, Peter Farrar, Robin Fox, Brian Fuata, Dale Gorfinkel, Singing Sadie, Rev Kriss Hades, Ian Pieterse, Marty Jay, Josh Shipton, Hirofumi Uchino, Somaya Langley, Trent Mardan, Shannon O’Neill, Gail Priest, Rory Brown, Mark Selway, Milica Stefanovic, Matthew Stegh, Amanda Stewart, Pizzo (George Tillianakis), Clayton Thomas, The Toecutter, Trash Vaudeville, Jon Wah and Dave Slave.

Without prior knowledge, Marynowsky’s strange bursts of cut-up noise and vision might appear like some kind of rabid multi-layered ‘channel-surfing’ symptomatic of an alien attention span even shorter than ours. Under digitally projected candlelight, the sound of the customised antique Pianola, coupled with the audiovisual menagerie of paradoxically generic individuals, intermittently appear and then disappear. Since all contributors were filmed individually under identical conditions (alone in centre frame and lit against a black background), a certain level of continuity is maintained despite the unpredictable cut-up nature of the exhibited projection.
Again, without prior knowledge, we might be reminded of US artist Christian Marclay’s impressive *Video Quartet* (2002), a four channel video installation simultaneously playing clips sampled from numerous popular and historical films, all meticulously edited together to produce an strange yet cohesive mash-up of horns, whistles, voices, strings and domestic noises. From a soprano’s trill to clashing cymbals to guitar feedback to gunshots and slamming doors, disparate visual elements somehow blend seamlessly with corresponding audio clips to produce a convincing symphony. Like Marynowsky’s work, the audio in *Video Quartet* finally matters as much as the visuals. But Marynowsky has actually taken Marclay’s audio-visual mash-up two steps further. Working neither with found footage nor a conscious compositional editing methodology, Marynowsky’s system extends Marclay’s 12-minute duration toward infinity. In a decade defined by durational video installation work it was amusing to watch visitors to Artspace sit patiently waiting for *Autonomous Improvisation v1* to ‘loop’. Others, once realising that it would never repeat exactly the same sequence, could be heard whispering, ‘you should have seen what it did earlier!’

Since Marynowsky has programmed a computer to randomly trigger the length and duration of each individual performer’s improvisation, he has effectively removed any compositional deliberation from the relationship between the individual contributors and their phantom conductor. This is where Marynowsky questions the notion of improvisation. Can a computer improvise? Considering that humans determine a computer’s capabilities, the answer to this question is ultimately semantic. Improvisation involves a dialogue between the thoughtful and the thoughtless. Whilst Marynowsky probably experimented with the kind of random patterns appropriate for the work (certain parameters must be consciously determined), he has also devised a system in which some decisions are relinquished to automation. The outcome, like improvisation itself, is therefore the consequence of the dialectical interplay of two approaches. Some parameters are controlled whilst others are given over to chance. Conscious thought makes plans and then invites chance in to work to its end. Perhaps we sometimes recognise in chance that we have been actively striving for in consciousness. At any rate, the uncanny (anti)compositional experience that is *Autonomous Improvisation v1* exhibits the kind of strange poetry that could make the ‘conscious’ creative mind jealous.

Under the right conditions, complex patterns and sequences can emerge from the interaction of simple interacting events. Beyond art historical debates surrounding form versus content, formlessness constitutes that which stands outside such oppositionalities. Artists have long created systems or parameters in which events might unfold. Whilst the exact outcome might be
unknown, a kind of outcome is expected. From abstract expressionism to Fluxus to so-called
process art, whenever an artist has waited for something to rust, for torn paper to fall, for
 mediums to react with one another, for randomly cut up audiotape to be spliced together, or for
an audience to interact with a performance, repeated activities are demonstrated to produce self-
similar outcomes rather than specific outcomes. Since Marynowsky has devised the program, he
has also designed the kind of outcome that it will produce. But in establishing the parameters
within which the work will operate, the fact that its final configuration is automated does not
necessarily imply that the technology is acting ‘on its own accord’.

In that chance is commonly defined as something that happens unpredictably without discernible
human intention or observable cause, what role does chance play within Marynowsky’s system?
This question is of course confused once we consider that Marynowsky has consciously
employed skill, taste and imagination to conceive a system in which chance plays a role. From
Dada onwards, chance was considered central to the modernist enterprise of experimental artistic
production. Located somewhere between conscious creation and random occurrence, between art
and anti-art, or between the rational and irrational, the paradoxical question of chance in art is
certainly nothing new.

But many people still question the so-called artistic merit of facilitating the role of chance. The
jury is still out on to what degree chance dictates the action of allowing paint to fall and splatter,
let alone the idea of actually programming it. At any rate, beyond reiterating old yet unresolved
debates, it should be noted that any artist can potentially encounter something unexpected in the
nature of their chosen medium, and that that unexpected element may or may not be then
exploited by the artist.

Since the mid-twentieth century, with the proliferation of performances, events, happenings,
film, installation and, later, video, temporality has become an increasingly central theme in the
arts. This relationship has of course been extended by the addition of machines to inaugurate and
sustain the art action. The video documentation of performance-based work, once considered an
outcome in its own right via the work of Bruce Nauman and Vito Acconci, freed performers of
the necessity of interactivity with their audience. Acconci saw the video frame as somehow
separating the artist from the outside world in an ‘isolation chamber’ in which he was intimately
connected with his primary material. The video camera itself could represent the other.

Marynowsky has extended this relationship to include the machine as arbiter of both who is in frame and for how long they remain there. Ever since Nam June Paik’s ‘video robots’ shifted emphasis from the images displayed on the monitor to the visual impression of the monitor itself, the space outside the monitor or screen has also been considered as critically significant as that contained within it. Although Paik abandoned live performance during the 1980s, turning instead to multi-monitor video constructions, his connection to performance remained important. For Paik, it was as if the monitor was now a performer in its own right. By injecting frenzied movement into his installations, his video sculptures could appear like mechanised organisms rather than inert monitors. For Marynowsky, what is displayed across all three screens and the relationship between the projections and other physical elements within the overall installation are of equal importance.

Installation and video-installation’s relatively easy passage into the inner sanctum of visual art criticism are arguably a consequence of their historical associations with more familiar practices such as sculpture. The installation of video was in part an acknowledgment of the importance of the space outside of the screen or monitor. In addition, video installation practices have extended video’s attention to temporality. If time can be manipulated in multiple ways even within single-channel video, the possibilities are extended significantly with the use of multiple channels and screens. Temporality is unavoidably a concern for any artist working with the moving image. Add a computer to randomly trigger the length and duration of each video clip and time becomes elastic. Visual literacy, now no longer limited to the object, must now also embrace the fluid-ever-changing world made possible by and within the computer. Duchamp’s suggestion that a work depended on the viewer to complete the concept is now hyperrealised.

Dynamic video and new media installation practices not only reduce the degree of separation between artist and viewer but also see the role of authorship shift toward that of artist as facilitator of experience. Marynowsky’s role as a facilitator of experience extends to both the role of selector and that of programmer. If it was Duchamp’s radical shift of emphasis from object to concept that allowed for multiple methodologies to be redefined as artistic enterprise, the degree to which subsequent technological advancements have shifted the way in which contemporary art is both produced and experienced has given the Duchampian revolution some historical closure. With the arrival of new digital production methodologies and art forms, artists are now working so far beyond questions regarding materiality that many discussions surrounding the relative object status of a work now seem redundant. Is it ultimately a programming innovation that constitutes Marynowsky’s work or is it the programming that
enables the work? Are the performers themselves dispensable and therefore interchangeable?

How might the work be transposed to another cultural context with a different combination of

performers?

With experimental art forever expanding its collective and pluralist enterprise toward the

expression of any concept via any means possible, digital technologies are understandably

central to the cause. With many avant-garde tendencies increasingly defined in relationship with

the most enduring revolution of the last century—the technological revolution—many artists are

now more excited and enabled by the possibilities of technology than necessarily alienated by it.

This tendency stands in strong contrast to the anti-technology prejudices that affected artists and

counter-culturalists alike during the 1960s and 1970s. Much like the softening in attitudes that

occurred in popular music (in which formerly elite technologies such as synths and

computers started to become the DIY bedroom programmer’s alternative to the DIY garage

band), digital technologies are now as central to cultural generation and dissemination as they are

to the military. Interestingly, one of the most enduring offspring of the relationship between art

and technology, the temporal arts, is also often its most ephemeral. Where happenings,

installations, performances and later video made temporality central, the computer has allowed

for multiple and intersecting temporalities. The viewer now enters a relationship with a machine

that extends the art action across time. Just as cinema once provided a new and strange way of

experiencing life, the computer is now seemingly and endlessly extending our experience of the

uncanny. ‘Notions of originality’, as French critic Nicolas Bourriaud put it in 2002, ‘… are

slowly blurred in this new cultural landscape’ in which the programmer and DJ takes on the ‘task

of selecting cultural objects and inserting them into new contexts². Moreover, for Bourriaud, it

is no longer about ‘creating meaning on the basis of virgin material but of finding a means of

insertion into the innumerable flows of production³’. Ultimately, ‘the artwork is no longer an end

point but a simple moment in an infinite chain of contributions⁴’. On the flip side however, in a

world in which most images are instantaneously accessible, the artist is now far less likely to be

regarded as any kind of specialised conduit for ideas or social orders expressed via image

mediation.

According to the late Australian critic Nicholas Zurbrugg, although postmodern culture can be

considered in many ways ‘apocalyptic … superficial, weightless [and] static’, it is nonetheless

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³ ibid. p. 17
⁴ ibid. p. 20.
finally capable of functioning more ‘profoundly’, ‘weightily’ or ‘radically’ when considered against ‘the complex creative potential of its ever-evolving technology’. If knowledge is a system within which individual elements attain value based upon their relationship to that system, Marynowsky’s system continuously overwrites those relationships. Although the experience of Marynowsky’s system will always be very different to that of any of the individual contributors, a different set of contributors would nonetheless provide for a very different experience of that system.

The challenge facing emerging and hybrid art forms is the need to generate and maintain a public. It is interesting to note that the audio and visual components of Autonomous Improvisation v1 function both inclusively and exclusively. Beyond elucidating sound’s role in creating or adding meaning to the visual or vice versa, with eyes shut and/or ears blocked, the work remains intriguing. This is therefore a work that might potentially appeal to both a visual art and an experimental music audience. Moving beyond contemporary (albeit much experimental) music, with its reliance upon repetitive and predictable rhythm structures, yet at the same time maintaining familiar structures within the individual fragments, it is refreshing to hear something that compositionally and rhythmically transcends the last half-century of relatively omnipresent 4/4 time signatures and rock derivative structures. The strangely inhuman rhythms generated within Marynowsky’s system together with the hybrid poetics of the installation itself certainly provide for myriad points of departure. Although technology is central to the work’s functionality, being far more than an exhibition of technological capability per se will certainly limit its date ability. At any rate, prepare to see and hear much more from Marynowsky and his alien jukebox incarnations. But please … don’t bother waiting for it to loop!

Appendix C

Autonomous Improv and the Player Piano Effect

By Michael Arnzen, July 6, 2008; The Popular Uncanny, Michael Arnzen’s Notebook on the Strange in Pop Culture and Everyday Life (Arnzen, 2008).

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Wade Marynowsky’s weblog, Autonomous Mutations, highlights current uncanny art projects and other manifestations of das Unheimliche and is full of fantastic and unique examples of the aesthetic (like Karakuri ningyo), links to machine art, and also references to uncanny theory.

I say he features the “aesthetic” of the uncanny because his blog is an offshoot of his own excellent art inquiries, featured in “Autonomous Improvisation”, one of several multimedia exhibits that Marynowsky has created that integrates popular music with concept art to inquire into the uncanny nature of art and computer programming. Marynowsky describes his initial project and artistic intentions this way:

A prepared pianola is linked to a network of computers and is programmed to orchestrate [a palette of videotaped musicians from diverse genres performing for the camera] creating an ever-changing composition. This is presented via three-channels of audio-visual projection. Through non-determinist re-composition, the work questions if it is possible for improvisation to be programmed, or if this is simply a paradoxical endeavour. More significantly, ‘Autonomous Improvisation v1 asks us to consider what is imposed on human autonomy in an increasingly computer-controlled society.

The Autonomous Improv exhibit employs stock icons of the uncanny in random patterns (e.g. images flicker on the wall like ghosts, projecting masked singers who look like dolls, mix-mastering clowns working turntables, etc, while the old-fashioned pianola works like a player piano with candles aglow in its heart), but the real effect of the uncanny is felt when all of this “clicks” into an accidental surprise where it seems like the object is actually making music and working in some kind of uncanny harmony.

The following video from YouTube doesn’t do the sound justice, but it is a good example of the exhibit in motion. Those interested in this project should seek out Marynowsky’s DVD from his own Demux label. In “Alien Jukebox,” a review of the exhibit for Artspace (available in a pdf file), Sean Lowry raises an interesting question about the role of the artist/author in constructing an experience of the uncanny:

Artists have long created systems or parameters in which events might unfold. Whilst the exact outcome might be unknown, a kind of outcome is expected…whenever an artist has
waited for something to rust, for torn paper to fall, for mediums to react with one another, for randomly cut up audiotape to be spliced together, or for an audience to interact with a performance, repeated activities are demonstrated to produce self-similar outcomes rather than specific outcomes. Since Marynowsky has devised the program, he has also designed the kind of outcome that it will produce. But in establishing the parameters within which the work will operate, the fact that its final configuration is automated does not necessarily imply that the technology is acting “on its own accord.”

Here Lowry is arguing against Wade Marynowsky’s assertion that the work is a form of uncanny “automata” because it does not act “on its own accord,” but is rather programmed for a particular outcome to transpire. The so-called “ghost in the machine” was put there by the artist. In other words, the uncanny experience is like a firecracker: it may stun us with a burst of angst in response to its automatic semblance, but the artist has still metaphorically lit the fuse.

But all art has an artist standing in the curtains behind it in some way (even long after his or her death!), and this is not necessarily an issue. It doesn’t reduce the uncanny effect of the artwork on the spectator. Another way of thinking about what I would call the “player piano” effect: the exhibit aims at randomness that syncs up music and image in an uncanny way, but it is nevertheless programmed in much the same ways as a player piano relies upon a script to play its tune. However, in this case, the script roll has been programmed to randomise its notation and express that randomisation through imagery of the uncanny that invites the observer to reflect on the random nature of the moment in juxtaposition to its orchestrated planning and programming. It is this irreconcilable conflict, perhaps, which is felt as uncanny.

It is the planned accident that anticipates uncanny synchronicity (a la Karl Jung)…perhaps this is one of the appeals of all improv.

I like how Lowry muses over Marynowsky’s work by recalling and contrasting it to the work of the surrealists, like Duchamp, who employed the uncanny but in a highly conceptual (and less experiential) way. Later in his review, he brilliantly writes that artwork like this is inherently more intimate, a symptom that the role of authorship [has shifted] toward that of artist as facilitator of experience.
Lowry considers the way technology works in relationship to this cultural shift, and muses over its implications:

The viewer now enters a relationship with a machine that extends the art action across time. Just as cinema once provided a new and strange way of experiencing life, the computer is now seemingly and endlessly extending our experience of the uncanny. “Notions of originality,” as French critic Nicolas Bourriaud put it in 2002, “…are slowly blurred in this new cultural landscape”… The challenge facing emerging and hybrid art forms is the need to generate and maintain a public.

Given Marynowsky’s integration of music and programming, and his blog’s features on musical bots, I would imagine that Marynowsky would be interested in David Byrne’s ‘‘singing robot’’ project, and vice-versa.

Appendix D


It’s worth going in to see The Discreet Charm of the Bourgeoisie Robot completely unprejudiced, but better yet to bring someone else uninformed along.

The scene is this: both side walls of the gallery are lined with gramophone horns that hiss gentle static; a robot spins around the floorboards at the arrival of each new guest. Human height, its mechanism is hidden by a lace-trimmed black bustle; a single (also lace-trimmed) video camera eye beneath a plastic dome is all that ties this machine to the 21st century. At a glance it resembles the autonomous robotics experiments of Mari Velonaki’s Fish-Bird, minus the Research Council support: the machine’s erratic trajectory and myopic focus speaks of the buggy algorithms of artificial intelligence on an arts grant budget, and the tinny, canned voice sounds the routine synthesised knell of another ‘new’ media interactive.

But the apparent autonomy is a ruse. The “programmed” conversation progresses from “How are you, sir?” to discussion of its dance moves, the gallery’s interior design, to suspiciously well-informed digs about your personality. At least, they’re well-informed if you are personally
known to the wizard behind the curtain, a role played during my visit by Wade Marynowsky himself.

Marynowsky has taken pains to situate his show at the juncture of several respectable cybernetics and performance theories and sophisticated technical design. For all this attention to the machine, though, the real exhibit is the interplay with gallery-goers who wander in unawares from the leafy Newtown back-street.

My unbriefed friend, a counsellor from out of town, questions the Bourgeoisie Robot as she would any other client. Immediately, their conversation invokes and inverts that old new-media parody, the ELIZA psychoanalysis program. Buying into the performance with an analyst’s unabashed comfort with the personal, she leaves the robot scrabbling for consistency as she dissects its absurd motivations and fashion sense. And, eventually, dresses it in her scarf. The robot bursts out of its conversation, trundles towards me crying plaintively, “You sir, with the hat! Tell me, are you enjoying the show?” Marynowsky’s willingness to be no less ludicrous than us, his supposed patsies, is what charms me. And it’s what seduces me into further collusion. Rumour has it that the next iteration of the project will see multiple such robots unleashed on the public. If it is still intimate enough a scene for complicity in absurdity, I recommend you attend. And bring a friend.

Appendix E

On the Edge of the Uncanny Valley, Ryszard Dabek; The Discreet Charm Of The Bourgeoisie Robot, Wade Marynowsky (Dabek 2009, p.46).

At first glance Wade Marynowsky’s installation at Newtown’s grandly named Institute of Contemporary Art seemed liked an elaborate exercise in sci-fi stage setting. A single robotic figure occupied the gallery floor flanked by two walls bearing rows of antiquated gramophone horns that emitted an eerie and unrelenting shepherd tone: A singular sound possessed of an ever-rising pitch that filled the space with an unsettled ambience. In its just-right mix of menace and intrigue the installation employed an aesthetic that recalled the Victorian futurism of HG Wells as much as the improvised inventions of 1960s BBC television productions. For all these historical juxtapositions there was an elusive sense of familiarity at play within the work, a familiarity borne not so much of recognition but one psychically inscribed by years of subsumed transmissions and projections.
Occupying the centre stage of this carefully choreographed drama was the “bourgeoisie robot”, a surprisingly mobile and engaging presence that proudly declared itself to be named Boris. Possessed of an appearance that spoke of functionality rather than anthropomorphism, Boris was a bricolage of glass domed minimalism and Victorian lace. The transparent dome shielded a single inquisitive camera/eye that unnervingly swivelled to size up its audience. Beneath this dome a lace edged black hoop dress served to at once hide the inner workings of the robot and problematise its gender. In this enjoining of visual styles and epochs Marynowsky knowingly placed his creation in a historical continuum that reached back to the mechanical automatons of 18th Century France. But while the construction of these mechanical ancestors was largely concerned with mimicking the outward conditions of life; movement and animation, Marynowsky’s robot distinguished itself by its apparent possession of an inner life or at the very least a limited set of conversation topics.

A conversation with Boris was as surprising as it was unsettling. Self obsessed to the point of narcissism the robot deflected questions not to its liking by returning to a range of preferred topics: itself, its appearance, caviar and champagne and the various pleasures of its (bourgeois) existence. And when all else failed Boris would make a high-minded declaration and clam up until its interest was once again piqued. The actual sound of the robot’s voice was pure computer generated coldness, inflected with the accent of an upper class English toff. It was a voice that engendered Boris with a sense of superiority that further reinforced the awkwardness and inherent strangeness of a conversational exchange with this seemingly autonomous and self-willed creation.

But as we know appearances are deceptive. The truth to Boris’s conversation skills and deft movements lie not in the fantastical domain of artificial intelligence but in the power of remote control and the agency of the network. From his remotely located studio Marynowsky controlled and voiced the “robot” via the internet. For the length of the exhibition he was Boris. It is perhaps Marynowsky’s greatest success not that he managed to conceal the true nature of the installation’s workings but that he inhabited the space of the automaton so convincingly. Regardless of the actual operational details, the process of exchange that Boris solicited was haunted by a sense of the uncanny, of something awry.

But what exactly is the source of this inherent uncanniness? One line of approach to understanding this work would be to simply consider Marynowsky as a type of digital puppeteer controlling his cyber-marionette by means of the World Wide Web. But to do so would be to
Wade Marynowsky; An exploration of the uncanny in autonomous artworks.

efface the strange sense of dislocation at the heart of the work and to limit our understanding of it to ideas surrounding control and mimesis. It is perhaps more useful to consider the installation and Boris in particular in terms of a performance in which the uncanny is played out through not only the devices at hand but also the historical and subjective relations that they engender.

For Sigmund Freud the latent power of the automaton to invoke feelings of the uncanny was in part located in the way it rendered the familiar movements of the body unfamiliar, the very gap of representation. Japanese roboticist Masahiro Mori more recently observed that the narrower the gap between human and robot behaviour the more profound this sense of unease. He identified a range of such manifestations as precipitating the Uncanny Valley, a type of psychic no-mans land occupied at its deepest point by animated corpses. By a sleight of hand, or more precisely, a performative rigour underpinned by a complex technical system, Marynowsky managed to steer his pseudo-automaton if not into this valley at least to its very edge.

The sense of unease that one felt when conversing with this robot alter-ego was as deeply rooted in the performance itself as it was in the technology that Marynowsky employed as his performative apparatus. Boris’s curtailed conversational range and the almost mocking tone of his delivery disrupted the niceties that one expects from a simple exchange. The title of the installation, *The Discreet Charm Of The Bourgeoisie Robot*, was itself a homage to Luis Buñuel’s 1972 film *The Discreet Charm Of The Bourgeoisie*. The film, a critique of the predilections of the bourgeoisie, acted as a conversational template for the performance, privileging the self-interested concerns of Boris the “bourgeoisie robot” above all.

Within the installation the audience anxiety one normally associates with the public display of interactive art was transplanted by a much more troubling experience in which the interactive exchange itself was problematised by its very efficacy. What I have termed the inherent uncanniness of this installation resided not only in the apparent responsiveness of the robot conversationalist Boris but also in the way traces of humanity could be gleaned from its dialogue. It was an exchange that within the gallery walls was for the most part inescapable as the apparently dormant robot eavesdropped on conversations and invaded personal space to often humorous effect. My observation to a fellow gallery visitor that it was like the artist was present under Boris’s dress was met with a sharp rejoinder from the robot who pronounced to one and all that “there is no-one under my dress, how dare you look under a lady’s dress.”
Ryszard Dabek is an artist and lecturer in the Film and Digital Art department at Sydney College of the Arts, University of Sydney.

Appendix F

Bruce Barber, 24 Exhibitions 25 years (Barber 2009, p.71).

For this writer the most intellectually satisfying performance work was Wade Marynowsky’s extraordinary *Olympia, the sneezing automaton* (2008), a robotic performance with sound and dresses courtesy of Susan Marynowsky, the artist’s mother. The genesis of this work was in the artist’s (and Freud’s) reading of E.T.A. Hoffman’s 1917 essay “The Sandman”, exploring the uncanny (*unheimlich*) and human relationships to the automaton. Brilliantly uncanny, this performance was spectacular even without the computer intelligence and the artists directing their movements, these robots would not have seemed out of place at the Bauhaus in an Oskar Schlemmer gesture dance.

Appendix G

Dan MacKinlay, Dancing Machine, RealTime Magazine #93 (MacKinlay, 2009b).

That huge foyer in the front of CarriageWorks: commodious enough to play jump-rope in, and wholesome enough too. It’s a chunk of light cut from the atmosphere in a heavy industry sized serving, populated in work hours by those expert occupiers of knee-grazing surfaces, small running children.

Then, you enter the show in bay 21, and nothing could be more distant than the memory of that air and light.

When the double door thumps shut I can see only the stippled patterns on my retina in the dark. A beam of light pins me from above, radiating from a transparent dome two armspans above my head, just over ... there. It stirs, glides toward me, revealed as the crowning cupola atop a towering robot. Wearing a gigantic bustled dress.

The scale of the creature makes the theatrical dimensions of the space seem domestic, even claustrophobic; I’m the one built on the wrong scale, an interloper in another’s intimate space.
My illuminated host makes me welcome nonetheless, stopping an alarming few centimetres away for a curtsy. It (she?) mumbles some indecipherable pleasantry, and as the lights and the sound swell, I can see the room throngs with these enormous things, marking out the sporadic steps of a disjointed dance that I seem to be the only one not to know.

If these creatures owe something to the Victorian automata to whom their creator claims a debt, then it is the Victorian fashion. Their clothes are a pastiche of dress gowns, corsets, lace and military paraphernalia, an alien forensic anthropologist’s reconstruction of a Southern plantation ball demolished by stay cannon shot, familiar but dissonant.

Their performance, lacks the endless repetition of those parlour automata. These are unsettlingly interactive, personal, provoking, narrative. Each robot approaches in turn, offers some vocal non-sequitur (“Do you love me?”) and then pirouettes, inviting me hopelessly to some dance you would surely need prostheses to participate in. I intuit with unease that my faculties are inadequate for the social world of these creatures, and find my ears trying to demodulate the drones that fill the room as a modem decodes signals from a telephone line. Have I stumbled onto a mechanical rehearsal for some obtuse celebration? Are these machines taken aback to find a human among them half way through their private training in the finer points of the graces of the fleshed? Or is that what they want from me? This performance doesn’t feel like spectacle – rather it fills me with the suspicion that I am the spectacle. As the indecipherable noise spilling from the gramophone horns crescendos, it becomes so close in there that it feels an effort to breathe. I go.

It’s not only the lace trimming that links this show to Wade’s earlier robotics experiment, The Discreet Charm of the Bourgeoisie Robot. In both, Wade plumbs the crevices of the shifting contemporary anthropology of robotics, and it is we punters who are on display, with the grating awareness of self that uncertainty about our observers provides. What are these beings? If the society of the 1800s was taken in by Wolfgang von Kempelen’s notorious hoax Mechanical Turk, are we perhaps more vulnerable to that same hoax today? How much looser might the criteria be now for an entity to merit social pleasantry, in this age of digitally mediated conversation, public surveillance, machine learning? There is a kind of inversion of the panopticon here. I know I am watched, but I do not know truly by what. Is it another of Wade’s telepresence hoaxes, or some automated trickery, or perhaps something more unnaturally intelligent? Is the moment at hand when we reprise our ancient animism, when we catch ourselves being polite to our appliances, just in case there is an intelligent mind of any sort peering back at us through their lenses that we might offend? Are we anticipating the time that...
our contraptions will accuse us of being mere imitations? In my case, I am startled and sheepish at the faint Frankenstein paranoia that characterises my bit part in this gothic techno social comedy of manners.

I do have to say, though, those preschoolers from the foyer love it.

Dan MacKinlay teaches web interactivity at UTS, and should know better than to succumb to this kind of superstition.

Appendix H

JUST WHAT IS IT THAT MAKES TODAY’S ROBOTS SO DIFFERENT, SO APPEALING?
Catalogue essay by Bec Dean, Associate Director, Performance Space (Dean, 2009).

In 2007, a group of Japanese engineers from Osaka unveiled a child-sized robot; bald and naked with grey silicone skin and watchful, oversized eyes. Video documentation showed these eyes as they tracked its creators moving around the lab. Then, while the engineers spoke to it and offered it kind words of encouragement, the infantile robo attempted to adjust its body from a lying to a sitting position. This uncanny, faintly chilling struggle with hydraulic piston soundtrack can be viewed over and over, courtesy of YouTube (just type-in “Scary Child Robot” or “Creepy Baby Robot” to find the link). CB2 is a robot birthed into a kind of humanoid nascency, with a high level of awareness, yet limited functional responses. Two years later, CB2 has been equipped with complex programming that enables it to learn through observation, classification, trial and error.¹ Just like a real boy?

In the doleful camera-lens eyes of CB2 is a reflection of the myriad retellings of Carlo Collodi’s Pinocchio (1883) in children’s stories and popular culture, from Disney to Brian Aldiss (author of Supertoys Last All Summer Long (1969)), to Stephen Spielberg. Who (of those who saw it) could forget the melodramatic Artificial intelligence (2001) and the main character David’s frequently-expressed desire for a mother’s love, to become a “real boy”, and the fraught emotional conundrum of his surrogate mother as she decides to abandon him in a forest? While one could drown in the gush of sentiment that issues from A.I., it somewhat bluntly addresses a hurdle to the progress of our recognition of artificial forms of intelligence. In Japanese roboticist Masahito Mori’s terms, the more a robot is not-quite-but-almost human in appearance, the more difficulty we have in accepting it, as we assess it emotionally, according to our own difficulty we have in accepting it, as we assess it emotionally, according to our own

physiological and psychological judgment values, as a human being. The Uncanny Valley that Mori hypothesised in 1970 refers to a sharp decline in a sense of familiarity when encountering a being one at first perceives to be human, only to discover through the rupture of shock that is not. As Jasia Reichart wrote of Mori in her contemporaneous Robots: Fact, Fiction and Prediction (1978), “…for Mori, the most terrifying and the deepest secret of the uncanny valley is a moving corpse, which would be even more frightening than the most realistic artificial hand going awry.”

“Nothing is more strange to a man than his own image.”

It is with Mori’s thesis in mind that artist Wade Marynowsky has embarked on a series of robotics projects since 2007 that deviate from the hackneyed Hollywood tropes and popular science-fiction representations of the robot, while maintaining a fascination for the uncanny. Turning away from the predilection for repeating narratives of robot rebellion; of humanoid robots turning-on their makers at the point of achieving a human-like state of consciousness, or whilst undergoing a kind of existential crisis, Marynowsky’s research has delved back further into European and Asian histories, where the invention of decorative automata arose from mechanical revolutions (from medieval times to the nineteenth century) through the skilled hands of artisans, puppeteers, craftsmen and clockmakers. In turn, the handmade construction of these expensive automata, available only to the aristocracy (or perched in hard-to-reach public places) aspired to harness the wonders of nature – to imitate the actions of birds, monkeys, horses and humans, all within the luxury of one’s home. Others created the artifice and illusion of live performance, where clockwork dolls played musical instruments such as pianos, harps and flutes. The idea of the automata as a source of entertainment, performance, reanimation and repetition is evident in Marynowsky’s first major robotics project Autonomous Improvisations v1 (2007) which catalogued and remixed video documentation of Sydney’s underground performance and burlesque artists through the improvisational conduit of a computer-aided pianola, spookily played by unseen hands.

3 Kapek, Karel, Rossum’s Universal Robots (1920), Act IV. This play by the Czech writer is widely held as the first instance in which the word ‘Robot’ was used. Robot is derived from the Czech word robota, meaning serf labour.
4 For instance, Alien, Forbidden Planet, I Robot, 2001: A Space Odyssey, Dark Star, Terminator, Robocop, Blade Runner, etc.
5 The Strasbourg Cock by Villard d’Honnecourt was an automated cockrel, installed on the spire of the Strasbourg Cathedral in 1352.
In 2008 Marynowsky inhabited what Ryzard Dabek called the “inner life of the automaton” by providing the voice and conversational apparatus of a polite and superficially charming robot named Boris. His installation, *The Discreet Charm of the Bourgeoisie Robot* (after the 1972 film by Luis Buñuel) expressed a one-sided performance modality; of physical proximity without intimacy; of jokes with or without humour; of conversational language employed without the need for reciprocity or reply. Exquisitely dressed in a French maid’s black satin and lace with a bustle-like protrusion at his back, Boris’s embodied and mobile voice represented the notion of a self-contained and self-preserving intelligence. For all of its polite exclamations and enquiries, Boris’s primary interest was to convey its satisfaction with its own appearance – not in self-improvement through the mirror of humanity, not a desire for emotion or the possibility of becoming a “real boy”. Marynowsky identifies in this work the complexity of our relationships with automata: We claim to ‘love’ our cars, our toys and dishwashing machines and through the mediated forms of our popular culture, we imagine that they could love us back (or otherwise pursue us to extinction). But do we consider that they could also be possessed of a selfish love for themselves?

*The Hosts: A Masquerade of Improvising Automatons* takes a leap across Mori’s Uncanny Valley, imagining a space for human encounter with robots that relies only on the familiarity of context (a masquerade ball) and artifice (embroidered crinoline costumes and twinkling electronic lights). But it is not framed around the expectation of human mimesis. Inspired in part by E.T.A Hoffmann’s series of tales including *Der Sandman* (1817) in which a young man falls in love with a feminine automaton, Olympia, who communicates only through her glances, Marynowsky’s *Hosts* recognise and track the movement of other robots and people in the space via their bodies and illuminated eyes – the space itself is watched-over by another ocular source of light perched above them all. The sumptuous, carnivalesque dresses and embroidery of The *Hosts* make them desirable objects in our eyes as we languish over the folds and filigree lace of their attire. In turn, *The Hosts* in their various high-camp masquerade guises (Princess, Clown, Cowboy and Military Officer) possess us in the spotlight of their dazzling gaze, holding us in their thrall before turning away and moving on. Unlike the child robot CB2, these eyes do not seek to consume in order to process our behaviour and imitate us, for *The Hosts* are far superior dancers. Marynowsky’s robots occupy a kind of fragile utopia – a space for greeting and coexistence, for slightly menacing choreography and a testing ground for the possibility of equitable inter-intelligence relationships: A space where (free of superstition and paranoia) we

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7 Boris’ outfit was the its only concession to the notion of robot as servant to humankind.

8 From the artist’s notes.
do not see the plastic-coated shadows or the reanimated corpses of ourselves but rather other autonomous beings, improvising.

Appendix I

Bridie Connell, *The Hosts: A Masquerade of Improvising Automatons*

*The Hosts* is a new interactive media installation by Sydney artist Wade Marynowsky. It’s the most recent in a series of projects by Marynowsky exploring humankind’s relationship with automata (robots), focusing on Japanese roboticist Masahito Mori’s theory, “which suggests that in designing humanoid robots one should not aim for total human likeness, but for an alternative to an uncanny appearance.”

*The Hosts* demonstrates that whilst it is true that robots that look ‘human’ are creepy, Marynowsky’s alternate offerings – robots that look like ‘robots’ but engage in simulated human social activities – are equally unsettling!

Marynowsky has created five larger than life size robots. Themed on a masquerade ball, they wear sumptuous, embroidered ball gowns by designer Sally Jackson and individual masquerade guises – a clown in black and white harlequin print, a princess in a pink ribboned bodice, a military officer with star and stripes and a cowboy-hatted cowboy.

Faced with the end result – not unlike Daleks in drag – I have flashbacks of scary 1980s *Dr Who* episodes, leaving me frozen, half expecting to hear the words, “Exterminate! Exterminate!”

Instead the robots giggle amongst themselves, headlights flashing and twinkling conversationally. Gliding gracefully, they ‘dance’ a completely automated, sensor-based choreography – with not a remote or control panel in sight – to a silent soundtrack in an otherwise empty exhibition space. Lights dimming to a dull glow, they pause periodically, and commence spinning in unison like robotic whirling dervishes.

Surrendering to the absurdity of the situation, I too giggle and venture a little closer – but not too close. It would seem a lifetime of science fiction and computer mishaps has left me with a very real distrust of machines! However I can conclude that *The Hosts* – creepy, intriguing and amusing – is a must see installation for 2009.

Appendix J

Sally Jackson has been creating customised couture for artists and performers since 2007, when she started her business ‘200% No Rules Just Passion’. Formally educated in fashion design,
graduating from an S.I.T. diploma course (1999), Jackson initially trained as sample cutter for fashion designer Collette Dinnigan. In 2001 Jackson moved overseas, working as an assistant for designers in Paris, New York and London. While travelling, Jackson diverted her attention from fashion, broadening her skills and appreciation for theatre and costume, working in fancy dress and burlesque. She returned to Sydney in 2004 and collaborated with Sydney artist Monika Tichacek on the 2004/05 work *The Shadowers*. Jackson has continued developing her training in bridal couture, working with bridal couturier Karen Willis Holmes (2006–08) and continuing to construct themed wedding dresses and other alternative dressmaking projects.

Aras Vaichas is an artist and an electrical engineer. He holds a Bachelor of Engineering (Mechatronics) (University of Sydney, 1994) and studied Visual Arts, Fine Arts (Sculpture) (University of Sydney, 2002–2003). Since graduating he has worked as a professional engineer for various companies in Australia and England. He has worked in diverse fields, such as power metering, multimedia communications and the gaming industry. He specialises in all areas of embedded software, from software design and architecture to electronics design and product specifications. He is co-responsible for the success of a variety of commercialised electronic products that are currently sold all around the world. In 2006 Vaichas became an active participant in Dorkbot Sydney. Subtitled “People doing strange things with electricity,” Dorkbot is a worldwide phenomenon that invites people to share technical and artistic knowledge.

Mirabelle Wouters is a Belgian set and lighting designer, a graphic artist, a contemporary dancer and choreographer, and an industrial design graduate. She has been living and working in Sydney since 2002. She designed the set and lights for *The Football Diaries* by Ahilan Ratnamohan, produced by Urban Theatre Projects, and for *The Riot Act* directed by Karen Therese and produced by Campbelltown Arts Centre. Earlier this year Wouters and Branch Nebula secured a Translab research grant and worked in residency at Performance Space. Last year she toured around Australia with Branch Nebula’s show *Paradise City*, as the co-creator and designer. Earlier in 2008 she was the set and lighting designer for Urban Theatre Projects’ *The Last Highway* in the Sydney Festival.

Jeremy Apthorp started destroying computers when he was four. After years of experience (involving extensive damage to the computing systems of friends, family and parents’ workmates), he started undestroying them. Now his primary interest is exploring them, changing them and creating with them. Jeremy is studying Computer Science at the University of New
South Wales, and is presently in his second year. The fields of robotics and artificial intelligence are immensely attractive to him, and he has been involved in the UNSW Robocup team.
References


Deleuze, G & Guattari, F 1983, Anti-Oedipus: capitalism and schizophrenia, University of Minnesota Press, Minneapolis.


Hanson, D, Ismar, AO, Pereira, A, Zielke, M 2005, Upending the uncanny valley, University of Texas at Dallas and the Institute for Interactive Arts and Engineering, Dallas, p.25.


Horn, R & Haegelein, CA 2000, Rebecca Horn, Institut fur Auslandsbeziehungen, Stuttgart.


Jentsch, E 1906, On the psychology of the uncanny, Angelaki, Urbana-Champaign, trans. Roy Sellars. p.11.


Kapur, A 2005, A history of robotic musical instruments, University of Victoria Music Intelligence and Sound Technology Interdisciplinary Centre, USA, p.1-2.


Kostelanetz, R 1988, Conversing with Cage, Limelight, New York.


Ord-Hume, AWJG 1973, Clockwork music: an illustrated history mechanical musical instruments from the music box to the pianola, from automaton lady virginal players to orchestraion, Allen & Unwin, London.


Los Angeles County Museum of Art, Harry N. Abrams, New York.


Sconce, J 2000, Haunted media: electronic presence from telegraphy to television, Duke University Press, Durham, NC.


Singer, E 2006, Ballet mécanique by George Antheil, exhibition, National Gallery of Art, Washington, DC.


Truax, B 2001, Acoustic communication, Ablex, Westport, Conn.


Webster’s third new international dictionary of the English language, unabridged, Merriam, Springfield, MA.

Wiener, N 1948, Cybernetics, or control and communication in the animal and the machine, John Wiley, New York.


