

Parasitic Relations: Thinking Beyond Interactivity

by

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BFA (Hons)

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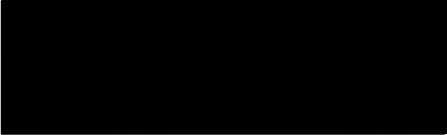
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Andrew Goodman
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Table of Contents

Declaration of Originality	2
Table of Figures	6
Abstract	8
Acknowledgements.	9
Publications	10
Introduction	13
1. Rethinking interactivity	14
2. The Parasite	16
3. Structure of the thesis	17
4. Scope of the research	20
5. Some notes on methodology	22
5.1. Research-creation.....	22
5.2. Tactics	24
5.3. Process philosophy	25
5.4. Meta-modeling.....	27
Section 1	31
Chapter 1	32
1.1 The myth(s) of interactivity.	32
1.1.1 Production: exchange and use-value	36
1.1.2 Linearity: riding the interactive train.....	39
1.1.3 Histories and networks of control	42
1.2 Art as event: a relational model.	44
1.2.1 From material to organic thinking.....	45
1.2.2 A relational model(ing)	50
<i>Bridge: Into the Midst: Immersion Immersive.</i>	53
Chapter 2	58
Thinking parasitic action	58
2.1 Introduction.....	58
2.1.1 Minor interactions	58
2.1.2 Molecularisation and the assemblage	60
2.1.3 Differential machines	63
2.2 Structuring action and flow: drift, autopoiesis and concretisation	69
2.2.1 Propositional invitations	69
2.2.2 Self-organisation	72
2.3 The parasite	78
Section 2	89
Chapter 3	90
Walking with the world: towards an ecological approach to performative art practice.	90
3.1 Walking	90
3.2 Making the world/performing space	92

3.3 Differentiating the body	94
3.4 Landing Sites: worlding the body	96
3.5 <i>Compressionism</i>	100
3.5.1 <i>Compressing</i> the city	101
3.5.2 Dancing objects	104
3.6 Conclusion	105
<i>Bridge: Psychopomp</i>	107
Chapter 4	113
Entertaining the environment: towards an ethics of art events.	113
4.1 Introduction	113
4.2 From agency to transduction	116
4.3 <i>Caminhando</i>	118
4.4 Tentativeness	121
4.5 The wisdom of rocks	122
4.6 Multiplicity	124
4.7 Tactics	126
4.8 Conclusion: Towards a new politics	126
<i>Bridge: Pnuema and the minor gesture</i>	129
Chapter 5	134
The noise in the noise: micro-perception as affective disruption to listening and the body.	134
5.1 Introduction: vibrational symbiosis	134
5.2 Micro-perception	135
5.3 Body as ear	137
5.4 <i>Space-Shifter</i>	138
5.4.1 Parasitic diffraction: the vibrational as differential force	139
<i>Refrain: Parasitic unsounds</i>	145
5.4.2 Multiplicity: the aliveness of the virtual	149
5.5 Conclusion	151
Chapter 6	153
A thousand tiny interfacings: fertile acts of resistance.	153
6.1 Introduction	153
6.2 Interfacing	155
6.2.1 Transduction	156
6.3 <i>Re:Positioning Fear</i>	157
6.3.1 Parasitic noise	158
6.3.2 Folds - the vibration of the impossible	161
6.3.3 Concretisation and the virtual	163
6.4 Conclusion	166
<i>Coda: towards a gathering ecology</i>	173
1. Parasitic friends and enemies	180
2. Parasitic organisation	181
3. Parasitic propositions	182
4. Parasitic movements	185
5. Parasitic politics	187
Appendices	190
Appendix A	191
DVD List of Media	227

Appendix B.....	231
Sacrificial RAM: locating feeling and the virtual in software.....	231
B.1 Introduction: towards a technical ontogenesis.....	231
B.2 <i>Orgasmatron</i>	234
B.3 Generative software design.....	236
B.4 Algorithmic feelings: a digital mode of thought	244
B.5 Systems modulating through disruption.....	250
7.5.1 Attractors.....	250
B.5.2 Limits & Bifurcations.....	254
B.6 Towards an ecology of patching	256
Appendix C	259
Entertaining the environment: a conversation.	259
Bibliography.....	268

Table of Figures

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Figure 1.1 Senselab collaborative project, <i>Into the Midst: Immersion Immersive</i> (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.....	55
Figure 1.2 Senselab collaborative project, <i>Into the Midst: Immersion Immersive</i> (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo credit: Hannah Buck.....	55
Figure 2.1 Andrew Goodman, <i>A Chorus of Idle Feet</i> , 2010. Digital video still.....	67
Figure 2.2: <i>A linear chain of relations</i>	84
Figure 2.3: <i>Parasitic potential relations</i>	85
Figure 3.1 <i>Compressionism Documentation</i> , 2012. Digital photograph. Photo: Bianca Scliar	103
Figure 3.2 Nathaniel Stern & Annette Jakobsen, <i>Compressionism Scan</i> , 2012. Digital Image.....	103
Figure 3.3 Nathaniel Stern & Gerko Egert, <i>Compressionism Scan</i> , 2012. Digital Image.....	103
Figure 3.4 Andrew Goodman, <i>Psychopomp</i> . 2012. Digital video still.....	110
Figure 3.5 Andrew Goodman, <i>Psychopomp</i> . 2012. Digital video still.....	110
Figure 3.6 Andrew Goodman, <i>Psychopomp Costume documentation</i> . 2012. Digital photograph.....	111
Figure 3.7 Andrew Goodman, <i>Psychopomp</i> . 2012. Digital video still.....	111
Figure 4.1 Lygia Clark, <i>Caminhando</i> , 1963. The University of Texas at Austin. ARTstor image ID	120
Figure 4.2 Lygia Clark, <i>Caminhando</i> , 1963. The University of Texas at Austin. ARTstor image ID	120
Figure 4.3 Andrew Goodman, <i>Pnuema</i> , 2011. Digital video still.....	131
Figure 4.4 Andrew Goodman, <i>Pnuema</i> , 2011. Digital photograph.....	131
Figure 4.5 Andrew Goodman, <i>Pnuema</i> , 2011. Digital video still.....	132
Figure 5.1 Sonia Leber and David Chesworth, <i>Space-Shifter</i> (detail). Photo: Leber & Chesworth. Accessed 4/7/2014. < http://www.waxsm.com.au/spaceshifter01.htm >	141
Figure 5.2 Sonia Leber and David Chesworth, <i>Space-Shifter</i> (detail). Photo: Leber & Chesworth. Accessed 4/7/2014. < http://www.waxsm.com.au/spaceshifter08.htm >	141
Figure 5.3 Sonia Leber and David Chesworth, <i>Space-Shifter</i> (installation view), 2009. Photo: Leber & Chesworth. Accessed 4/7/2014. < http://www.waxsm.com.au/spaceshifter12.htm >	141
Figure 5.4 <i>Sound layering in a sample from Momo</i>	146
Figure 5.5 Andrew Goodman, <i>Momo</i> , (detail view). 2011.	147
Figure 5.6 Andrew Goodman, <i>Momo</i> , (installation view). 2011.....	147
Figure 6.1 Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Photo: Joerg Mohr. Accessed 4.7.2014. < http://www.lozano-hemmer.com/showimage.php?img=graz_1997&proj=RePositioning%20Fear&id=10 >	159
Figure 6.2 Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Photo: Joerg Mohr. Accessed 4.7.2014. < http://www.lozano-hemmer.com/showimage.php?img=graz_1997&proj=RePositioning%20Fear&id=6 >	159
Figure 6.3 Andrew Goodman, <i>Momo</i> , (installation view), 2011	169
Figure 6.4 Andrew Goodman, <i>Momo</i> , (detail), 2011. Digital photograph.....	169

Figure 6.5 Andrew Goodman, <i>Momo</i> , 2011.....	170
Figure 6.6 Andrew Goodman, <i>Momo</i> , 2011 (detail).	170
Figure 6.7 Andrew Goodman, <i>Momo</i> , (detail), 2011. Digital	170
Figure C.8 Andrew Goodman, <i>Orgasmatron</i> (detail), Blindside, Melbourne, 2013.	175
Figure C.9 Andrew Goodman, <i>Orgasmatron</i> (installation view), Blindside, Melbourne, 2013.....	175
Figure C.10 Andrew Goodman, <i>Orgasmatron</i> (detail), Blindside, Melbourne, 2013.	176
Figure C.11 Andrew Goodman, <i>Orgasmatron</i> (installation view), Blindside, Melbourne, 2013.....	176
Figure A.1 Andrew Goodman, <i>Chorus of Idle Feet</i> , Allan Walk, Bendigo, 2010. Digital video still.	195
Figure A.2 Andrew Goodman, <i>Swarm</i> , West Space West Wing, 2011. Digital photograph.....	199
Figure A.3 Andrew Goodman, <i>Swarm</i> , West Space West Wing, 2011. Digital photograph.....	199
Figure A.4 Andrew Goodman, <i>Swarm</i> , West Space West Wing, 2011. Digital photograph.....	199
Figure A.5 Andrew Goodman, <i>Pnuema</i> , Off the Kerb, 2011. Digital video still.....	203
Figure A.6 Andrew Goodman, <i>Pnuema</i> , Off the Kerb, 2011. Digital video still.....	203
Figure A.7 Andrew Goodman, <i>Momo</i> (detail), Paradise Hills Gallery, 2011. Digital Photograph.....	207
Figure A.8 Andrew Goodman, <i>Momo</i> (detail), Paradise Hills Gallery, 2011. Digital Photograph.....	207
Figure A.9 Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman. <i>Weather Patterns</i> (detail), 2011-12. Deakin University Phoenix Gallery. Digital photograph	210
Figure A.10 Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman, <i>Weather Patterns</i> (installation view), 2011-12. La Trobe VAC. Digital photograph	210
Figure A.11 Senselab collaborative project, <i>Into the Midst: Immersion Immersive</i> (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.....	213
Figure A.12 Senselab collaborative project, <i>Into the Midst: Immersion Immersive</i> (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.....	213
Figure A.13 Andrew Goodman, <i>Psychopomp</i> , digital video still, 2012.....	219
Figure A.14 Andrew Goodman, <i>Psychopomp</i> , (documentation of sound suits), 2012.....	219
Figure A.15 Andrew Goodman, <i>Orgasmatron</i> (detail), Blindside, 2013. Digital video still.....	226
Figure A.16 Andrew Goodman, <i>Orgasmatron</i> , Blindside, 2013. Digital photograph.....	226
Figure B.1 <i>Graphic representation of Actors in Orgasmatron patch</i>	136

Abstract

This practice-led research questions what more a participatory work might be able to do beyond prescriptive and linear forms of interactivity in art events. The research develops practical applications of Michel Serres' concept of the 'parasite', the inherent noise that disrupts and multiplies within relation. The possibility of self-production and modulation in a participatory event and the potential of intensive disruption as a driver of creativity within the events are the basis for this investigation of models of art that can incorporate a range of environmental forces to generate an ecological set of relations where viewers, art objects and surroundings generate new and shared potentials.

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Publications

The following publication results were achieved as part of the research for this project:

Solo artworks and exhibitions:

A chorus of idle feet (2010), in *Metasonic II*, curated by Jacques Sodell, Liquid Architecture Festival, 2010. Allan's Walk ARI, Bendigo.

Swarm, (2011) West Space West Wing, Melbourne Central.

Pnuema (2011), Off The Kerb, Collingwood, Melbourne.

Momo (2011), Paradise Hills Gallery, Richmond, Melbourne.

Psychopomp (2012), Kings ARI, Melbourne.

Orgasmatron: Spaces to make love in (2013), Blindside, Melbourne.

Collaborative art projects:

Weather Patterns (2011-12). Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman, in *Entertaining the Environment*, curated by Kent Wilson and Andrew Goodman, Deakin University Phoenix Gallery, Melbourne, Latrobe VAC, Bendigo & Bus Projects, Melbourne.

Into the Midst: Immersion Immersive (2012), Senselab collaborative project, Society for Art and Technology (SAT), Montreal, Canada.

Peer reviewed publications:

Journal articles:

Goodman, Andrew. "Entertaining the Environment: Towards an Ethics of Art events", *AJE: Australasian Journal of Ecocriticism and Cultural Ecology*, Vol. 3, (2013/2014): 61-71.

<<http://www.nla.gov.au/openpublish/index.php/aslec-anz/article/view/2609/3817>>

Conference proceedings:

Goodman, Andrew. "A thousand tiny interfac(ing)s", in Cleland, K., Fisher, L. & Harley, R. (2013) Proceedings of the 19th International Symposium on Electronic Art, ISEA2013, Sydney. <<http://hdl.handle.net/2123/9658>>

Goodman, Andrew. "Rethinking Interactivity", in *ACMC Interactive conference proceedings*, ed. Matt Hitchcock (Victoria: Australasian Computer Music Association, 2012), 9-17.

< http://www29.griffith.edu.au/acmc12/files/ACMC_2012_Proceedings.pdf >

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Other Publications:

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Goodman, Andrew and Erin Manning. "Entertaining the environment: a conversation", *Fibreculture Journal* 21, (2012): 124-135.

Book reviews:

2014 Goodman, Andrew, "Book review: Carnal resonance: Affect and online pornography", *Convergence: The International Journal of Research into New Media Technologies*, 20, May (2014): 250-251.

Conference presentations:

"Walking with the world: towards an ecological approach to performative art practice," "The Art of Walking: Pedestrian Mobility in Literature, Philosophy, and the Arts from the Eighteenth Century to the Twenty-First" 9-11 October, 2013, ENS de Lyon, France. (And presented at On the streets, Monash University Social Aesthetics Research Unit and the Australian and New Zealand Association of Literature and Aesthetics, 6 December 2013).

"The noise in the noise: micro-perception as affective disruption to listening and the body," 'The Noises of Art: Audiovisual Practice in History, Theory and Culture,' 4-6 September 2013, Aberystwyth University, UK.

"A thousand tiny interfac(ing)s," ISEA 2013, Sydney University, 12-14 June 2013.

“Im-position: a minor politics for interactive art,” (panel presentation): Andrew Goodman (Chair), Nathaniel Stern, Lone Bertelsen & Andrew Murphie, ISEA 2013, Sydney University, 12-14 June 2013.

“Entertaining the Environment: Towards an Ethics of Art events,” Regarding the earth: ecological vision in word and image, 4th ASLEC_ANZ biennial conference, RMIT and Monash Universities, 31st August-2nd September 2012.

“Rethinking Interactivity,” the Australasian Computer Music Conference, Griffith University, Brisbane, July 2012.

Introduction

Imagine you are out walking in the street. To go for a walk is to create, through the endless flow of interaction, bodily and spatially. With each step – and within each step – perceptual, sensorial and social possibilities are opened up, assemblages of forces gathered, altered and reconnected, complexities multiplied, memories activated. The moment is saturated with affectual relations and intensities¹. With the fall of the same step, previous possibilities perish, simultaneously propelling the endless opening of fresh possibilities of connection².

Try to map all the relations that go to make up one instant, one occasion: within your body, between body and world, mind and body, object and object – all the various ‘machinic’ combinations producing experience. You will have to consider subatomic, atomic and molecular forces with their general disregard for what we view as discreet bodies. You will want to account for the way texture and gradient of the terrain shapes movement, rhythm and posture; how sensory perception, vision and hearing and so on, begin to ready the body for the next step; how the force of physical habits and body memory shape patterns of movement in the moment. Also present will be all the events of relation that have gone into making each tree, stone, person and sound you are interacting with, affecting your body more or less forcefully. Then there are the mental forces – ‘inextricably intertwined’³ with the physical – memories, anticipations, random associations made and forgotten, affects that will subtly or bluntly alter you, the myriad mental processes that sit behind conscious perception, yet nevertheless shape and reshape your body. Beyond that instant, in the next occasion, the concrescence of all these forces creates anew this simple act of walking the street. It is a constant, complexly enmeshed

¹ Tamsin Lorraine, “The nomadic subject in smooth space,” *Deleuze and Space*, eds. Buchanan & Lambert (Edinburgh: Edinburgh University Press, 2005), 73-4.

² Erin Manning, *Relationscapes* (Cambridge, MA: MIT Press, 2009), 38-9.

³ Alfred North Whitehead, *Process and Reality* (New York: The Free Press, 1978), 325.

act of creativity: when we look honestly, all things, as Whitehead says, are vectors of relations⁴.

Such an everyday act is saturated with complexity and invention, and rich with potential. But now imagine you are in a gallery, in some interactive installation. Things happen as you move around – sounds, lights, video – perhaps triggered by your presence, the work pretty much does its own thing, perhaps it continues to develop as you engage. Either way, this type of work often lacks the complexity, intertwined-ness of body and work, the perceptual nuance, the fluidity, the surprising originality of connection and thickness of experience of a simple walk outside. The distributed agency frequently attributed to interactivity is often lacking in these linear, somewhat prescribed constructions of relation. At best, as Brian Massumi argues, the interactive experience might seek to expand awareness of the processes of perception and relation⁵, yet too often remains programmatic, lacking in subtle and surprising combinations of associations, sensations, affects and prehensions. This is not to suggest that the role of interactive art is to mimic life, but rather that many such works display a paucity of life's rich, heightened experience of connection and possibility.

1. Rethinking interactivity

In order to think through such art experiences, we might question what more an interactive work could do to encourage a nonlinear experience of greater complexity: how else could it be made to operate, or what more could we ask of the interactive art event? I propose not to abandon interactivity, but to consider ways to begin to rethink and expand the term and genre. The 'beyond' here in the title is not an outside of interactivity, rather it is an activating of a potential beyond the codified, habitual understanding – an ecological rethinking of interactive art into a complexity of relational processes between and within the component systems, and the field within which it individuates.

⁴ Ibid., 309.

⁵ Brian Massumi, *Semblance and Event* (Cambridge: MIT Press, 2011), 45.

‘Relation’ is here taken to be primary, as processes of forces that both form objects or events capable of moving beyond themselves or generating further individuation. However, an uncritical embrace of relation can lead to its fetishisation without acknowledgement of the possibility that relation itself might enforce systems of power and reify structure or loosen or reconfigure it. The characteristic of a self-generating or autopoietic capacity is too easily and simplistically conferred on the relations between participant and artwork, without full consideration of the ethics of these interactions.

Relation in and of itself guarantees neither autogenesis, nor creative or aesthetic interest, and its qualitative and dynamic potential must be considered in more depth: within the interactive paradigm in respect to bodies and technologies, their combinatory potentials, and the events they conspire to produce. The politics of relation in interactive work too often homogenise and constrict experience and curtail open experimentation. To remain ethical, relational works need to instead enable expressive capacities⁶, and position heterogeneous elements in dynamic or productive relation. As this research has progressed, it has identified the imperative to give particular attention to how the various components of an art event begin to gather and intertwine in each other’s and a collective creative advance. In other words, how ecologies as sets of ‘complex dynamics of relations in a given situation’⁷ begins to form through interactions – not only between participant and work, but between all material, conceptual and affectual components.

This investigation was brought about by dissatisfaction both with the limitations of the larger debate around interactivity, and with the limitations of my attempts at creating dynamic relation in artworks. The working through of this research project has enabled me to articulate those areas in which I wish to explore interactivity further. Specifically, this is in the areas of the work’s ability to move the event towards the generation of its own outcomes out of emerging difference within relations. An artwork here might best be described as ‘machinic’ in that it is concerned not so much with the utility of materiality

⁶ In forming relations an entity ‘expresses’ or performs some of its capacity to affect and be affected by other entities and forces.

of the systems or representations of relation, but more with the affects the works are capable of collectively producing. Such thinking is inherently wrapped up with concepts of assemblages, with their particular heterogeneous modes of operation, and with the proposition of art as an event, a productive exploration of relational potential of the components. These intertwined concepts of event and machine are further explored in Chapter Two, and expanded through their application to individual artworks throughout this exegesis.

2. The Parasite

Such questions of ecologies and production have put me on this path, seeking to articulate and experiment with techniques or tactics to enable processes within works that might be broadly categorised as ‘interactive’ in the general understanding of the word. These questions have lead, in a propositional and speculative manner, to identifying the ability of differential operations within an art event to be activators of co-causal relation. Difference here is not oppositional or a negative, but a dynamic creative force for both extensive exchange and intensive development, binding heterogeneous elements into the production of the event⁸.

This research identifies as its focus the operations of the ‘parasite’ – defined in Michel Serres’ writing on the subject as the essential noise in any system of relations. The parasitic disruption to relation that produces new relational connections from within an existing system is proposed as a mechanism for intensively generating change while also drawing elements into more complex interdependence. The parasite, which Serres argues is always present within relations⁹, problematises simple connections with its ever-present potential to further differentiate, transforming stable systems into evolving systems of co-causality. Potential parasitic actions are explored in this exegesis and

⁷ Lone Bertelsen, “Affect and Care in ‘Intimate Transactions,’” *Fibreculture* 21 (2012): 41.

⁸ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 57.

⁹ Michel Serres, *The Parasite* (Minneapolis: University of Minnesota Press, 2007), 79.

exploited in the artworks across multiple scales for their ability to productively create from an initial set of propositional conditions. The research is focused on this exploration of the potential of noise within relation¹⁰ (or rather immanent with the event of relation), and this has lead to the articulation of the central research question driving the work:

How can the operations of the parasite be utilised to drive invention of participatory events within process philosophy thinking?

This is resolutely both a practical and an open question, concerned not with establishing a new paradigm or manifesto of interactivity, but with a propositional exploration.

3. Structure of the thesis

This exegesis is constructed in two sections. The first section charts the path to the development of this question, positioning and articulating the general potential of the question within the framework of process philosophy. This then leads to investigation and speculation on a number of specific tactics of parasitic operations in the second section.

Chapter One takes the research to the point of the problem I seek to address: the point at which the current broad thinking of differentiation within the art event and practical investigations lack a clear connection and articulation. While I concur with the need to articulate a more complex relational and nonlinear modeling of interactivity – to show the potential application of process philosophy to this shift – there is still much work to be done in more specific, practical, and detailed investigation on achieving this from the perspective of artists wishing to apply such concepts to interactive works. I demonstrate this need for further practical investigation, and in Chapter Two I propose the concept of the parasite as a means to this end.

¹⁰ This is a secondary meaning of ‘parasite’ adopted by Serres in *The Parasite* to explore the productive disruptions to relation.

It is from this point that the practical research and exegesis chapters in Section Two then branch out in a number of speculative directions from this initial question, attempting to ‘think with’¹¹ a number of theoretical texts, in order to extrapolate some of the creative potential of a type of disruption to relation.

Each further chapter includes an unpacking of an individual artwork within the context of the processes/production of difference being investigated. Each chapter also charts instances where in specific, multiple and overlapping ways, the workings of a participant-artwork machine produce a move beyond representation and object/subject divisions – to destabilise such stratifications and encourage tendencies toward a felt intensity of an emergent ecology. Interludes are included to explore and draw parallels with aspects of the artworks produced as part of this research.

Chapter Three examines bodily movement as a creative disruption which folds body into the environment and environment into body, explored, after Michel de Certeau, through walking as a non-totalising ‘minor practice’. Movement is proposed as being not of, but cutting across the body, connecting and disrupting its relation to a larger potential. This is investigated through Arakawa and Madeline Gins’ examination of the ways that the body immanently contributes to and distributes itself into the environment. These concepts are unpacked through Nathaniel Stern’s *Compressionism* performative work, concentrating on the new bodily styles of movement, as it lures the participant into an exploring that problematises any notion of the space as a preformed whole, making a new relation between bodies through movement.

The potential for an artwork to disrupt habitual cognition and therefore suspend one in the processes of perception are the focus of Chapter Four. The emphasis in interactive works on demonstration of relation over immersion in its immanent production is then

¹¹ ‘Thinking with’, as Isabelle Stengers describes her act of thinking with Whitehead’s philosophy, entails ‘accepting an adventure from which none of the words that serve as our reference should emerge unscathed’. It requires taking a speculative approach to philosophers’ ideas and seeing an interrogation of these concepts as part of the problem, which must be addressed, rather than accepting the authority of the texts. Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, MA: Harvard University Press, 2011), 15-6.

critiqued. The chapter proposes an opening of gaps in the habitual perceptual schema through a parasitic split between immersion in sensation and its causal comprehension, examining the ability of Lygia Clark's work *Caminhando* to utilise such suspensions in process.

Chapter Five explores ways in which the art event implicates various bodies into systems of feedback and shared potential through an exploration of sound – considered as a series of vibratory propositions engaged for their productive disruptive potential. It examines the affectual content of sound as a parasitic, micro-perceptive potential, enriching heard sounds and acting synesthetically on bodies. Vibrational diffraction is, after Karen Barad's work, positioned as an immanent parasitic action within sound events that creates an expression of difference – a becoming interval. These ideas are then explored through Sonia Leber and David Chesworth's *Shapeshifter* installation.

Chapter Six examines the problematic position of the 'interface' within process thinking on body-technical relations. It proposes 'interfacing' as a performative act, rather than as a fixed and privileged site of exchange, in order to preference transductive relational forces over object-based notions of information exchange. Rafael Lozano-Hemmer's *Re:Positioning Fear: Relational Architecture 3* is used to examine incidences of parasitic disruption, the enfolding of intentions and tonalities outside a work's initial parameters that extend the potential of the work, and move the event towards greater self-production.

An additional example on the application of the parasite – in Appendix B – considers in detail the potential for an ecological approach to generative software – a non-linear, intensively organised software patch activated through difference or noise. This study closely examines my utilisation, in the writing the software patch for the final practical work produced in this research, of Luciana Parisi's work on the potential openness of algorithmic process, and Manuel De Landa's writing on multiple attractors and state bifurcations.

The task of this exegesis is to utilise a conceptual and practical experimentation with parasitic actions to slow down an examination of the creative role of differentiation within interactive art events. This entails a methodology of multiple readings, multiple configurations of concepts, and multiple propositional relational encounters, and is proposed as a potential politics of art: an ethics addressing not the representation of relation, but its immanent construction and critique. This is an ontogenetic, rather than ontological, approach to both text and artwork, practicing a parasitic method of research that could be described as a ‘meta-modeling’.

4. Scope of the research

The concept of relation cannot be limited to exchanges between two forms, but must be seen also as intrinsic to an entity’s individuation¹² – as the very forces that form occasions. Philosophically, this entails a shift from a hylomorphic view of the world as composed of discrete objects and subjects enduring in relative stability over time and which then interact with each other, to a view of the world as an ongoing, continually unfolding series of events of relation. This is an expanded notion of relation as emerging within an art event, concerned not with its demonstration or metaphoric representations, but with the power of conjunctive and disjunctive relational forces to creatively differentiate – with the capacities of entities to affect and be affected in order to advance events.

With this position of the primacy of forces, an expanded and open definition of what constitutes a body is possible. The body referred to here is not limited to the subject, or to a fixed or post-individuated stable entity, but is itself ‘a process of intersecting forces

¹² Relation is ‘an aspect of internal resonance of a system of individuation.’ Gilbert Simondon, “The Genesis of the Individual,” *Incorporations*, eds. Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 297-319, 306. That is, relation is a formative operation of difference both within and between entities. See Michel Serres, *The Parasite*, 79.

(affects) and spatio-temporal variables (connections)’¹³. That is, bodies not only capable interact with external forces and entities, but are in themselves formed from the ongoing meeting and conversation of forces¹⁴. Bodies are creative systems or ecologies in themselves, always more than any stable subjectivity, which might be better seen as a partial resolution in ongoing individuation that has always the potential for further movement. Rather than define a body by its representational qualities, or in relation to ideal forms limited to a stable subjectivity, a body is more usefully defined within this research, as Massumi has described it, by ‘what capacities it carries from step to step’¹⁵: in other words, by its performativity and its abilities to interact within an ecology of which it is an active participant¹⁶.

Within this process-orientated view, not only bodies but also other entities – including inanimate objects – can also be defined by their abilities to interact with their environment, and they too can be thought of as complex negotiations of relational forces or events in themselves¹⁷. If entities all have their own capacities to affect and be affected by other forces and entities¹⁸, they are therefore always capable of further changes, of influencing and being influenced. This gives an opportunity to consider the interactive potential of not only human bodies, but also the affective capacities of all components of an art event’s ecology. This thinking has the potential to greatly expand what interactivity within a system means, and suggests an obligation to begin to think about how non-human components of a system have capacities to interact with each other. In other words, it implies the necessity to consider a larger ecology at work, rather than focus purely on artwork-participant relations while assuming that other relational forces and objects will remain fixed.

¹³ Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming* (Cornwall: MPG Books, 2002), 21.

¹⁴ Bodies are therefore ‘continuous’ with the external world, (Alfred North Whitehead, *Modes of Thought* (New York: Free Press, 1968), 21), and also have ‘internal resonances’ and plays of forces (Simondon, “The Genesis of the Individual,” 305).

¹⁵ Brian Massumi, “Navigating Movements,” 4.

<<http://www.brianmassumi.com/interviews/NAVIGATING%20MOVEMENTS.pdf>> [Accessed 13/4/2010].

¹⁶ Elizabeth Grosz, “A Thousand Tiny Sexes: Feminism and Rhizomatics,” *Gilles Deleuze and the Theatre of Philosophy*, ed. Constantin V. Boundas & Dorothea Olkowski (New York: Routledge, 1994), 194.

¹⁷ Whitehead, *Process and Reality*, 73, 41.

The implications of these ideas potentially move the discussion on interactivity beyond concerning only ‘new media’ artworks¹⁹. As will become apparent both from the choice of works and the aspects of these works discussed, interactive potential should not be limited to works obviously mechanically interactive in their enaction, nor to work necessarily involving ‘technologies’ in the most obvious sense of the term. This positions the actual artworks made in the research and the implications of the research, within a wider framework and history of relational artwork²⁰.

5. Some notes on methodology

5.1. Research-creation

The project is conceived within a ‘research-creation’ framework, seeking to create resonating lines of inquiry through writing on concepts and artistic experimentation. As such, the exegesis is positioned as a parallel to the art making research, with both streams feeding into the understanding and development of the other. Rather than seeing the text

¹⁸ Ibid., 85-6, 230.

¹⁹ While a detailed critique of the term new media is outside the scope of this research, it is, as a number of writers note, a problematic term. The ‘newness’ in new media, as Fuery notes, is limited to technical rather than artistic invention and creates an artificial stabilisation of investigations that are ongoing processes of innovation. This, as Munster says, calls attention to the medium as the definer of artistic outcomes, and it might, as Murphie claims, leads to a fetishisation of the technological invention for its own sake, rather than a measured consideration of their interactive and ethical potentials. Kelli Fuery, *New Media: Culture and Image* (New York: Palgrave Macmillan, 2009), 9. Anna Munster, *Materializing New Media: Embodiment in Information Aesthetics* (Hanover: University of New England Press, 2006), 154. Andrew Murphie, "Vibrations in the Air: Performance and Interactive Technics," *Performance Paradigm* 1 (2005): 31. <<http://www.performanceparadigm.net/journal/issue-1/articles/vibrations-in-the-air-performance-and-interactive-technics/>.Issue 1> [Accessed 18/12/2012].

²⁰ Relation here concerns a much broader span and range of forces than most interactive works acknowledge. It would, I believe, be possible to argue that many more ‘traditional’ art forms successfully exploit a wide range of relational forces in ways that are often more subtle and complex than many prescribed interactive artworks. On painting and relation, for example, see Robert Irwin, *Notes Towards a Conditional Art* (Los Angeles: J. Paul Getty Museum, 2011); Manning, *Relationscapes*, 55-63; and Massumi, *Semblance and Event*, 127-30.

having a purely explanatory or critical role in relation to the artwork, the exegesis seeks to utilise the artworks discussed to creatively think through concepts²¹.

The practical investigations in this project are, of course, the primary research – outstripping or spilling over outside the scope of the theoretical discussions in the way that art always does. Art perhaps does itself a disservice in trying to articulate theory or tie itself too directly to conceptual frameworks. The series of artworks constructed and discussed here do not follow a necessarily linear articulation of the concepts, thus different attempts to address the concepts echo throughout the progress of the practical research. The speculative and propositional nature of the theoretical discussions is then, I would argue, both a philosophical choice in line with process philosophy, and a practical technique for dealing with the necessarily open-ended nature of propositional art events – bringing to attention that ‘theory-making itself, [is] a messy, fleshy practice’²².

The audience – or ‘participants’ – are here involved not only in art-making through their participation, but are also in this thinking an active part of the research as ‘co-producers’ of the work²³ that experiments with these concepts. As Roy Ascott writes, participatory art practices are capable of producing a ‘cultural membrane’ that bridges divides²⁴. This, for Jacques Rancière, has the potential to produce ‘a passage from the status of spectator to that of actor, a reconfiguration of places’²⁵. As participants, we ‘research’ the potential of our bodies and their connective and disruptive relationships to the field, even though this is not a conceptual or reflective researching, but a bodily enaction of some potential

²¹ Writing here is a creative act that creates texts as ‘little bombs’ that might be productive in their scattering of ideas and establishing of new linkages, as art is a method of ‘thinking’ through embodied participation. Elizabeth Grosz, *Architecture from the Outside: Essays on Virtual and Real Space* (Cambridge, MA: MIT Press, 2001), 58; Deleuze & Guattari *What Is Philosophy?* (New York: Columbia University Press, 1994), 66.

²² Natalie S. Loveless, "Practice in the Flesh of Theory: Art, Research, and the Fine Arts PhD," *Canadian Journal of Communication*, 37:1 (2012): 95.
<https://www.academia.edu/1476730/Practice_in_the_Flesh_of_Theory_Art_Research_and_the_Fine_Arts_PhD_2012> [Accessed 2/2/2014].

²³ Participation implies the involvement of the viewer ‘not only in constructing meaning, but, rather, their coproduction in the actual work.’ Pierre Levy, *Cyberculture*, Electronic Mediations Series (Minneapolis: University of Minnesota Press, 2001), 15.

²⁴ Roy Ascott, *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness* (Berkeley: University of California Press, 2003), 328.

²⁵ Jacques Rancière, *Aesthetics and Its Discontents* (Cambridge, MA: Polity Press, 2009), 23-4.

that is produced immanently through experimental interactions with other components of the art event.

As will be critiqued in the first section of this exegesis, the scope of participation often offered within interactive artworks displays a very narrow conception of the term. In concentrating on maintaining the body-world divide and the (often) programmatic exchanges between the two, these limited notions of participation in interactivity ignore the potential for both bodies and their environment to creatively combine and disrupt such boundaries.

A more expansive concept of participation considered on many scales of interaction concerns not only the continuation of the ‘research’ proposed by the artwork, but also moves beyond simple notions of ‘choice’ within the participatory event, to one enabling an immersion in what I term a ‘gathering ecology’. Participation is here focused more on an increased implication of components of the art event (including bodies), and in the development that begins to draw entities towards a collective individuation. To paraphrase Yve-Alain Bois’ conception of participation, this invests actions with meaning (in that they have affectual force within the ecology), and ‘nourishes’ the participant’s actions through affectual interaction²⁶.

5.2. Tactics

Parasitic action is utilised in the artworks and positioned in the exegesis as a tactic. A tactic is open-ended and opportunistic. It reuses elements of a system (as the parasite is itself formed from a reconfiguration of already present relation), ‘without taking over [the system in] its entirety’²⁷. The tactic therefore destabilises from within, without necessarily imposing new order, remaining essentially *per*-formed. Applying the parasite as a series of tactics implies a consideration of the productive effects of its disruptive

²⁶ Yve-Alain Bois & Lygia Clark, "Nostalgia of the Body," *October* 69 (1994): 109.

²⁷ Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1988), xix.

actions, rather than the representation of difference²⁸. A tactic is also always singular, forming in relation to the specific set of conditions within which it arises, and must be reinvented for each new set of events. Various tactics also fold into and complicate one other, so that the range and exact terrain of their productive operation can never be fully defined. In this regard, tactics must be reinvented through practice, avoiding the rigidity of sets of rules or manifestos, being co-composed with (rather than preceding) events in which they seek to intervene.

In Chapter Two, the concept of the tactic is utilised to think the re-invigoration of interactive systems from within. As a tactic, the parasite is molecular in producing difference or movement within a dominant form of interactivity²⁹. Again, while this first section of this exegesis is concerned with a more general thinking of this new potential of interactivity along relational lines, the second section is devoted to the exploration of specific parasitic tactics, as the artworks themselves are also concerned with practical explorations of these creatively disruptive propositions.

5.3. Process philosophy

A ‘tactical’ approach is clearly in line with a process philosophical view of the world, centered on propositions, the gathering of forces and the immanent nature of events, rather than outcomes and closure. Process is a creative event of formation of an entity through the ‘transformation of the potential into the actual’³⁰. Whitehead terms the placement of process as primary within thinking a shift from the ‘material’ to the ‘organic’³¹.

²⁸ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (London: Duke University Press, 2007), 49.

²⁹ Felix Guattari and Suely Rolnik, *Molecular Revolution in Brazil*, trans. Karel Clapshaw & Brian Holmes (Los Angeles: Semiotext(e), 2005), 311.

³⁰ Ibid.

³¹ Various authors give different names to this approach, it might be termed organic, relational, performative or anti-representational, or one of radical, deep or expanded empiricism. All these terms are put to use in this research – here broadly grouped under the term ‘process’, with an implication that, as Ilya Prigogine says, an open-ended futurity requires understanding that the laws of nature are based on possibilities not ‘certitudes’. Ilya Prigogine & Isabelle Stengers, *The End of Certainty: Time, Chaos and the New Laws of Nature* (New York: The Free Press, 1996), 183.

Process philosophy's focus is ontogenetic, concerned more with how events (which here includes objects, relations and forces) come into being, than with the states they pass through³². Thus it replaces any ideas of transcendence – where development is focused on the achievement of an ideal, pre-described form – and focuses instead on the drive towards novelty and further differentiation³³. As Whitehead puts it, this is a novelty conditioned by its relationship to past events – ‘an urge towards the future based on an appetite in the present’³⁴.

In this approach, all relations need to be considered for their role in forming events, and thus William James' ‘radical empiricism’ forms an important base here, in asserting that *only* that which is experienced and *all* that is experienced must be admitted into its construction of the world³⁵. In this expanded model, thoughts and concepts are events in and of themselves, rather than projections or representations, and are as much a part of this enaction as objects³⁶. Relations that connect experiences, as James states, ‘must also be admitted’ as real and a place ‘found’ for them in the system³⁷.

As Massumi notes, an implication of this system is that most of these relations exist only as potential, and therefore the virtual must also be considered as ‘real’³⁸, with both actualised and potential relations being crucial to an understanding of the ability of relations to develop openly. Thus, expanded empiricism provides, as will be argued in the first section of this exegesis, a path to ‘thinking beyond’ the purely mechanical and overt interactive elements between stable objects, and into a richer and more complex series of

³² Brian Massumi, Arne De Boever, Alex Murray & Jon Rolfe, "Technical Mentality Revisited: Brian Massumi," *Parrhesia* 7 (2009): 37.

³³ This emphasis on an ‘additive’ approach, Massumi states, as the ‘key to an expanded Empiricism. There is always enough room in the world for more, more modulation, more “belonging”’. Brian Massumi, "Too-Blue: Color Patch for an Expanded Empiricism," *Cultural Studies* 14: 2 (2000): 216.

³⁴ This ‘creative advance’ of the universe is, as Whitehead sees it, the driving force behind process. Whitehead, *Process and Reality*, 21. See also: Isabelle Stengers, *Thinking with Whitehead*, 257-9.

³⁵ William James, *Essays in Radical Empiricism* (Memphis, TN: Longmans, Green & Co., 2010), 18.

³⁶ As Whitehead notes, a process philosophy approach ‘abolishes the detached mind’. *Process and Reality*, 56.

³⁷ James, *Essays in Radical Empiricism*, 18.

³⁸ Brian Massumi, "The Thinking-Feeling of What Happens," *Inflexions* 1 (2008): 39 - 40.

formative relations operating within a field; while still grounding thinking in lived experienced and avoiding the traps of transcendence and representation.

A broad adoption of Whitehead's philosophical approach provides the language to talk in detail about relational operations through his insistence on methodically describing the development of relation without assumption. It is 'speculative' in its entailing of 're-inventing the field to one in which the problem finds its solution'³⁹ rather than an acceptance of current restraints or foundations. Such a shift in foundations is the broad methodology proposed by my research in order to expand the concept of interactivity. However, while Whitehead's philosophy forms a primary platform for the project, the purpose of the research should not be construed as a defense of Whitehead's philosophical stance. Rather, it is embraced for its use-value – what it might add to an examination of the parasitic operation.

5.4. Meta-modeling

*'[T]here is no universal method, which is the reason...for drawing an appropriate method from the very problem one has undertaken to resolve.'*⁴⁰

What I wish to resist here – in both the thinking performed by the artworks and the text – is the inevitable temptation to think in terms of a single model that can define or 'sum up' the research. Rather, there is a desire to open up space for multiply possible analyses and create a 'becoming' model⁴¹. In utilising the speculative and inventive methodology of research-creation, and with a process philosophical basis for thinking, it requires any research to find a methodology capable of enacting, rather than contradicting or curtailing, open-ended process. This research therefore has adopted what Guattari terms a

³⁹ Stengers, *Thinking with Whitehead*, 17.

⁴⁰ Michel Serres and Bruno Latour, *Conversations on Science, Culture and Time* (Ann Arbor: University of Michigan Press, 2011), 91.

⁴¹ 'Becoming,' in the sense that Massumi uses it, 'open(s) up spaces and maps new virtual landscapes', it is a movement of invention, necessarily always an emergent model, in the process of being (re)invented. Therefore a 'becoming' model would be one that continually adapts to new information, heads in multiple

‘meta-modeling’⁴² framework of propositional concepts and artworks that remain open-ended, rather than being bound to some over-arching singular conclusion that exegesis and work must both arrive at.

Manning and Massumi argue⁴³ that models are ‘prescriptive templates’ that limit and control the discourse on actual events, which have potential beyond their iterations. Modeling circumvents discourse in two essentially negative ways that Janell Watson outlines. Firstly, she criticises the way models encourage the tendency is to analyse actual events only in relation to a perceived ‘norm’ rather than thinking outside the restrictions of such ‘dominant social order[s]’⁴⁴.

Secondly, by prescribing processes, models necessarily curtail possible outcomes – that is, they reduce the freedom of the virtual to a limited set of possible outcomes⁴⁵. Meta-modeling, as Guattari says, places the emphasis on the way ideas interact or have the potential to interact to produce new associations⁴⁶. To establish a model for the analysis of interactive art risks the exclusion of elements that do not fit, such as aesthetic qualities, an under-discussed area of much interactive art criticism. Fixed models might also imply the creation of a ‘check-list’ of necessary elements that an artwork must contain to be called interactive; the bracketing into stabilised categories of problems and solutions; and the uncritical promotion of potentially invidious social norms.

directions: a kind of rhizomic ‘anti’ model. Brian Massumi, *A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari* (Cambridge, MA: MIT Press, 1992), 101-2.

⁴² Meta-modeling, Guattari states, is ‘to render palpable lines of formation, starting from no one model in particular, actively taking into account the plurality of models vying for fulfillment’. Felix Guattari cited in Erin Manning & Brian Massumi, *Propositions for an Expanded Gallery: Generating the Impossible*. Private correspondence to participants of the ‘generating the impossible 2011’ convergence, including the author (1/10/2010): 25. Guattari’s concept relates directly to his idea of schizoanalysis as an alternative to conventional psychoanalytic models, this is productively expanded in *Fibreculture Journal* 12 (2008), an issue devoted to meta-modeling. See also Massumi, *Semblance and Event*, 87-104, for further extrapolation of the concept relevant to embodied experience of the world.

⁴³ Manning & Massumi, *Propositions for an expanded gallery*, 28.

⁴⁴ Janell Watson, “Schizoanalysis as Metamodeling,” *Fibreculture Journal* 12 (2008): 1.

⁴⁵ *Ibid.*, 2.

⁴⁶ Felix Guattari, *Chaosmosis: an Ethico-Aesthetic Paradigm* (Bloomington: Indiana University Press, 1995), 59.

In contrast, the process of meta-modeling abandons attempts at establishing set models, accepting potential in all possible models – providing, Guattari states, they ‘abandon all universalizing pretensions’⁴⁷. Rather than creating a ‘didactic program’, meta-modeling, involves a disentangling of oneself from systems of modeling that ‘pollute our ways of thinking’, creating instead a contingent critical ‘bricolage’ of possible approaches to be utilised for the particular analysis at hand⁴⁸.

In this sense, meta-modeling clearly experiments with a reenergising and reconnecting of existing elements (whether conceptual or physical). Meta-models are resolutely singular – that is, they allow the possibility of constructing a usable model for any given situation by ‘taking bits and pieces of other models in an attempt to solve a specific, singular problem’⁴⁹. This requires an embracement of increasing complexity and contingency – it demands a preparedness to act contingently and cobble together usable discourses as necessary, and it also requires one to allow this assemblage to perish after the event⁵⁰, starting afresh each time⁵¹.

Meta-modeling allows an acknowledgement of the absurdity of maintaining discrete categories such as ‘sculpture’ and ‘interactivity’ and the fluidity of movement possible between such terms. To do this necessitates an opening up of the space for discussing interactivity through an analysis of some of the language currently used to describe it, an accommodation of some new language and ways of thinking about participation, and an

⁴⁷ Felix Guattari cited in Watson, “Schizoanalysis as Metamodeling,” 3.

⁴⁸ Felix Guattari, *ibid.*, 3.

⁴⁹ Watson, “Schizoanalysis as Metamodeling,” 8.

⁵⁰ The meta-model, Manning and Massumi argue, is necessarily virtual as it remains at a point of emergence and therefore perishes in actualisation. *Propositions for an Expanded Gallery*, 25. See: Lynn on the virtues of complexity as an escape from both identity and dialectic contradiction. Greg Lynn, *Folds, Bodies and Blobs* (Depot Legal: Bibliotheque Royale de Belgique, 1998), 161.

⁵¹ Thus in relation to interactivity It enables the taking of any productive path of critique necessary to accommodate new input (and the jumping from path to path), rather than the setting up of fixed criteria for interactivity and either ignoring contradictory information, or dismissing artworks for not living up to established definitions. I want to suggest, as Manning and Massumi do, that this freedom to adapt and change direction – to equivocate – be viewed as a positive move. Manning and Massumi use the term ‘immanent critique’ that ‘energise(s) new models of activity... offer(s) a potential to escape or overspill readymade channelings into the dominant system’. *Ibid.*, 7. See also Steven Shaviro, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (Cambridge, MA: MIT Press, 2009), 148-9.

acceptance that the possibilities are mutable and endless in combination⁵². This meta-modeling approach might be seen in itself as a parasitic model – both are problematic, complicating existing systems or methods of working to emphasis the process of ‘working through’ rather than overly simple solutions⁵³.

This research seeks not to conclude to a single point, but rather to build ‘machines’ (both conceptual and sensorial) to explore the potentials of parasitic actions, and to push the limits of interactivity. The exegesis structure seeks to enact a parasitic meta-modeling, attempting to allow such speculative thinking and immanent connection of ideas on the part of the reader as well as author.

⁵² Therefore the concept of the parasite is not being proposed here as some ultimate conceptual basis for an expanded interactivity, but rather as one useful potential tactic that this project chooses to concentrate on.

⁵³ Serres & Latour, *Conversations on Science, Culture and Time*, 91, 188.

Section 1

Chapter 1

1.1 The myth(s) of interactivity.

‘Interactivity is a very dubious idea.’¹

One of the difficulties in discussing interactivity is that the term itself has no readily agreed upon definition. While some authors use it derogatively to condemn programmatic, simple to-and-fro exchanges of an object-orientated communicational model², others use the same term to imply a much wider range of participatory experiences that might be termed relational. Alan Peacock defines interactivity as ‘experiences that include a feedback loop and mutually (self-) modifying sequences and choices within the sequences that form a particular from many possibilities’³. Simon Penny also argues for the necessity of feedback loops and demonstrably developmental aspects in design, stating that ‘the fundamental requirement of an interactive system is that it correlates in a meaningful way data gathered about its environment (usually a user’s behavior) with output’, without which, he says, there is no perception of interaction⁴.

These definitions capture a popular conception of interactive art⁵ as a moderation of the work itself, and possibly the behavior of the participant, in a way that is

¹ Woody Vasulka in *‘Binary Lives: Steina & Woody Vasulka’*. VHS (46 min). Directed by Peter Kirby. Co-produced by Media Art Services and Grand Canal, Paris, 1996.

² Brian Massumi, *A Shock to Thought: Expression after Deleuze and Guattari* (London: Routledge, 2002), xv. Such criticisms are also leveled by Barad at a system such as Newtonian physics that assumes the existence of objects prior to their interaction. Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (London: Duke University Press, 2007), 197 and passim.

³ Alan Peacock, "Towards an Aesthetic of the Interactive," 1.
<<http://www.soundtoys.net/journals/towards-an-aesthetic-of>> [Accessed 25/8/10 2010].

⁴ Simon Penny, "Towards a Performative Aesthetics of Interactivity." *Fibreculture* 19 (2011): 80.

⁵ Whether we sustain such a category of art as ‘interactivity’ – and why we would even want to, when one considers the contemporary collapse of traditional boundaries between painting and photography, sculpture and drawing – is a debate deflected by the adoption of a wider relational model, with its acknowledgement of the participatory aspects and the potential of any art event.

perceptible and comprehensible. But, as Nathaniel Stern points out, these definitions of interactivity tend to concentrate on explanation of the fact that ‘a given piece is interactive and how it is interactive, but not on how we interact’⁶. That is, Brian Massumi says, there is a concentration on function, rather than quality, that limits the debate⁷. This is tied to a focus on representation that fixes relation to preconceived models rather than allowing the immanent production of new ways of experiencing⁸.

While many writers and artists therefore prefer to move from the term interactivity to one of relationality to distinguish themselves from or extend such narrow definitions⁹, others continue to use interactivity while implying a much wider range of qualitative potentials, believing, as Kelli Fuery states, that a prescriptive view ‘must be resisted, and it can be resisted...if we view interactivity as an unstable and uncertain process’¹⁰. Limited and functionally based discussions of interactivity do, however, contain some pertinent critique of the state of much work so labeled, even if in some cases they fail to grasp the potential of a wider reaching and more qualitatively based discussion.

Proponents of interactivity have promoted the existence of some essential qualitative – and indeed moral – judgment of difference between ‘interactive’ and ‘non-interactive’ forms. Simone Osthoff’s argues, for example, that Lygia Clark’s work

⁶ Nathaniel Stern, “Interactive Art and Embodiment: The Implicit Body as Performance” (Prepublished manuscript, 2012, pdf), 57. See also Claire Bishop’s critique on the focus on participatory art’s social rather than aesthetic qualities that tend to flatten all artistic social experience to the same level. Claire Bishop, “The Social Turn: Collaboration and Its Discontents,” *Rediscovering Aesthetics: Transdisciplinary Voices from Art History, Philosophy and Art Practice*, eds. Julia Jansen, Francis Halsall, Tony O’Connor (California: Stanford University Press, 2009), 240.

⁷ Brian Massumi, in Lozano-Hemmer, Rafael, “Vectorial Elevation: Relational Architecture No. 4,” (Son Torge: Mexico National Council for Culture and the Arts, 2000), 201.

⁸ Andrew Murphie, “Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari’s Thought,” *Convergence* 2:2 (1996): 4-5. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

⁹ Manning proposes that the relational is ‘active with the tendencies of interaction, but not limited to them’. Erin Manning, *Always More Than One: Individuation’s Dance* (London: Duke University Press, 2013), 29.

¹⁰ Kelli Fuery, *New Media: Culture and Image* (New York: Palgrave Macmillan, 2009), 45. In something of a widening of the parameters of the interactive, Stern proposes a number of types, some of which imply a relational mode of thinking: navigatable, reactive or responsive environments, participatory and collaborative interactions. Stern, “Interactive Art and Embodiment,” 28-9. See also Pierre Levy, *Cyberculture Electronic Mediations* (Minneapolis: University of Minnesota Press, 2001), 61, 115-6, for a discussion of a number of types of interactivity.

utilises the viewer's own energy, synthesises mind and body to explore the sensorial, and replaces the object with the experience – all in ways that painting and sculpture cannot¹¹. There is an implication of an essential moral superiority in interactive artwork present in Victor Stoichita's statement that in Rafael Lozano-Hemmer's work we 'are no longer before the (interactive) work, we are in the work'¹². Both Pierre Levy's assertion that interactivity 'actualizes the decline of totalization'¹³, and Roy Ascott's claim of 'moving beyond the object' from observed effect to participation, consider participatory art somehow opposite of 'traditional' forms that distance one from the process¹⁴.

What then are our expectations of the functioning of interactive art? That it expands the range of art experiences available to the audience, offering levels of 'free choice' and embodied experience seemingly unavailable in more traditional art forms? That it will be participatory on some level unavailable in the supposedly more passive enjoyment of traditional forms; or that it will be experiential rather than representational?

The question of (free) choice is, as Alan Peacock argues, one on which the success and failure of interactivity commonly balances, stating that 'decision making of some kind is a necessary condition of the interactive'¹⁵. But are there levels of experience in which there is really open-ended decision-making in generative or interactive art? Can interactivity really offer more choice than, for example, a painting? Can it offer as many options to the viewer, either in the way they assimilate content or in the choices of level of involvement in the work? An exhibition of paintings might offer the viewer relatively free reign in their manner of experiencing the space: the choice to

¹¹ Simone Osthoff, "Lygia Clark and Hélio Oiticica: A Legacy of Interactivity and Participation for a Telematic Future," *Leonardo* 30:4 (1997): 279-80. <<http://www.jstor.org/stable/1576475>> [Accessed 16/03/2010].

¹² *Underscan*, eds. Rafael Lozano-Hemmer & David Hill (Italy: Graphic Thought Facility, 2007), 129.

¹³ Pierre Levy, *Cyberculture*, 96, 131.

¹⁴ Roy Ascott, *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness* (Berkeley: University of California Press, 2003), 237, 328.

¹⁵ Alan Peacock, "Towards an aesthetic of the interactive," <<http://www.soundtoys.net/journals/towards-an-aesthetic-of>> [accessed 25/8/10]: 3. Free will', as Valentine Moulard-Leonard argues when discussing the philosophies of Henri Bergson, could in itself be seen on some levels as a 'false problem', presuming a preformed, singular subjectivity from which to deliberate on the world – whereas, in reality, deliberate and spontaneously arising actions might not

skim over some works, view them in any order, dip in and out of concentration and so on – all fairly banal choices that one would take for granted. Interactive works on the other hand, as Massumi notes, often dictate a high level of prescriptive participation to achieve any presence, creating ‘a kind of tyranny to interaction’¹⁶.

Here Massumi cautions that interactive works can dictate an involvement and proscribe possibilities¹⁷, enclosing us, as Louise Poissant says, ‘into a schema of manipulation rather than propos[ing] a real space for dialogue’¹⁸. Florence de Mèredieu likewise warns that ‘we should not delude ourselves: interactivity can conceal programmed actions and predetermined pseudo-choices’¹⁹. In such situations, Mona Sarkis argues, the participant in interactive art remains a passive ‘user’, assembling the artist’s vision without any real free choice²⁰. Thus she claims the interactive possibilities of technologies promoted by their producers are often ‘adopted in a careless and uncritical manner by...artists and philosophers’²¹.

Such forced or obligatory participation should not be taken for granted as being in any way a freedom from the normative viewer–artwork paradigm, rather it represents a potential co-option of art into the construction of mutable, exploitable bodies²². As Manning pointedly states:

To be forced to play is like being forced to touch. Not only does it potentially do violence to the complex relational field in co-composition, it also presupposes an already homogenous arena of engagement.²³

be so simply divisible. Valentine Moulard-Leonard, *Bergson-Deleuze Encounters: Transcendental Experience and the Thought of the Virtual* (Albany: University of New York Press, 2008), 18-19.

¹⁶ Brian Massumi, "The Thinking-Feeling of What Happens," 3.

¹⁷ Brian Massumi, 'The Thinking-Feeling of What Happens,' *Inflexions* 1, (2008): 1. Lev Manovich describes the rise of interactive art as a shift from representation to manipulation. Lev Manovich, "On totalitarian interactivity (notes from the enemy of the people)," 1996, 1.

<<http://manovich.net/index.php/projects/on-totalitarian-interactivity>> [Accessed 20/10/2010].

¹⁸ Louise Poissant, "The Passage from Material to Interface," *Mediaarthistories*, ed. Oliver Grau (Cambridge MA: MIT Press, 2007), 245.

¹⁹ Florence de Mèredieu, *Digital and video art* (Edinburgh: Chambers Harrap Publishers Ltd, 2003), 230.

²⁰ Mona Sarkis, "Interactivity means interpassivity," *Art and Cyberculture* 69, no. August (1993): 13.

²¹ Ibid.

²² Stern, "Interactive art and embodiment," 26-7.

²³ Manning, *Always more than one*, 129.

These problematic elements of interactivity and control might be thought of as having three related areas of contention: productivity, linearity, and histories of control and power embedded in the technologies – and, behind these, the issues the naturalisation of a representationalist or essentialist modeling of experience²⁴. The critique of these aspects links interactivity to consumable entertainment, demonstrability and its didactic applications. Here interactivity ‘fails to escape the discourse of commodification’ – becoming the ‘dubious idea’ of Woody Vasulka’s comment.

1.1.1 Production: exchange and use-value

The productive structuring of interactive art experiences is situated within the history of the commercialisation of its aesthetics and technologies. While we might commonly think now of artists’ repurposing commercial technologies into more artistic production, Simon Penny argues that there is an historical dialogue between the two that is largely ignored. The ‘techno-formalist’ concerns²⁵ at the centre of 1990s media art explorations, he says, laid much of the groundwork for gaming interfaces, for immersive training systems utilised by the militarily and commercial sectors (such as flight simulators), and by social media platforms on the internet²⁶. These non-art world technical advances – combined with new media works themselves – were ‘informed by the previous thirty years of “art and technology”, installation art, performance art and video art’²⁷. Penny proposes that not only do artists recommission technologies of control, but that many of these more prescriptive and troubling applications have arisen, if inadvertently, out of artistic experiments in manipulation.

²⁴ Barad defines ‘representationalism’ as ‘a system where representations mediate between independently existing entities’, and ‘essentialism’ as ‘a metaphysics that takes for granted the existence of individual entities. Each with its own roster of non-relational properties.’ Karen Barad, *Meeting the Universe Halfway*, 47, 55.

²⁵ Simon Penny, "Desire for Virtual Space: The Technological Imaginary in 1990s Media Art," 2009, 4.
<<http://simonpenny.net/texts/Resources/desireforvirtualspace.pdf>> [Accessed 10/8/2010].

²⁶ Ibid, 21. A similar dynamic is discussed by de Mèredieu, who gives the example of an ‘ageing machine’ developed as an artistic project whose program is now used by the FBI to help trace criminals. Florence de Mèredieu, *Digital and Video Art*, 197-8. See also Oliver Grau, *Virtual Art: From Illusion to Immersion* (London: MIT Press, 2003), 172.

²⁷ Simon Penny, "Desire for Virtual Space," *Digital and Video Art*, 11. De Mèredieu traces a similar ‘prehistory’ within art experiments of the 1960s and 70s.

The concentration on technical advance, alongside the necessary collaboration with companies and research laboratories invested in the commercial applications of such advances, has lead, as Penny points out, to the adoption of a certain philosophical stance that has leant itself to the development of interactive systems based on the dynamics of consumerist exchange²⁸. These applications promoted certain Platonic ideas about the divorce of mind and body, naturalising “‘objective external real”, “sense-data” and “representation””, and the thinking of participants as ‘users’ or consumers²⁹. As such, certain power structures have become a largely unquestioned norm of interactivity: stable systems of objects and bodies exchanging via an interface; users responding to already-formed sets of information; systems that draw attention to their mechanics through reward for behavior; and a focus on representations and exchanges of content within predefined parameters rather than co-emergence³⁰.

Participatory works might claim to escape this paradigm through a certain freedom from representational content³¹ – aiming for visceral experience over narrative, contemplation or reflection. While in one sense it is true that a painting’s content is constructed by the artist prior to the encounter with a viewer, even in the most

²⁸ We must remember that ‘interactivity’ has in itself become a marketing tool for a whole range of games and other electronic devices (Fuery, *New Media: Culture and Image*, 41-2), as it has been sold for its ‘novelty’ within the art world (Simon Penny, "Towards a Performative Aesthetics of Interactivity," *Fibreculture* 19 (2011): 72-109, 99), while the rise in digital arts funding could be linked to the potential future commercial applications of such artistic research, thus funding structures privilege a focus on learning, results and quantifiable changes. Manning and Massumi, "Propositions for an Expanded Gallery: Generating the Impossible," *Proceeds from the generating the impossible 2011 convergence*, 2010, 2. For discussion of the links between industrial culture and interactive technologies, see: Johannes Birringer, "Interactivity: 'User Testing' for Participatory Art Works," *International Journal of Performance Arts and Digital Media* 1:2 (2005): 153.

²⁹ Simon Penny, "Desire for Virtual Space," 22. The concentration on a distancing vision, Penny states, produces a ‘scopophilic obsession with the eye and vision...[producing] a technology of the phallic gaze, the conquering eye, in which the holistic nature of embodied being [is] elided’. Ibid.

³⁰ Erin Manning, *Relationescapes* (Cambridge: MIT Press, 2009), 63. ‘Interaction’, Stengers says, ‘implies terms that make a difference for one another, but a difference that does not modify their identity’. Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, MA: Harvard University Press, 2011), 514. In this context, we might say that interaction fails to challenge the roles of consumer and consumable object that might be questioned by more open-ended relational works. See also Levy, in which he critiques the difference between interactivity modeled on communication systems, whether consisting of ‘monologue’, ‘dialogue’ or ‘multilogue’ as being in opposition to an interactivity co-producing its subjects. Pierre Levy, *Cyberculture Electronic Mediations* (Minneapolis: University of Minnesota Press, 2001), 115-6.

³¹ Interactivity’s representational issues tend to have, as discussed in the next section, more to do with representations of its dynamics and/or mechanics.

didactic, narrative-driven image, there presents the possibility, one could argue an inevitability, for a freedom of association, for the viewer to link elements to memories³². This association is not simply a reliving of old memories, but an actualisation of virtual memory that creates new thought in the event of artwork and viewer, matter and memory – exactly the kind of ‘interaction’ that fits with Manovich’s argument that the notion of interactivity must become inclusive of notions of psychological processes, mental as well as physical or temporal connections³³.

Many artworks might therefore be read in this psychological sense as loosely ‘generative’ – not mechanically as in some participatory works³⁴, but that an individual experience still emerges from the combination of viewer and work that in its singularity inevitably begins to escape the confines of the artist’s control. Interactivity, however, can struggle to allow such excessive layering and complicating of dialogues. Productive interaction is often lacking the multitude of potential connections and struggles to become excessive, to outstrip function and destabilise orderly systems of exchange.

The ‘tyranny’ of interactivity is that it is based not just on required participation, but on the reduction of such participation to the parameters of linear, programmatic and productive exchanges. The ‘connection’ promised through interactive participation can, often remain at a level of relation that stays safely within the capitalist systems of information exchange – and the dynamics of interactivity can be seen to contribute to the construction of exploitable bodies within such a paradigm³⁵. It is perhaps then no wonder that interactive technologies form the basis of much entertainment industry

³² For example, the viewer might make personal and cultural associations, such as colours reminiscent of a flag, facial features associated with a friend, lighting effects that trigger memories of a half-forgotten film, muscle memory or a prehension of movement made conscious through an association with a figure’s awkward pose.

³³ Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 56-7.

³⁴ By which I mean that an interactive work might, for example, literally generate new combinations of sound and visual data out of the participant’s movements. The term ‘mechanical’ is not here used to infer negative connotations to such processes.

³⁵ Stern, “Interactive art and embodiment,” 26-7. This could be seen as similar to the ‘panoptic’ paradigm, in that the dynamics of interactive art can here work not only to construct the body as a kind of databank of new information to be fed into the workings of the system, but that as such systems become ‘naturalised’ – that is, the expected relationship with a work – and this relationship becomes an

spectacle, and interactive systems and displays sit so comfortably in didactic museum displays – ironically the very participation that in art is intended to free the viewer from constraints, but instead operates effectively to contain, direct and lecture them³⁶. As Massumi argues, to utilise such technologies in a becoming and emergent fashion, they need to be freed from ‘exchange-value’, to move beyond ‘prodding a participant to gain a response’³⁷, and take on a more speculative nature³⁸ that allows an excess to emerge. The artist involved in developing interactive systems might be charged here with an obligation to think beyond these co-optable dynamics of relation that so easily lend themselves to dominant power structures, and develop more complex ecologies of relation that resist productivity and spectacle.

1.1.2 Linearity: riding the interactive train

Interaction can become trivial, as Roy Ascott suggests³⁹, in a closed, linear system with finite data – a flicking of an ‘on’ switch with the viewer’s presence, a prompting of a software program to jump to the next prearranged scene, as in a video game. Programmed and linear events here lack emergent qualities that might help shape the actualised events through the immanent creation of further potential⁴⁰. The lack of physical or psychological tension created by such experiences is often in hollow contrast to everyday lived experience, as the excess of the virtual is replaced by the probable, while open-endedness is replaced by specific purposes.

What space for contemplation does the interactive installation allow? Perhaps the curse of interactivity is that often the viewer must either abandon midway through boredom, endure to a set endpoint, or at least move through in a set direction. That is, the experience remains essentially linear, ‘prepackaged and predigested’, as de

internalised response to the environment and bodies are performed as data to be exploited. See Michel Foucault, *The Foucault Reader* (New York: Random House, 2010), 206-13.

³⁶ My argument here is less intended as a critique of gaming and museum culture than of the limitation of interactivity within art events to such models. Anna Munster, for example, has argued for the positive aspects of the use of multi-media in interactive museum displays, which can allow for ‘affective experience’ that emphasises relations rather than objects. Munster, *Materializing New Media*, 56-8.

³⁷ Massumi, “The Thinking-Feeling of What Happens,” 9.

³⁸ Ibid., 32.

³⁹ Roy Ascott, *Telematic Embrace*, 378.

⁴⁰ Erin Manning, *Relationescapes*, 74.

Mèredieu states⁴¹. Here Ascott's claim that interactivity 'empowers' by allowing the 'individual to participate fully in the workings of the system'⁴² can be rather like the participation in riding a train: certainly we are bodily involved in the machinations of travel, but with limited entrance and exit points and heading inexorably in a prescribed direction. It is a kind of roller-coaster experience that contains a certain level of visceral thrill and which can, as Poissant notes, 'enclose one into a schema of manipulation rather than propose a real space for dialogue'⁴³. The risk is that our movements lose their incipient qualities, and the possibility of participatory works instead becomes a role of merely 'performing the software'⁴⁴.

Interactivity here becomes, as both Penny and Lozano-Hemmer have noted, 'Pavlovian', a 'trivial' modality based on a 'push the button and get a reward' system⁴⁵. Lozano-Hemmer attributes such systems to the early developments in interactivity, stating that greater 'sophistication' arose later⁴⁶, however I would argue that this issue continues today⁴⁷. As mentioned above, these issues with escaping linearity arise partially from the use of technologies created for specific, productive purposes, although it would be wrong to imply or to attribute this, as Wood does, to any inherent or inescapable properties of such technologies⁴⁸. Rather, we might see this issue as arising more specifically out of the technologies being put to use

⁴¹ De Mèredieu, *Digital and Video Art*, 213. Even generative models utilized within software programming for 'evolutionary' art, such as fractal or fitness based systems, while potentially divergent in the paths, still involve linear dynamics of cause and effect (alternative, ecological approaches are speculated on in Appendix B).

⁴² Roy Ascott, *Telematic Embrace*, 284. See also Levy, where he argues that 'cyberart' systems of interactivity operate against the totalizing forms of traditional media, allowing new and greater potentials for coproduction. Levy, *Cyberculture*, 115-6, 131 and passim.

⁴³ Louise Poissant, "The passage from material to interface," 245.

⁴⁴ Erin Manning, *Relationescapes*, 63.

⁴⁵ Simon Penny, *Towards a Performative Aesthetics of Interactivity*, 78. See also: Rafael Lozano-Hemmer, Marie-Pier Boucher and Patrick Harrop, "Alien Media: An Interview with Rafael Lozano-Hemmer," *Inflexions* 5 (2012): 150. Stern describes such systems as operations of a 'passive trace', utilising gesture and response. Stern, "Interactive Art and Embodiment," 68.

⁴⁶ According to Lozano-Hemmer, these later developments began to consider the question of how to include 'dissimulation, alterity, contagion, ambiguity, betrayal, interruption [and] loss'. Raphael Lozano-Hemmer, "Alien Media: An Interview with Rafael Lozano-Hemmer," 152.

⁴⁷ See also the critique of linearity in Manning, *Relationescapes*, 62-4, and Stern's critique of representational modes within interactivity ("Interactive Art and Embodiment," 10). De Mèredieu critiques the predetermined nature of an interactivity that 'confines the spectator's actions and reactions to a well mapped art path', and the ubiquity of such forms as 'an art trapped in prefabricated "networks" [running] the risk of being transformed into a kind of global, collective "art in kit form".' (*Digital Art and Video*, 230-1). Fuery also makes pertinent comments on the need for interactivity to continue to explore beyond the performance of its mechanisms and to investigate a 'becoming' of such mechanisms (*New Media*, 43-4).

primarily to represent relation within the interactive encounter (in itself a 'productive' use), promoting the demonstration of interaction over experiential emergence⁴⁹.

The desire to clearly demonstrate to the participant that they are indeed interacting with and causing change or growth, can prevent the riskier task of enabling the performative exploration of emergent relation, which may or may not reach a level of perceptible representation, and which may indeed remain at a virtual level⁵⁰. This focus on demonstration imposes 'self-completing lines through representations that trace existing conditions and attempt to repeat them', as Andrew Murphie argues of representation and virtual reality⁵¹, in its need, even anxiety, to facilitate the perception – as opposed to the sensations or performance – of an interactive experience. This serves to bring, once again, the modality of interactivity back to the language of gaming and use-value, where potential is replaced by the possible⁵². Exploration of 'becoming' in any larger sense, which is 'neither linear nor sequential'

⁴⁸ Aylish Wood, *Digital Encounters* (New York: Routledge, 2007), 16.

⁴⁹ Andrew Murphie, "Computers Are Not Theatre," 5. This is not to say that the two are necessarily exclusive – comprehension of relational factors does not, in itself, deny a rich involvement in immediate sensorial experience (causal efficacy and presentational immediacy being two components of any experience in Whitehead's system of perception) but that the emphasis in interactive art has often been on demonstration of its mechanics of relation. See Brian Massumi, "The Thinking-Feeling of What Happens," *Inflexions* 1, (2008), and Chapter Four of this exegesis. This demonstrative approach, as Penny argues, ties in with 'techno-fetishism', the instrumentalisation of the user through a concentration on the representation of the potentials of the technology. Simon Penny, "Towards a Performative Aesthetics of Interactivity," 73, 87.

⁵⁰ In such a sacrifice, what is lost is the larger potentiality, as outcomes are now made rigid and linear to ensure the pay-off of a quick and simple explicated exchange for the participant. David Rokeby discusses the problematics of this issue eloquently in relation to his work *Very nervous system* in a text entitled 'The Construction of Experience: Interface as Content', where he explains how the complex and multiply interwoven relational parameters built into the work caused participants to feel as if they were not in fact interacting and to then lose interest in the work. David Rokeby, "The Construction of Experience: Interface as Content," David Rokeby, <<http://www.davidrokeby.com/experience.html>> [Accessed 28/5/2013].

⁵¹ Andrew Murphie, "Computers Are Not Theatre," 6. See also: Karen Barad, *Meeting the universe halfway*, on the naturalisation of representationalism, 46-50. As artist David Rokeby notes, the 'simplified representations [of interactivity] replace the relationships to which they initially referred. This substitution turns the interesting ambiguities of control and subjectivity in interactive art into serious issues of control, manipulation and deception.' David Rokeby, "Transforming Mirrors", David Rokeby. <<http://www.davidrokeby.com/mirrorsconclusion.html>> [Accessed 28/5/2013].

⁵² Massumi defines the possible as 'normative' variation, as opposed to the 'unprescribed' nature of potential. Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation*, Post-Contemporary Interventions Series (Durham, NC: Duke University Press, 2002), 9. If we read the 'possible' as that which is already contained within the actual then it is, in a sense, tautological, defined retroactively and offering no forward movement from a position – rather it acts to contain and limit. See Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 211-12.

as Rosi Braidotti states⁵³, is replaced by the rehearsal of the already formulated and comprehended.

1.1.3 Histories and networks of control

It is certainly true, as Manning warns, that the sensory technologies at the base of many interactive works have ‘problematic pasts, both as displacers of the corporeal body and in assemblages of control’⁵⁴. Mark Dery advocates optimistically that repurposing such oppressive technologies within artworks is a potentially political act that displaces the power dynamics by making art with such tools of control⁵⁵. But this could be read more pessimistically as a move from the political utilisation of surveillance by governments to create systems of control, to a system in which an artist employs these tools to control the interactions between bodies and artwork, and where the work therefore still celebrates the power of the technology⁵⁶. As Penny argues, while these technologies are deployed in novel ways, they retain many of their original functions⁵⁷, including the potential for control inherent in the representation of relation (whether body-technology, body-body, or body-subject)⁵⁸.

The concept that such technologies necessarily have only the capability to produce these power relationships seems a flawed argument. Despite the undoubted links

⁵³ Braidotti, *Metamorphoses*, 118.

⁵⁴ Erin Manning, *Politics of touch: sense, movement, sovereignty* (Minneapolis: University of Minnesota Press, 2007), 118. As I have argued above, Penny presents a potentially more troubling history where artists must share some of the burden for the ways their technological experiments have been put to use.

⁵⁵ Mark Dery, *Escape Velocity: Cyberculture at the End of the Century* (New York: Grove Press, 1996), 14.

⁵⁶ As Dery does points out, the concept that reuse or re-purposing of equipment is necessarily a radical act against capitalist models can be wishful thinking, with software producers often encouraging innovative ‘misuse’ of their technologies, and building potential for adaptation into the product as part of an extension of its modes of production and as a marketing asset. *Escape Velocity*, 78.

⁵⁷ Simon Penny, “Trying to Be Calm: Ubiquity, Cognitivism, and Embodiment,” In *Throughout: Art and Culture Emerging with Ubiquitous Computing*, ed. Ulrik Ekman (Cambridge, MA: MIT Press, 2013), 268. Penny also notes that the ‘harnessing of the flesh to the machine [of the military] was clad in the rhetoric of liberation in the heyday of interactive multimedia remains deeply ironic.’ Ibid. Cf. Oliver Grau, *Virtual Art: From Illusion to Immersion* (London: MIT Press, 2003), 169.

⁵⁸ Representational modes of production can be linked to the reinforcement of the status quo – static systems of discrete subjects incapable of escaping a pre-constructed mode of being. As Murphie writes: ‘to approach art as simple signification... is, for Deleuze and Guattari, to curtail its expression, to subject it to potentially despotic *interpretations*’. Andrew Murphie, “Computers Are Not Theatre,” 16, (emphasis in the original).

between surveillance and interactivity, this tends toward a ‘technological determinism’, as Murphie and Potts argue, framing understanding of technologies as objects capable of independently creating certain relations of power within society, rather than considering them for their functions within certain contexts⁵⁹. There is, however, no doubt that they have the potential to reproduce such power relations, and it is disingenuous for artists to simply assume that art can avoid such pitfalls without a close examination of whether there has been a true shift in the dynamics⁶⁰.

Whether inherent or not, surveillance might be thought to ‘capture’ the body, both in the flattening of the experience of a body to a fixed identity or subjectivity, and the fixing of it within a readable space⁶¹. While interactive art events utilise similar structures to fix or interpret bodies, they will remain subject to the danger of falling into similar power relationships, despite their claims to a greater level of embodied participation than other forms of art. Such representational use of bodies denies their ever-individuating nature, and can contribute to disengagement with the corporeal⁶² – the separation of images from body that is part of the operation of surveillance. This is not because of the inherent properties of individual components of the art assemblage, but because the components combine to produce similar capitalistic and network-control paradigms. It is through the performance and repetition of these ‘specific bodily acts that bodies are reworked and that power takes hold of the

⁵⁹ Andrew Murphie & John Potts, *Culture and Technology* (New York: Palgrave Macmillan, 2003), 13, 32.

⁶⁰ For example, Lozano-Hemmer’s claim that his work, reliant as it is on technologies of surveillance – and potentially complicit in their construction through the use of custom software that extends the scope of their ability to productively map bodies within space – operates as a ‘perversion’ of these technologies. Peter Gorschluter, *The Fifth Floor - Ideas Taking Space* (Liverpool: Liverpool University Press, 2009), 103. Potentially, they both pervert and critique as they also employ power relationships, and perhaps some of his works are more successful than others in achieving his aims.

⁶¹ Though it would be incorrect to link this controlling to vision or the visible as is often implied. See: Martin Jay, “Scopic regimes of modernity,” *Vision and Visuality*, ed. Hal Foster (New York: Dia Art Foundation & The New Press, 1999) 2-23. Contemporary surveillance and interactive technologies show us that movement, sound, vibrations, infra-red waves, pressure, heat, and so on, can be mapped and plotted alongside the visible. The reduction of the potential of a body in some VR immersions to a representation divorced from the complexity of embodied sensory immersion in the world leads, Dery argues, to a ‘static body’ locked into ‘observation mode’. Dery, *Escape Velocity*, 234-5. This is, Penny states, a ‘thinning out’ experience in an action of ‘standardization, reductivism, efficiency [and] instrumentality’. Penny, *Trying to be Calm*, 7-8.

⁶² As Massumi notes, ‘bodies that fall prey to such transcendence...[have] their corporeality...stripped from them, in favour of a supposed substrate – soul, subjectivity, personality, identity’. Brian Massumi, *A User’s Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari* (Cambridge, MA: MIT Press, 1992), 112. See also Brad Epps on interactivity as ‘exercises in control’. Cited in Braidotti, *Metamorphoses*, 253.

body’⁶³. Here it is not the individual components but the particular systems that are composed out of these technical objects and other elements that produce these problematic power relationships.

Where such technologies of control are concerned, we need to interrogate, interrupt or shift the kinds of power dynamics that are enacted – the networks that are constructed – and within this, the ways that such technologies encourage the replacement of embodied experience with representational models, and the imposition of normative subject-object relations. Here it is not enough to simply claim that the end product differs from the original design aims of those technologies, without such more detailed and critical examination.

It is important that artists investigate ways to escape the machinics of the production of exchange, subjectivity and networks of control, in order to allow a rethinking not just of the component parts or productions of these machines, but also of the ways in which these parts form relations. This is an interactivity that moves beyond the performance of a mechanism, as Fuery suggests, becoming itself immanently interactive as a ‘technique’ for the processes of individuation⁶⁴. As Deleuze notes, it is not enough to trace a line away from something, but rather lines of flight need to be continued for the work to remain performative⁶⁵.

1.2 Art as event: a relational model.

The arguments above begin to imply some of the problematic ethics of interactivity, present not just in individual explorations of the genre, but whenever the underlying structuring of the production of the experience is unquestioned. Rather than dwell on

⁶³ Barad, *Meeting the Universe Halfway*, 63.

⁶⁴ Fuery, *New Media*, 43-4. See also Simon Penny, “Towards a Performative Aesthetics of Interactivity,” 94-5, where he advocates a ‘performative ontology’ as an ‘exploration of embodied interaction’ rather than an exploration of content. This might be described as a process of ‘subjectivation’, which, ‘although operating within social machines, uses processes of these social machines to form lines of escape from them’ – as opposed to ‘subjectification’, which ‘implies a thoroughly stratified or captured position. One’s subjectivity is aligned with the major, one’s flows contained within its antiproduktive maneuvering’. Andrew Murphie, “Computers Are Not Theatre,” 17.

these at length, or through critique of individual works, the purpose here is to propose potential tactics for the thinking beyond those kinds of relations interrogated in the previous section. Thus, more than a critique of specific iterations of the modality, the issues raised are proposed as the inevitable outcome of a essentialist system of interactions, which attempts to stratify the reality of co-emergent change⁶⁶. Thus the issue underlying the limitation of interactive artworks lies primarily, as a number of writers argue, in the philosophical conception of an object, a subject, and a work of art.

What happens to interactivity when rethought through the prism of a process philosophy? How can we think and construct interactive art differently, to encourage an ecological approach, emphasising co-emergence and inter-dependence, the fluidity and layered inventiveness that might be lacking in interactive artworks? It is this issue that underlies the narrowness of both the invention and critique of interactive art – a narrowness in the selection of evidence as Whitehead might argue, which, in its attempts to reduce the field of discussion to a manageable stability, succeeds only in denying the actual nature of the event⁶⁷.

1.2.1 From material to organic thinking

‘The change from materialism to “organic realism” ...is the displacement of the notion of static stuff by the notion of fluent energy. Such energy has its structure of action and flow and is inconceivable apart from such a structure.’⁶⁸

⁶⁵ Gilles Deleuze & Claire Parnet, *Conversations II*, trans. Hugh Tomlinson, Barbara Habberjam & Elliot Ross Albert (New York: Continuum, 1987), 29.

⁶⁶ Massumi, *Parables of the Virtual*, 207. Thus it is not enough to simply demand more from the interactive artist and critic – more complexity, more imagination, more inventive solutions, citing that it is a relatively ‘young’ art form, arguing for its inherent interactive qualities – without also considering implied philosophical positions.

⁶⁷ See, for example, Whitehead’s demonstration of how the problem of Zeno’s arrow can be solved through a shift to organic modeling. *Process and Reality*, 68-79. See also Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, MA: Harvard University Press, 2011), 16-17.

⁶⁸ Whitehead, *Process and Reality*, 309.

Massumi argues that interactivity describes a simple back and forth between two elements that remain discrete and stable⁶⁹, reflecting a material view of the world in which the viewer is a stable subject and the artwork is a stable object. Seen through process philosophy, however, the scenario is very different as these stable and persistent subjects and objects are replaced by entities that are themselves processes⁷⁰. These actualised entities are atomic. That is, they do not change in themselves; rather they exist only in the instance of their becoming, perishing in actualisation to be replaced by new actualisations, an endless advance towards intensity and invention. Viewed in this way, ‘objects’ are ‘cuts’ in processes of concrescence of complex events of relation, while ‘subjects’ arise out of experience, rather than interacting with the world in a transcendent manner⁷¹.

Such understandings begin to challenge how we think of, make and experience interactive art. They imply the need to view art objects, events and subjects as produced through, and as a result of, the complex play of forces. This does not deny that objects, bodies and subjects exist prior to the art event, but that further potential can be activated through the relational engagement when all entities are viewed as fundamentally processual in nature⁷². The processual is crucial in this expansion of interactivity, in that it opens the forming relations and the entities they initiate to a

⁶⁹ Massumi, *Vectorial Elevation*, 201. Similarly, Manning describes interaction as an ‘encounter between two bounded entities’. Manning, *Always More Than One*, 28.

⁷⁰ Whitehead, *Process and Reality*, 41. An ‘actual entity’ is anything that is actualised: object, person, atom, feeling, sound, etc. Whitehead also uses the term ‘occasion’ as interchangeable with entity, and this perhaps expresses the eventness of things more overtly. As Barad states: a ‘dynamic conception of matter is an unsettling of nature’s presumed fixity and hence an opening up of the possibilities for change’. Barad, *Meeting the Universe Halfway*, 63.

⁷¹ Whitehead prefers the term ‘superjects’ to subjects. Ibid., 155. This can be related to Simondon’s concept of individuation – an ongoing process of development of an entity that always ‘contains latent potentials’, individualisation is here thought of as a ‘cut’ in this ongoing process. (Gilbert Simondon, “The Genesis of the Individual,” *Incorporations*, eds. Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 300. Individuation is not, however, a single process of development, but rather ‘overlapping phasings happening in non-linear time’. A ‘dephasing’ or cut occurs when events ‘tune toward...a discrete iteration, a remarkable point’ that is a ‘shift in level from individuation to individual’. Manning, *Always More Than One: Individuation’s Dance* (London: Duke University Press, 2013), 17-18.

⁷² This notion of relationality, Massumi says, addresses objects and bodies from the point of view of their ability to change and respond – ‘a coming together in a fusional event...a telescoping into a potential becoming’. Massumi in ed. Rafael Lozano-Hemmer, *Vectorial Elevation: Relational Architecture*, 4 (Son Torge: Mexico National Council for Culture and the Arts, 2000), 201. Relationality immerses entities in a relational field that is quite distinct from the back and forth conversation of relation between entities of the interactive paradigm. Manning, *Always More Than One*, 130.

multiplicity of becoming that necessarily outstrips any unity of subjectivity⁷³. It brings into play the ongoing, overlapping individuations – states of constant generation rather than progression to one particular endpoint. These processes of individuation are a ‘making that is always bigger than the made’, as Massumi says, rich with the potential of the ‘yet to come’⁷⁴.

Manning poses a question about life in general that applies here to participatory art: ‘what if, instead of placing self-self interaction at the centre of development, we were to posit relation as the key to experience?’⁷⁵ As in life in general, the artwork here *is* the encounter: art as an event of relations⁷⁶.

The relational is an immediate ‘emergent process’, where something new occurs out of the relations⁷⁷. Relationality, as Couze Venn succinctly defines it, ‘relates to a process of becoming of the elements in relation, breaking with the idea of their pre-formation prior to the relation’⁷⁸. Thus Lozano-Hemmer’s insistence that his work is not interactive but ‘relational’⁷⁹ and focused not on the fixed or mechanical elements of interaction, but on the potential for establishing relations – relations that always have an immanent, virtual quality to them. This approach allows him ‘to think of the computer and technology as potential language with which you can make relationships emerge, as opposed to preconceiving the outcome’⁸⁰.

⁷³ The self here still exists, but as ‘a modality – a singularity on the plane of individuation’. Manning, *Always More Than One*, 2-3.

⁷⁴ Massumi cited in Manning, *Always More Than One*, xi. Relation is the ‘non-identity of a being to itself’, it expresses ‘more than a unity and more than an identity’. Simondon, “The Genesis of the Individual,” 312.

⁷⁵ Manning, *Always More Than One*, 2.

⁷⁶ While it is not the purpose of this research to provide such a critique, these concepts of the relational in art should be noted as distinguishable from the ‘relational’ as conceived in ‘Relational Aesthetics’, which, as Stern remarks, considers and limits itself only to relations between already constituted subjects. Stern, “Interactive Art and Embodiment”, 48.

⁷⁷ Manning & Massumi, *Propositions for an Expanded Gallery*, 8.

⁷⁸ Couze Venn, “Individuating, Relationality, Affect: Rethinking the Human in Relation to the Living,” *Body and Society* 16:1 (2010): 139.

⁷⁹ *The Fifth Floor: Ideas Taking Space*, ed. Peter Gorschluter (Liverpool: Liverpool University Press, 2009), 103. Relationality and interactivity cannot be described in simple binary opposition. Relation, as Manning notes, is ‘active to the tendencies of interaction, but not limited to them’ (*Always More Than One*, 29), while McCormack proposes, after Di Scipio, that interactions are byproducts of smaller interdependent relations within ecological systems (Cited in eds. Jon McCormack & Mark d’Inverno, *Computers and Creativity* (Dordrecht: Springer, 2012), 48.

⁸⁰ Lozano-Hemmer, *Alien Media*, 152.

Such a position is taken by a number of artists in attempting to move beyond the potentially limiting paradigm of interactivity. As noted in the introduction, there is a 'prehistory' to the discussion of a relational model, notably in philosophical writings and texts produced by artists Ascott and Clark that emerge in the earliest days of discussion on 'interactivity'⁸¹. As Ascott states: 'now that we see that the world is all about process, constant change, we are less surprised to discover that our art is all about process too'⁸². His concept of 'telematic art'⁸³ proposes a move away from the object to the examination of process – an art that explores an 'interconnectedness' of interweaving fields and forces⁸⁴.

Clark's writing provides a more sophisticated understanding of the scope of a process-based view of the world, and the relational potential of an art practice. Clark writes of her work as non-object based – 'an experience that does not leave a trace' but is an act that 'contains...its own becoming'⁸⁵. She writes of dissolution of the space between subject and object, a 'vibrating body' affected by worldly forces⁸⁶, and 'relational objects' designed to instigate affectual relationships⁸⁷ that might 'launch the spectator into unforeseeable becomings'⁸⁸.

⁸¹ Perhaps one could go back further in artists' writings, and quote, as Manning does in *Relationscapes*, from the Futurist Boccioni, who calls for a 'fusion of environment and object', and a 'sculptural simultaneity', a 'form-force' that expresses a continuity of becoming, and the abolition of subject matter replaced instead by the 'reality' of experience. (Umberto Boccioni, "Technical Manifesto of Futurist Sculpture. Preface to the First Exhibition of Futurist Sculpture," *Modern Artists on Art*, ed. Robert L. Herbert (New York: Dover Publications, 2000), 40-51.

⁸² Ascott, *Telematic Embrace*, 157.

⁸³ *Ibid.*, 231

⁸⁴ *Ibid.*, 195. This, Ascott states, is an art able to evolve in an unpredicted, heterogeneous manner – an art that is a state of 'perpetual play'. *Ibid.*, 158-9, 111.

⁸⁵ Lygia Clark cited in Jaroslaw Suchan, "Katarzyna Kobro / Lygia Clark / [Curated by] Jaroslaw Suchan," ed. Muzeum Sztuki (Lodz: Muzeum Sztuki, 2008), 6. Clark's work might be seen to encourage a felt experience of the forces making the body and to privilege 'relations across differing modalities'. Simone Osthoff, "Lygia Clark and Hélio Oiticica: A Legacy of Interactivity and Participation for a Telematic Future," *Leonardo* 30:4 (1997): 286. See also Manning, "Creative Propositions for Thought in Motion," *Inflexions* 1 (2008). 12.

⁸⁶ Lygia Clark cited in S.Martin, A. Ruiz & S. Rolnik "The Experimental Exercise of Freedom," (Los Angeles: Los Angeles Museum of Contemporary Art, 2000), 73, 104.

⁸⁷ Clark cited in Jaroslaw. "Katarzyna Kobro / Lygia Clark," 12.

⁸⁸ Lygia Clark, "Experimental Exercise of Freedom," 71. See also: Yve-Alain Bois & Lygia Clark, "Nostalgia of the Body," *October* 69: Summer (1994): 10. Here Clark calls for art to evolve beyond 'the simple manipulation and participation of the spectator' and for it to engage in 'the process of bringing the participant's freedom of action to light.'

A relational approach is explicitly adopted, at least theoretically⁸⁹, by a number of more contemporary artists. In architecture, the influential explorations of Greg Lynn could be cited⁹⁰ – and similarly, the more far-reaching explorations of emergent body-space by Arakawa and Gins⁹¹ discussed later in this exegesis. Penny, alongside Stern and Rokeby, writes as new media artists about the shift towards an enactive, performative approach to participation, engaged ‘less in the destination...and more in the temporal process which constitutes experience’⁹². This ‘performative ontology’⁹³ Penny says, expands interactivity towards that of ‘machine ecology’⁹⁴. Lozano-Hemmer advocates relational systems that ‘shatter the objective tendency and liberate representation’⁹⁵, stating that his work is ‘about the moment of the event itself and its creation through perception and participation, rather than the moment of artistic creation and presentation’⁹⁶. Participation, Manning states in summing up ‘relational’ art, differs from the programmatically interactive in its tending towards the virtual and gathering of forces from the field⁹⁷.

⁸⁹ It could be argued that there remains in many artists’ work a gap between the thinking and proposing of work as relational and the works themselves. Lozano-Hemmer’s work, while it includes many interesting experiments in multi-layered relation (the ongoing *Relational Architecture* series, for example, discussed in chapter six), also includes works that fall back into an object-orientated, demonstrative and fairly linear approach (such as *Tape Recorders*, 2011). In Penny’s writing, despite his advocacy for relation, he fails to make the leap to a model in which force is primary, ignoring the distinction between relation preceding form and relation between the already formed, and such an issue could perhaps be seen to arise in his artwork, with a similar dependence on the demonstration of connection. This is less intended here as a criticism than a pertinent reminder of the difficulty within practice of actualising theoretical material that interrupts the ‘normative’ understanding and use of objects and bodies within art.

⁹⁰ Lynn calls for a practice based on theories of complexity that engage with ‘continuous multiplicities’ to escape both identity and contradiction. Greg Lynn, *Folds, Bodies and Blobs* (Depot Legal: Bibliotheque Royale de Belgique, 1998), 161.

⁹¹ Arakawa and Gins, *Architectural Body* (Alabama: University of Alabama Press, 2002), and *Reversible Destiny* (New York: Guggenheim Museum, 1997.) See also <<http://www.reversibledestiny.org/#!bioscleave-house-%e2%96%91%e2%96%91-lifespan-extending-villa>> for the Bioscleave House, an example of their ‘procedural architecture’.

⁹² Penny, “Towards a Performative Aesthetics of Interactivity,” 83

⁹³ Ibid., 94-5.

⁹⁴ Ibid., 100. Stern describes the body and world as ‘implicit in one another’, a ‘per-formed’ rather than ‘pre-formed’ relationship. Stern, “The Implicit Body as Performative: Analysing Interactive Art,” 233. This is a body which is emergent ‘through its active relations to other matter-and-matters in progress’. Stern, “Interactive Art and Embodiment,” 34. As such, the creation of relation is ‘continuous; it is embodiment’s ...always ongoing formation’, and he compares this to the ‘more finite’ possibilities of interactivity: responsive but restrictive. Stern, *ibid.*, 8. Likewise, Rokeby argues for an interactivity that develops ‘complex and resonant relationships between interactor and the system’. Rokeby cited in Penny, “Towards a Performative Aesthetic of the Interactive,” 84.

⁹⁵ David Hill & Rafael Lozano-Hemmer, *Under Scan* (Italy: Graphic Thought Facility, 2007), 44.

⁹⁶ Lozano-Hemmer, *Alien Media*, 153.

⁹⁷ Manning writes that it is not about ‘the plan of the movement or the partitioning of the individual bodies in space. It is the relational force that persists from the collective movement’s incipient cueings and alignments, the incipient priming gathered as a force field not of the bodies per se, but of the active

The *embodied* relational approach referred to here, considers the social as a force contributing to the individuations of the body and subject, but is also considerate of a much broader spectrum of relational possibilities. Similarly, an embodied model of relation is in marked contrast to artists such as Stelarc, for instance, who invest in the transcendence of the body through the bio-technological melding – a ‘neo-Cartesian reduction of the body to a machine’ that constrains it, Dery argues, to the position of commodity and the ideal subject for power⁹⁸.

The operational politics of the relational are, on the other hand, as Manning states, ‘the politics of procedurality: that to begin again is to begin differently’ – to be moved by and be attentive to the force of the field with which one co-emerges⁹⁹ and to express new potentials for becoming.

1.2.2 A relational model(ing)

Relations are always improvisational, fluid and emergent, Manning states¹⁰⁰, a ‘becoming’ connectivity¹⁰¹. The ‘event’ of the connections and their co-emergence with bodies – the way relations develop between the body and the work, a ‘mutual incipency’ – is a process of change and response¹⁰². Manning and Massumi use the

intervals their relational movement creates, intervals that in turn propose multiplicities in the moving...It is the difference and repetition of performance's ontogenetic field as it creates space.’ ‘The Dance of Attention,’ *Inflexions* 6 (2013): 342.

⁹⁸ Dery, *Escape Velocity*, 232, 164, 154-235. Dery criticises the ‘cyborg’ model for preaching ‘transcendence through technology’. Ibid., 161. For a succinct discussion of Simondon’s critique of cybernetics see: Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, trans. Thomas LaMarre (London: MIT Press, 2013), 79-83. See also Manning’s distinction between the cybernetic and the prosthetic use of technology (*Relationescapes*, 63). Cf. Massumi, *Parables for the Virtual*, Chapter 4, for an alternative reading of Stelarc’s work that emphasises his ‘tweak of the human body-object into a sensitivity to new forces, or neglected aspects of familiar forces’ (112). There is no doubt Stelarc is his own worst enemy in the kind of transcendent language his writing uses to describe his experiments, which in themselves present the possibility of more nuanced and complex readings (for example Stelarc’s proposition of the obsolescence of bodies <<http://stelarc.org/?catID=20317>>). For a balanced discussion of the relational pros and cons of Stelarc’s work and writing and the gap between the two, see: Andrew Murphie, ‘Becoming Interactive - Interactive Becomings: A Deleuze-Guattarian Approach to an Ethics of Interaction’ (PhD diss., Macquarie University, 1997), 147-8.

⁹⁹ Manning, *Always More Than One*, 212-3.

¹⁰⁰ Manning, *Relationescapes*, 41.

¹⁰¹ To move relationally, Manning says, is ‘to harness the preaccelerations, becomings, futureness of movements’. Ibid., 26.

¹⁰² Massumi, *Vectorial Elevation*, 201.

term ‘co-causal’¹⁰³ to describe this mutual emergence of the new through the flux of the forces of relations, while Barad uses ‘intra-action’ to describe a system where cause and effect emerges as the differential materialisation of bodies. Barad writes that ‘intra-actions are non-arbitrary, nondeterministic causal enactments through which matter-in-process-of-becoming is iteratively enfolded into its ongoing differential materialization’¹⁰⁴. Francisco Varela uses the term ‘enaction’ to describe such events of relation between the world and body as events of mutual creation – neither wholly internal nor external – a ‘co-determined’ condition rather than a stable environment that one is ‘parachuted into’¹⁰⁵.

This may be considered as self-evident information, for if all things are composed from events of relation, are not all artworks thus composed, regardless of the artist’s intentions? The way many interactive works operate, however, is to attempt to stabilise such unfoldings, erase the connections to the virtual – the future potential for ‘immergence’¹⁰⁶ – and establish enduring actualised connections and representations of connections.

The shift in emphasis to the relational concerns affording an emergent or potential event that may occur or is occurring. A work might still be thought of as existing beforehand, as an object or proposition for an event, but it exists *as* an event only in a temporal relationship – or rather as a nexus of relationships – with the viewer, enfolded and unfolded through interaction, and each nexus of relations creates a singular event.

As a ‘proposition’ the potential event of art-objects/spaces and bodies can move beyond obstacles that ‘delimit the event according to pre-constituted interiorities’¹⁰⁷ to act instead as ‘propositions for an ecology of participation’¹⁰⁸. Embodied enaction

¹⁰³ Manning & Massumi, *Propositions for an Expanded Gallery*: 42, n.2.

¹⁰⁴ Barad, *Meeting the Universe Halfway*, 176, 169. This she terms a system of ‘agential realism’ (Ibid., 132-188 and passim). Bertelsen uses the term ‘trans-subjective’ after Ettinger, to move beyond interactivity and describe responsibility as a shared concern between all emergent aspects of an event. Lone Bertelsen, ‘Affect and Care in “Intimate Transactions”’ *Fibreculture* 21 (2012): 31-71

¹⁰⁵ Francisco J. Varela, Evan Thompson & Eleanor Rosch, *The Embodied Mind* (Cambridge, MA: MIT Press, 1992), 198-205.

¹⁰⁶ That is, to be further immersed in a field rather than to emerge out of the field.

¹⁰⁷ Manning, *Always More Than One*, 114.

¹⁰⁸ Ibid, 185.

of an event is always directed towards the ‘next’ – further potential differentiations – the continuing evolution of the event¹⁰⁹, and therefore open always to the pull of the virtual. Such events create body-artwork assemblages – contingent networks of interconnections with multiple, unplanned, potentially contradictory variables of relation¹¹⁰.

The participant’s concentration shifts to the buildup of energy and rhythm between and within body and work; how the event moves beyond a mapping of simple cause and effect and into something that has a ‘self-tendency, [a] life movement’¹¹¹. Such complex multiple actions and potential relations might catalyse a singular experience, moving beyond what can be articulated. Thus, what is felt or perceived here in the moment might be intensities of pure sensation, a building of energies expressed through ever reconfiguring combinations of movement, sound, image, posture, and so on – that also includes potentially contradictory affectual relations that push and pull at the body.

A relational art event might begin to concentrate on enabling the conditions for new connections to arise, a richer palette that might include slippery, hard to define, conjunctive and disjunctive forces – such as affects, inarticulate sensations, micro-perceptions, emotional tonalities – moving the work further away from any prescribed outcomes. Such fuzzy and inarticulate forces will always outstrip function. Affect and sensation are forces that can never be fully compressed into productive perception – there is always an inarticulate remainder affecting the body beyond cognition. This philosophical stance of relationality, O’Sullivan states, points (optimistically perhaps) away from ‘consumption’ and towards an ‘art practice as a process...always producing’¹¹².

¹⁰⁹ Varela, *The Embodied Mind*, 205.

¹¹⁰ An assemblage is a productive network of variable, contingent connections that produce something more than the individual components.

¹¹¹ Massumi, “The Thinking-Feeling of What Happens,” *Inflexions* 1 (2008), 13.

¹¹² Simon O’Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (New York: Palgrave MacMillan, 2006), 24.

Bridge: Into the Midst: Immersion Immersive.

While in theory it is easy to agree on a general shift to relational modeling, it remains problematic for the practicing artist engaged with an interactive, generative, or what we might now term ‘relational’ art practice, to question ways to structure or enable fluidity and to maximise open-ended potentiality in practical terms, particularly when working with interactive technologies designed with other outcomes in mind. An example of some of the practical issues involved in attempting this shift to a more relational version of interactive art events can be seen in *Into the Midst*, a five-day, collaborative research-creation and workshop/presentation in the *SATosphere* – the Society for Art and Technology’s interactive and immersive projection dome in Montreal, Canada¹¹³.

The project sought to explore the ‘minor’ potential of a space constructed with seemingly rigid divisions the artists’ technical and spatial control and the viewers’ lack of control of the space, and the similarly clear divisions between the interior presentation space and the physical and social realities of the gallery’s geographical position within a politically-charged area of downtown Montreal.

Key to the usual operation of the dome was that the scale of the space and configuration of the seating constrained its use to an undoubtedly spectacular, but somewhat passive, viewing space – with viewers reclining while focusing attention on relating to the surround sound and giant images that wrapped around and cocooned them. The space centralised all eyes and ears on these immersive events that provided a very similar experience to all viewers regardless of where they were positioned in the dome.

Into the Midst artists hoped to activate more varied experiences for viewers, potentially including relating to the edges of the space, images and sounds that disrupted the smooth illusion of immersion, opportunities for bodies to openly relate to each other beyond simply sharing the viewing of the projections, or the reactivation of what is generally an immersive environment that remains relatively passively consumed as entertainment during regular operation.

¹¹³ See Appendix A for further details and images from this project.

In seeking a minor potential for the dome, the artists in the project sought not to ignore the various technical mechanisms built into the space to provide such spectacle, but to reuse them in a more speculative and unconventional manner. Tactics employed within the space itself¹¹⁴ to disrupt the habitual configurations of relation included: creating relational play between artists and audience members with yarn that was crocheted between bodies; improvised movement procedures and generated sounds that sought to activate the perimeter of the dome; projections of images and videos that disturbed clear spatial representation; and sudden shifts between centralised, immersive images and sound and multiple smaller images; a sudden cut to projected imagery; and more subtle, directed sounds that attempted to locate viewers back into their specific spatial configurations (see *figures 1.1* and *1.2*¹¹⁵).

Despite the concerted efforts to extend the potential of the dome's mechanisms in its public presentation, the normative paradigm of the dome as a space for relatively passive consumption of immersive imagery continued to overwhelm the efforts of the artists. The event too easily became an extension to, rather than an interruption of, the 'entertainment' space and habits that such places encourage.

¹¹⁴ As part of the project, a number of parallel experiments in relation were carried out around the site of the SAT and then folded back into the space. Chapter Four discusses one such experiment – an iteration of Nathaniel Stern's ongoing *Compressionism* project.

¹¹⁵ Senselab collaborative project, *Into the Midst: Immersion Immersive* (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photographs. Photo credit: Hannah Buck.



Figure 1.1 Senselab collaborative project, *Into the Midst: Immersion Immersive* (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.



Figure 1.2 Senselab collaborative project, *Into the Midst: Immersion Immersive* (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo credit: Hannah Buck.

The lure of the projections continued to quickly draw viewers' focus to the centre of the space, and to encourage them to lie back and gaze at the imagery, rather than engage in the other activities offered. The mechanisms of the dome proved to be highly effective at centralising and constricting forms of relation to those between the systems of projection and a generalised audience, so that they overwhelmed the more tentative and singular experiments, which were attempted within the space.

My own participation in this project crystallised some of the key issues around the difficulties in moving the interactive beyond habitual divisions of artwork and subject, and in enabling relations to operate outside the (again habitual) paradigm of the passive consummation of the demonstration of the spectacular¹¹⁶.

The space of the dome, and its sound and light projection apparatus, had been designed with a rigid and highly-productive (spectacle-spectator) relation in mind that proved particularly hard to shift. It was difficult to utilise the technologies built into the space without creating a work that ended up principally demonstrating the undoubtedly impressive capacities of the technology. The design of the space seemed to suggest that it primarily concerned itself with a relationship between a relatively passive subject and events predicated on 'out of body' experiences (such as spectacles of virtual travel reminiscent of nineteenth-century panoramas), rather than with any embodied potential that might be exploited within such a large space.

Potentially disruptive transversal relations that might have interrupted the centralised focus (between viewers, for example), were too easily overwhelmed by the force of attraction toward the overhead light show, and the 36-speaker surround sound, which drowned out the other potential interactions. Even the artists involved found it difficult to not succumb to the lure of the projected spectacle above, despite our shared interest in moving beyond this experience. Likewise, those viewers who attended the public showing found themselves, for the most part, adopting this passive position within the space, despite the various activities designed to disrupt this action.

¹¹⁶ The cost of the construction of the SAT's immersive dome has led to the need to hire it out for events of mass spectacle, and therefore to configure the technology to primarily provide this over other forms of engagement. This perhaps was not its intended primary use when first envisaged, as the SAT previously had been known for much more open and experimental uses of media technologies.

Technologies of interaction demonstrated in this project that they have the potential to control and limit relation when not carefully constructed to operate otherwise, and that habits of operating within a known paradigm can be hard to shift, even for those with such intent. Here it became evident that the construction of relation in and of itself can still easily conform to dominant and perhaps constrictive paradigms, and that any ethical platform of emergent relation must find new ways to interrupt the habitual means of engagement.

Participants' bodies similarly needed to be addressed in individual ways, and encouraged to engage on multiple levels, rather than as a generalised ideal. The kind of dominant relation between fully-formed subject and work that the SAT's dome space assumes as primary, also needs to be put into question by relations that allow movement in differing kinds of connection and disconnection – and on differing scales of interaction – to emerge.

For me, this project highlighted that, as Penny notes, there is, at times for all of us, a considerable gap between the theory and practice¹¹⁷, broad intention and outcomes. While the relational model previously outlined is the one pursued within this research, much of this theory on broader philosophical level only begins, at best, to address the more practical concerns of how to enact such systems within a participatory framework. How to structure a work to allow for multiple, surprising outcomes, and how to create organic movement – the complex flow of prehension, synthesis and perishing, pursued endlessly by further such creation – remains a question¹¹⁸.

¹¹⁷ As Penny says: 'We appear to have advanced little in our ability to qualitatively discuss the characteristics of aesthetically rich interaction and interactivity and the complexities of designing interaction as artistic process.' Simon Penny, *Towards a Performative Aesthetics of Interactivity*, 72.

¹¹⁸ These issues are at the heart of this research, and Chapter Two begins to address these more forward-looking and practical concerns – the 'how to' of a thinking beyond in detail, and some of the potential tools that might be constructed with which to realise such aims.

Chapter 2

Thinking parasitic action

2.1 Introduction

A reimagining of interactivity along relational lines introduces the possibility of a ‘minor’ interactivity. This involves a continued activation or problematisation of the major form, in order to avoid a return to any oppressive stasis. The concept of the assemblage – here linked to molecularisation – and the notion of art as an event and a machine are introduced to enable a closer investigation that is at the heart of this research: the creative power of noise or interference in relation and its role in increasing the self-organising capacities of the interactive event,

This rethinking must also involve more practical tools that allow an interrogation of singular instances of relation. It must be remembered that ‘relation’ in itself is not an answer, since all existence in the process philosophy model adopted, is necessarily concerned with relation. However much interactive work, as I have argued, is relationally oppressive in working to fix and contain relational difference and generation along programmatic lines. It is important then to think of relational propositions that might allow a certain freedom to reinvent or mobilise existing relation – to produce potential movement.

2.1.1 Minor interactions

Such rethinking might be thought of as a ‘becoming minor’ of the interactive system, a reactivation of its major form. Using the concept of the minor allows a thinking of a relational potential of interactivity that, rather than being oppositional or reactive to the critiqued dominant paradigm, seeks to explore the further potential of the

components of the systems, utilising the same components but with a different structural logic¹. In this sense, ‘becoming’ or individuation is always minoritarian, as Erin Manning states², in that it is about the activation of movement or further individuation beyond a stable form. The becoming-minor, for Gilles Deleuze and Félix Guattari, is precisely a tactic with which to pervert or trouble the structure of an oppressive system³ to explore ways to allow the oppressed qualities of the major to oppose its oppressive qualities⁴. This, as Simon O’Sullivan says, breaks with the habitual formations, and challenges dominant regimes of the form to allow further movement or open change in the system⁵. In the most general sense, a shift from interactive to relational modeling could be seen as an activation of the minor potential of the form – shifting emphasis from its control and signification of subjects and objects, in which relational qualities are subordinated and oppressed, to one where it is precisely these controlled relational forces or qualities that are encouraged, and where their expressive, expansive pull can be utilised to problematise the structure⁶.

This might re-energise interactivity’s potential, giving rise to an uncertainty within

¹ As Claire Bishop points out in her critique of current trends in socially relational art, relational works are also quite capable of enforcing the status quo through blind promotion of social inclusiveness in the works ‘while the structural inequalities of society remain uninterrogated’. Claire Bishop, “The Social Turn: Collabortion and Its Discontents,” *Rediscovering Aesthetics: Transdisciplinary Voices from Art History, Philosophy and Art Practice*, eds. Julia Jansen Francis Halsall & Tony O’Connor (Stanford, CA: Stanford University Press), 241.

² Erin Manning, “Weather Patterns, or How Minor Gestures Entertain the Environment,” *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, eds. Jay David Bolter, Ulrick Ekman, Lily Diaz, Morten Sondergaard & Maria Engberg (New York: Routledge, 2014), 3.

³ Gilles Deleuze & Félix Guattari. *Kafka: Towards a Minor Literature*, trans. Dana Polan (Minneapolis: University of Minnesota Press, 1986), 10.

⁴ Ibid., 27. In this way it is precisely the power of the ‘weak’ and the almost silent that is the tactic of the minor revolution, agitating change through the unseen gesture that disturbs the balance rather than the grand act that incites reaction. The parasite, as Serres says, ‘multiplies wildly with its smallness; it occupies space with its imperceptibility’. Michel Serres, *The Parasite* (Minneapolis: University of Minnesota Press, 2007), 194.

⁵ Simon O’Sullivan, *Art Encounters with Deleuze and Guattari*, 69. In this, as O’Sullivan states, it ‘is not so much a question of the minor or of the major but of a becoming minor from “within” the major’. Ibid., 71.

⁶ In taking this stance perhaps it is possible to avoid viewing the major and minor as essentially positive or negative. In this Meagan Morris is somewhat right, I think, to critique the use of the ‘minor’ as a default position within certain contemporary thinking. Certainly, as noted in the arguments about relationality, it does not seem enough to promote a so-called the ‘minor’ as necessarily radical in itself; rather attention must always be paid to what alternatives are being created. The limitation to Morris’s argument (though not necessarily her intent) is perhaps in misreading the ‘minor’ as a position, rather than a tactic that is all in the making. That is, the minor does not lead to a better place, the freedom it provides is only in-process, through the agitation and disruption: it is in its production of movement that is radical. See Meaghan Morris, “Banality in Cultural Studies,” *Logics of Television*, ed. Patricia Mellencamp, (Bloomington: Indiana University Press, 1990), 29.

what was fixed in order⁷, and allowing new productive capacities to be explored. It is not about the production of a new stabilised ‘form’ of interactivity – that sits in opposition to the major oppressive paradigm – but the production of the conditions that enable continued agitation of the elements⁸. Potentially, this disturbs any stabilisation and instead emphasises the productive nature of disorganisation itself. It allows for consideration of the particulars of an event, and the relations and entities co-composed with it, rather than following any established path⁹, and in this, it has specific disruptive implications for fixed or linear interactivity. The move to the relational here is a tactic with which to reactivate and charge (interactive) structures with new potential¹⁰.

2.1.2 Molecularisation and the assemblage

The concept of molecularisation is closely linked to the minor, and in itself might be described as the becoming-minor agitations within a system¹¹. The ‘becoming-molecular’ of a system is precisely the ‘shifting sideways’¹² of a former stabilised whole into parts that both decentre the system while allowing new communications or exchange between components¹³ – a hyper-differentiation encouraging new potentials, intensities and complexities to arise¹⁴. Rather than being ‘molar’ – a set of entities that are molded to a prescribed set of connections, a ‘disciplined’ or ‘dominated’ group of individuals that have a fixed identity imposed upon them, as

⁷ Andrew Murphie, “Becoming Interactive - Interactive Becomings: A Deleuze-Guattarian Approach to an Ethics of Interaction,” (PhD diss., Macquarie University, 1997), 68.

⁸ This is an ‘expressive machine’. Deleuze & Guattari, *Kafka*, 28. Thus the minor here does not designate specific productive outcomes, but rather the ‘revolutionary conditions’ in which continued exploration might be produced. It is, as Massumi states, directional in that it moves away from stasis, but not ‘directed-to’ any particular endpoint. Brian Massumi, *A User's Guide to Capitalism and Schizophrenia*, A Swerve Edition (Cambridge, MA: MIT Press), 103, 18.

⁹ Andrew Murphie, “Becoming Interactive,” 72-3.

¹⁰ De Certeau’s concept of the tactic can be closely aligned with Deleuze and Guattari’s notion of the minor, being also concerned with performative reconfiguration of a stratified form. Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1988), 101-2. See Chapter Three for a discussion of the tactic of walking as a minor practice.

¹¹ As Manuel De Landa states, ‘In many respects the circulation is what matters, not the particular forms that it causes to energise.’ Manuel De Landa, *A Thousand Years of Non-Linear History* (New York: Zone Books, 2011), 104.

¹² Deleuze & Guattari, *Kafka*, 50

¹³ Ibid, 41.

¹⁴ See Rosi Braidotti, *Metamorphoses, Metamorphoses: Towards a Materialist Theory of Becoming* (Cornwall: MPG Books, 2002), 147-8.

Brian Massumi says¹⁵ – a molecular configuration of the same entities allows local activations: transient and improvised connections to take place (and perish)¹⁶. Thus, becoming-minor is also always becoming-molecular¹⁷, an increase in movement or intensity within a stratified system.

Within the paradigm of interactive art, the ‘molar’ perspective might be seen, firstly, as the discrete body of the viewer taken as a whole, and the artwork similarly viewed as one idea or fixed assemblage of components. Secondly, it might also be the fixed relations between work and viewer that both prescribe the type of relations and outcomes possible between them while, thirdly, prescribing the event overall as conforming to a preconceived notion of interactivity. A molecular approach to the same art event would open up the potential of new ways of relating inside these ‘wholes’, filling the systems with fluctuations, uncertainties and tentativeness that are its opening up to new singular expressions¹⁸, and making the site(s) of interaction mobile and multiple, delimiting the resultant events of interaction¹⁹.

In this sense, as Deleuze and Guattari state, molecularisation tends towards the creation of ‘machinic’ assemblages²⁰ – a collection of entities functioning immanently and pragmatically, rather than being ‘subordinate to the laws of resemblance’²¹. An assemblage is a non-unified set of components that is ‘ad-hoc’ in that it is composed of available material, and dynamic – as all its relations remain active – a ‘volatile

¹⁵ Massumi, *A User's Guide to Capitalism and Schizophrenia*, 55. As Massumi notes, the molecular still exists within this molar regime, but it is controlled and free relational movement is contained. Ibid.

¹⁶ Despite the terms, the molecular/molar divide has nothing here to do with scale, but is defined by the way relation is controlled or opened up. Ibid.

¹⁷ Gilles Deleuze & Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 272.

¹⁸ Felix Guattari & Suely Rolnik, *Molecular Revolution in Brazil*, trans. Karel Clapshaw & Brian Holmes (Los Angeles: Semiotext(e), 2005): 162. Guattari writes: ‘It is precisely this singular, minor production, this singular point of creativity, that will have a maximum impact on the production of mutation of sensibility, in all the different fields, that I call molecular revolution.’ Ibid, 161. Serres’ statement that the ‘only instances of systems are black boxes’, expresses a similar interest in the freeing or revealing of the machinations or potential of dynamic relations within that which appears on some scale as a whole: a hidden molecular potential. Serres, *The Parasite*, 73. See also Michel de Certeau on the ‘swellings, shrinkings and fragmentations’ of totalities that allows new spatial systems to arise. Michel de Certeau, *The Practice of Everyday Life*, 101-2.

¹⁹ Realistically, any such artwork will be composed of both molar and molecular components or tendencies, and the aim might be to encourage an increase in potential for internal movement and change.

²⁰ Deleuze & Guattari, *Kafka*, 37.

²¹ Massumi, *A User's Guide to Capitalism and Schizophrenia*, 192.

mix' of forces, part and materials²². Assemblages maintain the individual qualities of components and the differences between them – rather than repressing these for the sake of the whole – while at the same time collectively and potentially producing or becoming something else. The assemblage is an organisation of relations, though not reducible to this, and is also multiplicitous: it has an internal dynamism that always keeps its relational fields open to potential recombination²³. In this one might say, as Bennett does, that the individual components and the assemblage together exhibit agency²⁴, and components are 'molecularised' in an assemblage in that they are able to individually modulate their relations while maintaining collective coherence.

Importantly for this argument, assemblages are able to operate without resolving or erasing internal differences. In fact, such internal tension and potential for difference might be seen to both drive creative organisation and production of the assemblage, saturating it with intensive potential for derivation from any realised or emergent form²⁵.

Once relation is no longer considered as existing only between stable objects and subjects, and is instead seen to exist within and across such idealised forms, initiating and potentialising them (a philosophical molecularisation), then the room for continued movement within the seemingly continuous whole begins to become apparent – the infinite gaps and discontinuities that can be activated to drive change within the event.

Within an art-event-as-assemblage, such internal modulation then provides an open-endedness that enriches, rather than destroys, the now mobile whole. What also becomes apparent is that the privileging of viewer-work relations is no longer necessary, and that any discussion of relation can – indeed must – consider relations forming connections between various body organs and/or technical entities, and between and within technical entities themselves, as equally open to change. This

²² Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham NC: Duke University Press, 2010), 24-5.

²³ Ian Buchanan, *Deleuzism: A Metacommentary* (Durham: Duke University Press, 2000), 120, 129.

²⁴ Jane Bennett, *Vibrant Matter: A Political Ecology of Things*, 31-2.

decentring of the human in favour of a wider approach to relation within the art event is essential, in order to consider more fully the forming of a larger ecology of the event, to acknowledge the dynamic role that all the elements bring to bear on the playing-out of relational forces across the various scales and assemblages in which the event is activated.

2.1.3 Differential machines

*'The term assemblage does not imply any notion of bond, passage, or anastomosis between its components. It is an assemblage of possible fields, of virtual as much as constituted elements.'*²⁶

Guattari's concept of the machine provides a useful way of conceiving of an artwork or event as a productive assemblage, from which basis the mechanics of self-organisation might be examined. Machines, Guattari tells us, are any system that produces an effect²⁷. There are, for example, social, logical, biological and linguistic machines; machines that are combinations of these systems, such as cities²⁸, alongside machines that are conglomerates of technical objects or technical objects plus bodies²⁹. Like assemblages, machines can be broken down into smaller machines, or sets of components held together through some kind of productive relation³⁰. They act

²⁵ Assemblages relate 'difference to difference' and maintain an adaptive potential, 'a capacity to further differentiate differences'. Manuel De Landa, *Intensive Science and Virtual Philosophy* (London: Continuum, 2005), 73. See also Murphie, "Becoming Interactive," 23-4.

²⁶ Félix Guattari, *Chaosmosis: An Ethico-Aesthetic Paradigm*, trans. Paul Bains & Julian Pefanis (Bloomington: Indiana University Press, 1995), 35.

²⁷ This might be an increased self-production (autopoiesis), and/or the production of something other than themselves (allopoiesis). See Guattari, *Chaosmosis*, 39; and Humberto R. Maturana & Francesco J. Varela, *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht: Kluwer Academic Publishers, 1980), 68.

²⁸ Felix Guattari, "On Machines," *Complexity* 6 (1995): 9. See De Landa, *A Thousand Years of Non-Linear History*, passim, for a detailed examination of the city as a machine processing flows of energy and biomass.

²⁹ Such as the 'car-driver' machine that produces travel. See Andrew Murphie, "Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought," *Convergence* 2:2 (1996): 89. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

The 'machinic' is therefore not the mechanical (a fixed technical system), nor is it specifically linked to the technical (non-organic), but is a productive assemblage, another configuration of the non-unified subject. Braidotti, *Metamorphoses*, 254. A machine's cohesion (such as it is) is achieved through a shared potential. Maturana & Varela, *Autopoiesis*, 77.

³⁰ Murphie, "Becoming Interactive," 265. For example a machinic body that also contains machines/organs that process light, sound, food, etc.

molecularly in resisting the collapse back into any irreducible whole, or series of wholes, through their continued potential activation of relation. A machinic connection or relation might therefore be one that is pragmatic, flexible and local, always with further potential iteration or expression available to it.

This thinking gives us three very useful ideas that help to expand any technologically based concept of the machine in a decidedly non-humanist direction:

Firstly, the need to understand the role that the wider ecology has in determining what potential is actualised³¹. Technology, as Andrew Murphie explains, is always only one aspect of a larger notion of the machinic, requiring a larger physical/social field within which to operate³².

Secondly, as Guattari describes, technical machines inherently contain potential beyond their immediate actualisation – ‘ontogenetic elements’³³ – and that they are held together not so much by any physical bond, but by a shared potential, an ‘assemblage of possible fields’³⁴ that develops through the process of ‘concretisation’.

Thirdly, that we must consider machines not through utility or representation, but in terms of their productive capabilities. Just as Alfred North Whitehead shifts the discussion from ‘questions of essence’ (what is it?) to questions of manner (how is it possible?)³⁵, Guattari’s conception of the machinic shifts the assemblage from: ‘what is it composed from/what is it an aggregate of?’ to ‘what does it produce?’ That is, machines are performative, concerned with ‘matters of practices, doings and actions’³⁶. Within a machinic assemblage, Manuel De Landa explains, components explore their ‘capacities’ to connect with other component, their abilities to affect and

³¹ That is, technical objects are embedded in (or unfold from) a larger ecology of relations.

³² Machines here are ‘proximity grouping[s]... [of] man-tool-animal’. Ibid., 80.

³³ Guattari, “On Machines,” 8.

³⁴ Félix Guattari, “Machinic heterogenesis,” *Rethinking Technologies*, ed. Verena Conley (Minneapolis: University of Minnesota Press, 1993), 35. Such machines are ‘about symbolic alliances and fusion... about viral or parasitic interdependence’. Braidotti, *Metamorphoses*, 254.

³⁵ Steven Shavero, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (London: MIT Press, 2009), 72.

³⁶ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 135.

be affected, which is separate (if related) to their ‘intrinsic properties’³⁷. Such machines are necessarily multiplicities, with ‘no need whatsoever of unity in order to form a system’³⁸, preserving internal differences between component. Their potential lies in a productive ‘opening out to heterogeneity and alterity’³⁹.

An interactive art assemblage might be usefully viewed as machinic, with a focus on how the work as a machinic whole is composed of various smaller machine components – bodies, technical entities and combinations of parts of these entities – that interrupt, modulate or transduce forces they come into contact with or are subjected to⁴⁰. The larger art assemblage or machine is then brought into existence and organised through these productive relationships between these smaller parts. Each component within an assemblage productively affects and is affected differently by any force, increasing internal difference or molecularity⁴¹. Interaction with and transduction of forces is here the process by which such ‘an activity sets itself in motion’, at the same time as it generates ‘processes of modification’⁴². The interactions organise the machine – albeit in a temporary, always mobile fashion – and various smaller machines are drawn into provisional relation by their shared modulation of a particular force⁴³.

³⁷ Here, in De Landa’s example, a piece of ground may have a slope as an intrinsic property, but this ground also has a capacity to affect the production of a style of movement of a walker in a body-ground-gravitational pull assemblage. De Landa, *Intensive Science and Virtual Philosophy*, 72-3.

³⁸ Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 182.

³⁹ Murphie, “Computers Are Not Theatre,” 92.

⁴⁰ Gilles Deleuze, *Desert Islands and other Texts*, trans. Michael Taormina (New York: Semiotext(e), 2004), 219.

⁴¹ For example, an eye and a light sensor are both affected by light modulations in a space, but express different capacities to react to this light. Light level or colour variations might also create shifts in affectual tonalities that then alter the mood and affect bodies in other ways as well. Here the machine operates not as a homogeneous processor of flows of forces, but rather its component parts produce singular modulations of forces, producing a further internal molecularisation through creating difference within both the transduction of force and the components. Difference is both actualised and maintains a virtual difference or potential to continue to produce further differentiations through ongoing modulation and interaction and the ongoing tensions between the modulating affectual capacities of parts on the force.

⁴² Gilbert Simondon, “The Genesis of the Individual,” *Incorporations*, eds Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 313. That is, it sets in motion the further individuation of the machine, while at the same time potentially reconfiguring its internal relations.

⁴³ While internal differentiation moves the system away from a molar expression, this increased movement or molecularisation of the system leads not to the destruction of coherence, but is the very logic that provides coherence through emergent co-causality – the implication of components in each other’s individuation. That is, it is difference as a unifying element. Deleuze, *Difference and*

In the work *A Chorus of Idle Feet* (2010) produced at the beginning of this research, sensors were set up in a walkway that were capable of transducing the movement of bodies through the space to produce variations in the syncopation of sounds (see *figure 2.1*)⁴⁴. Here, various components might be thought of as forming assemblages, expressing a capacity to connect and produce modulations in forces, and then combining to produce more such machines built on intensive differentiation. Body movement and light together expressed the capacity to produce shadows in the space – becoming a shadow-machine modulating light – while light sensors modulated the flow of electrons in a light/light sensor/electron machinic assemblage⁴⁵. While these were capacities of the two machines, when combined they began to make a machine that transduced the force of movement to the flow of electrical current, as shadows produced changes in electrical resistance. This machine, in turn, combined with other components to form another machine that expressed its capacities to connect movement into changes in sound pitch, rhythm, tempo or tone⁴⁶. These machines were productively transducing movement into modulation of light waves, light waves into modulations of electrical current, and flow of electrons into modulated flows of sound waves. All nested within a larger assemblage that collectively transduced the force of movement into these sound waves.

Repetition, 56.

⁴⁴ *A Chorus of Idle Feet* was completed in 2010 and exhibited in a busy walkway outside *Allans Walk ARI* in Bendigo as part of the 2010 *Liquid Architecture* festival. See Appendix A for more detailed description of the work.

⁴⁵ The sensor's silicate material has the capacity to modulate its electrical resistance in affectual response to changes in light producing variation in the flow of electrons through it.

⁴⁶ For example, combining with a machinic assemblage that converts electrical resistance to computer code such as MIDI signals that control sounds on a computer (an electrical flow-MIDI code-vibration machine).



Figure 2.1 Andrew Goodman, *A Chorus of Idle Feet*, 2010. Digital video still.

In the same work, other sensors linked with the capacities of the movement to produce variations in the spatial distribution of bodies⁴⁷, which linked into larger productive relation with software triggering more sound pulses. This again nested within a larger machine, producing modulations in syncopation of the sounds as they combined. Here all the components provisionally came together as a machine, producing an emergent quality of rhythmic syncopation that was a collective expression formed through interaction of all parts to create an event that retained the dynamic qualities of modulation of the machinic assemblage – concerned with the ‘viscosities’ of the transduction of various forces through the system⁴⁸. The work operated through an ongoing production both of internal connections and differences in the flow of forces. It was a ‘fuzzy aggregate’ composed of counterpoints, inequalities and tensions in the processing of forces between the parts⁴⁹.

What such a machine begins to produce is an event that is an exploration of its collective expressive capacities through the modulation of forces. At the same time, these explorations produce the machine itself. Thus, the two are, to some extent, co-produced, becoming implicit in each other’s actualisation and potential: a ‘concretisation’ of the assemblage⁵⁰. Such a shift in an interactive art-machine moves it away from prescribed notions of either outcomes, or of particular, pre-thought or fixed relations. This thinking performs a molecularisation onto the interactive event described, as through productive actions, the components move collectively into an increasingly co-dependent or agential distributed form.

⁴⁷ Such as proximity and movement detection sensors focused on particular areas of the walkway, detecting changes in the position or number of bodies present.

⁴⁸ That is, the styles and speeds of affectation of components by forces and visa versa.

⁴⁹ Deleuze & Guattari, *A Thousand Plateaus*, 328-9. The larger machinic assemblage obtains a level of consistency in production (it continues to express relations between movement and sound rhythm) not through the submission of internal difference and organisation, as in a molar system, but precisely because it is internally flexible enough to accommodate intensive modulations. The initial force of movement driving the event is also molecularised, being transduced by various component machines into multiple new and potentially competing forces.

⁵⁰ A ‘concrete’ system exhibits a structural unity and interdependence of its components, ‘entirely coherent with itself and entirely unified.’ Simondon, Gilbert. *On the Mode of Existence of Technical Objects*, (1980), 21. <<http://aaaaarg.org/text/3070/mode-existence-technical-objects>> [Accessed 2/2/2012].

2.2 Structuring action and flow: drift, autopoiesis and concretisation

*'Invention is less about cause than it is about self-conditioning emergence.'*⁵¹

These concepts of the minor, molecularisation, assemblage and machine, form something of a basis from which to explore self-organisation in the participatory artwork, in essence being propositional to an event of the production of relation. From this point, we can question how an art event generates its own 'satisfaction'⁵² through consideration of the concepts of drift and concretisation, then question how the drive towards novelty might be maximised in the event through the key concept for this research: the noise or parasite within relation.

2.2.1 Propositional invitations

To think of a relational art event in an open-ended fashion, we might think of the practicality of building it out of propositions. These propositions might be multiple, possibly contradictory. If sound 'A' can happen, or sound 'B' can occur, but not both sounds together, the sound that is not actualised still has, as Whitehead says, a creative role to play – both as a 'givenness' that shapes paths of potentiality, and as a continuing link to the virtual. The negated proposition remains a link, both to what might have happened or might in the future happen, and to the unrealised potential of an entity that 'vibrate(s) against the conformal'⁵³.

An entity, Whitehead states, 'feels as it does feel in order to be the actual entity it is'⁵⁴. The propositions composed within the art event are launching points, 'lures

⁵¹ Brian Massumi, Arne De Boever, Alex Murray & Jon Rolfe, "Technical Mentality Revisited: Brian Massumi," *Parrhesia* 7 (2009): 40.

⁵² In Whitehead's terminology, when an entity or event reaches 'satisfaction' it ceases to become, having achieved resolution of its bonds with the universe into 'one complex feeling'. Alfred North Whitehead, *Process and Reality* (New York: The Free Press, 1978), 44.

⁵³ Alfred North Whitehead, *Process and Reality*, 188.

⁵⁴ *Ibid.*, 222.

towards feelings'⁵⁵. These feelings are the prehensions⁵⁶ in which the drive toward 'satisfaction' is the realisation of some potentiality for the entity⁵⁷. 'Feelings' in the sense of prehensions, are not necessarily anything to do with conscious thought. Rather, they are a drive towards completion of an occasion. A feeling here is the potential for affectual connection, that is, an entity's potential capacity to be affected by, and affect other forces, entities or events. Thus, an inanimate entity might be seen as capable of a feeling (affecting and being affected by forces), and of driving towards its own satisfaction, as a sentient being.

A sensor, for example, might have the proposition of a tendency to notice movement. This movement may not happen, it is a potentiality, constrained by the given: its position, the mechanics of its construction, and so on. It has 'sensitivity' towards searching for this movement, a potential capacity to form a machinic connection with this force, the incoming sense data that drive its completion, and its satisfaction when it expresses this capacity for connection, whether it senses movement or not. These are exclusive potentials – and in any occasion, only one can be actualised while the other remains virtual.

Even simple and linear propositions are, in themselves, never fully conclusive. Any actualisation is only a singular iteration of that proposition's potential, and does not preclude further iterations arising⁵⁸. In a system with multiple exclusive and inclusive propositions, the outcomes become decidedly more non-linear – and the virtual more evident – as a factor within the system. The 'other alternatives are there all the time, *coexisting* with the one that happens to be actualised'⁵⁹ and creating a tension or problematisation that pulls the event towards further 'impossible' actualisations. This might be the increase in intensity that is the line of flight from the molar or

⁵⁵ Ibid., 259.

⁵⁶ Ibid., 220.

⁵⁷ Here, in Whitehead's schema, while the 'satisfaction' or resolution of an event of becoming of an entity is singular and terminal in the actual plane, it is not prescribed, as the entity is a multiplicity on the virtual level, having always the potential for further actualisations.

⁵⁸ In this sense, although the outcome appears relatively conclusive, the conclusion to a proposition is only approached, never realised. While the individual event of the sound actualising reaches satisfaction or an end-point, the proposition itself still exists virtually. As De Landa says, it is 'easy to overlook the virtual nature of the end state.' De Landa, *Intensive Science and Virtual Philosophy*, 75.

⁵⁹ Ibid., 75, emphasis in the original.

prescribed event, in that it is a qualitative increase in relational potential within the system.

Propositions guide the dynamics of an event, though not in a prescriptive manner⁶⁰. They provide ongoing invitations or lures toward the potentialities of the event they condition, and to a 'second phase' of the virtual: its 'real' rather than the 'general' potentiality⁶¹, conditioning the potential by inclusion of the circumstances of the emergent event. These circumstances include those selected by the artist (layout, software, sounds, images, shapes), plus what the participants bring (physical capabilities, tastes, moods), plus the circumstances surrounding the art event (culture, politics, geography, art histories, weather), which all co-create the event's virtual milieu. This is a gathering of, and complex negotiation between, the various individuated propositional potentials of all the component parts of the machine to create a collective propositional potential⁶².

While we might think of the artwork as a single entity or event, it is perhaps better viewed as a 'society'⁶³ of entities, divisible into multiple, overlapping and simultaneous events or entities, each seeking and competing for its own satisfaction. During actualisation, the event is always at a point of unfolding, facing multiple potential paths towards various satisfactions. These multiple and fluid assemblages – eyes/brain/image, ears/noise/speakers/current, software/sensor/movement data and so forth – are each divisible again, each seeking resolution of their feelings⁶⁴.

⁶⁰ A proposition, Bennett states, 'has no decisionistic power but is a lending of weight, an incentive toward, a pressure in the direction of one trajectory of action over another.' Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham N.C.: Duke University Press, 2010), 103.

⁶¹ Whitehead, *Process and Reality*, 65.

⁶² The machine does not erase, but draws on the propositions of the smaller assemblages of which it is composed.

⁶³ In Whitehead's schema, while entities themselves continually perish and are replaced, the things we experience as enduring actualities, such as art objects or people, are termed 'societies'. Whitehead, *Process and Reality*, 34-5, 89. The 'society' that is the artwork assemblage can endure because new entities emerging within the art-assemblage conform to common feelings – their emergence is shaped in part by their relation to the society – 'conditions imposed upon prehensions of other members of the nexus' that is a 'positive feeling'. Ibid., 34. See also, Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, MA: Harvard University Press, 2011), 47.

⁶⁴ Such art events might begin with multiple proposals, luring even greater multitudes of prehensions, held in both inclusive and exclusive relation to each other, seeking and competing for their satisfaction, driven by the creative urge to turn the potential into the actual. This philosophical stance emphasises that art events are composed from the ground up. It provides an understanding that the concrescence of forces builds towards an endpoint of an actual event, discovered and motivated within the occasion itself by complexities of virtual and actual forces.

Seeing art as a propositional event begins to deflect the emphasis away from any final representational form, and to instead emphasise the ongoing role of the internal tension of the negated propositions or differences in enriching the virtual of the event. Within interactive art, this suggests an experience focused on emergent qualities of relations in and of themselves. Here interactivity might begin to distinguish itself from goal-orientated ‘gaming’ – solving a puzzle, moving through levels, controlling a space – and ‘didactic’ works – directed towards a learning outcome, whether based on perception or content.

2.2.2 Self-organisation

‘The challenge is to create the conditions for the work to work in an ecology of relation that does not privilege the interactive but seeks to open the way for the activation of the more-than the work has to offer.’⁶⁵

How does the art event ‘choose’ which prehensions it follows through to satisfaction, and which entities will actualise? How can we think of this without falling back into prescriptive models? Having set itself into motion through its propositional structuring, and gained through feeling its own collective agency, the event is no longer beholden to any external intentions or drive – it must sort itself out internally. But it does not strive to be the best event it can – the most efficient, original or surprising. That would again imply some kind of transcendent motivation, a ‘neo-Darwinist’ thinking that assumes that entities or events are invested in, and capable of, striving for some preconceived ideal form or an outcome of maximum efficiency⁶⁶.

⁶⁵ Erin Manning, *Always More Than One, Always More Than One: Individuation's Dance* (Durham: Duke University Press, 2013), 132.

⁶⁶ Ronald Bogue, *Deleuze on Music, Painting and the Arts* (London: Routledge, 2003), 69-73. See Francisco J. Varela, Evan Thompson & Eleanor Rosch, *The Embodied Mind* (Cambridge Massachusetts: MIT Press, 1992), 185-207 for a relevant critique of Neo-Darwinism. For a discussion of the difference between Neo-Darwinist and co-causal models, see Thomas Lamarre, in Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, trans. Thomas LaMarre (London: MIT Press, 2013), 56.

Rather, we could say, it ‘drifts’, which implies a system, as Francesco Varela says, that ‘makes do’ – it seeks the ‘viable’ rather than the ‘optimal’⁶⁷, it is ‘pragmatic’, its motivation is to find *a* satisfaction, not *the* satisfaction⁶⁸. That is, it makes do with what it has, and cobbles together a solution. As Ronald Bogue states, systems self-organising through drift emphasise change or creativity over ‘fitness’⁶⁹, and experiment with ‘assemblage[s] of heterogeneous forms for no other reason than that they are possible’⁷⁰. Enabling a process of drift, Varela argues, ‘takes the place of task oriented design’⁷¹. It implies a system which is truly interactive – both within itself and its given circumstances – composed through that activity, rather than representative of determined function or outcome⁷².

Drift does not imply that such systems operate through random connections, but that it creates systems of intensive and local connection: a ‘chaosmos’ that has a molecular rather than molar relationality⁷³. This replaces a system organised through a single dominant relational pull towards a future ‘useful’ and externally projected outcome – as much interactive art is designed – where differences becoming suppressed or flattened to serve a larger or dominant purpose. The lack of external motivation⁷⁴ of a system in drift, allows the subtle and complex dynamic modulation of internal forces

⁶⁷ Varela et al., *The Embodied Mind*, 205. See also Pickering on drift as ‘evolving within fields of agency in dialectics of resistance and accommodation’. Andrew Pickering, *The Mangle of Practice: Time, Agency and Science* (Chicago: University of Chicago Press, 1995), 247-8.

⁶⁸ That is, it does not preference certain possible outcomes or types of outcomes, rather outcomes or connections arise through non-prescriptive processes.

⁶⁹ Bogue, *Deleuze on Music*, 74-5. See also: Jon McCormack & Mark d’Inverno, *Computers and Creativity* (Dordrecht: Springer, 2012), 45; and Appendix B for a critique of fitness based generative programming.

⁷⁰ Bogue, *Deleuze on Music*, 75.

⁷¹ Varela et al., *The Embodied Mind*, 207.

⁷² *Ibid.*, 207, 209. In drifting, a system demonstrates an agency that is clearly not attributable to any one (or indeed all) of its component parts that might then direct the unfolding of events, but rather any agency – as the modulating and distributing of forces and relations – can be seen to be a property of the event itself, a collective expression that draws entities into relation. Julian Yates terms this ‘agentive drift’, an agency that is a ‘dispersed or distributed process in which we participate rather than a property which we are said to own’. Julian Yates, “Towards a Theory of Agentive Drift; or, a Particular Fondness for Oranges Circa 1597.” *Parallax* 8, no. 1 (2002): 48.

<<http://dx.doi.org/10.1080/13534640110119614>> [Accessed 20/3/2012]. Here drift is a molecular modeling of an event, in that it gathers and accentuates relational intensity through the unresolved tensions of multiple potential resolutions, to the pulls of various propositional forces that are within the emergent system, rather than containing such relational play in order to serve a central or molar aim.

⁷³ Murphie states that the ‘creation of a chaosmos is what interactive art and work with new technologies should head towards, as only then can outcomes be protected from chaos without turning interaction into a choice of alternative stratified opinions.’ Murphie, “Vibrations in the Air,” 42.

⁷⁴ Perhaps, more correctly, this is not a lack of motivation but a set of competing heterogeneous motivations.

to be played out, encouraging an immanent expressive exploration of the multiple potentials of relation within the assemblage.

In *A Chorus of Idle Feet*, changes to a small assemblage within this interactive system could be seen to affect the productive workings of many component assemblages, and the event as a whole. A change in light, for example, would affect the way electrons passed through the assemblage of a particular sensor, while also affecting other assemblages linking the sensor to sound vibrations emitted through speakers⁷⁵. These vibrations potentially affected the larger assemblage of the art event by combining and diffracting with other sound waves being emitted⁷⁶, affecting both the rhythmic pulls of combinations of sounds, and the affective tonalities of the event⁷⁷. In such a system, localised agitations or changes to flows affected surrounding assemblages and had a run-on effect, potentially spreading through and shifting much of the system's workings. Each component remained primarily responsive to its local connections, with no prescribed aim or outcome dictated by the original movement. A larger movement or circulation of forces in the system was created through emergent difference – contagious and rhizomic, instigating and gathering new combinations of co-dependent relations that the systems needed to negotiate.

The system here sacrificed self-preservation as it drove towards creativity through the continued recombining of forces⁷⁸. Such changes did not necessarily force a collapse in the system⁷⁹, as there was a degree of consistency or dynamic equilibrium within

⁷⁵ This change in the flow of electrons through the sensor would also cause a change in the flow of electrons through the larger sensor-wiring-computer interface assemblage, and potentially affecting the MIDI code-sampler patch assemblage in the computer.

⁷⁶ Thus producing local shifts in the expressions of the speaker systems. Such diffractive events, where two or more waves become catalysts in each other's differentiation is an example of what De Landa terms an 'autocatalytic loop'. De Landa, *A Thousand Years of Non-Linear History*, 63. See also Chapter Five of this exegesis for an extended discussion of diffraction as a generative differential force within a system.

⁷⁷ Thus the productive expressions of the other component sensor-machines – those that were not directly affected by the changes in light – were potentially still altered through a series of complex implications that were relational, but not entirely predictable. It becomes evident that the entities are all connected, whether directly or in various smaller and less direct relational routes: degrees of prehension. These new prehensive potentials must enter into a conversation with other propositional pulls in order to affect individuation of an entity.

⁷⁸ Whitehead, *Process and Reality*, 103-5.

⁷⁹ Though this remains possible, dynamic systems can exhibit the ability to bifurcate and shift from one system of propositional pulls to a new (if related) system – a 'phase transition' – when they move beyond a limit to which they can accommodate relational agitations. See Manuel De Landa, *Intensive*

the assemblage⁸⁰. Any such system operating through drift is an open or dissipative system, ‘in which momentary deployments of forces produce systemic orderings, local eddies or drifts’⁸¹. At the same time, it is a ‘dynamic whole’ with an ability to accommodate intensive changes, without necessarily causing destruction to the ability of the machines to communicate productively, even as it causes variations to the productive outcomes of the event⁸².

Drift has lured into being a system that is productive in a machinic sense, but not at all about a directed, idealised or maximised productivity. As each component assemblage responded to changes in its local systems of forces, there was a flow-on of repercussions that was not always entirely linear or predictable – an excess and freedom of relation that may, as Massumi and Manning state, reorientate exchange. Such systems are therefore principally about self-production, the experience of the components gathering together, an ‘emergence of [a] field of relation’⁸³. It is also always a ‘re-gathering’, a minor act that is a reorganisation of available entities and relations, and more than the inclusion of new factors.

Drift implies, to some extent, that a system is ‘autopoietic’. Humberto Maturana and Varela define an autopoietic machine as one capable of generating its own organisation⁸⁴ by producing a ‘relationship between processes of production of components’⁸⁵. Such a relationship is the evolution of a shared potentiality, as much as any actualised co-causality, an implication of relation on a virtual plane. A system in drift might not necessarily reach a state of autopoiesis, but it is involved in a process of increased ‘concretisation’.

Science, 70; and Chapter Six & Appendix B of this exegesis for some discussion of the creative potential of such delimiting.

⁸⁰ De Landa terms this a ‘meshwork’, a system with an ability to adapt to local differentiations without losing productive relation⁸⁰ that exists because such systems are complexly interdependent but remain heterogeneous. Manuel De Landa, “Meshworks, Hierarchies and Interfaces,” *The Virtual Dimension: Architecture, Representation and Crash Culture*, ed. John Beckmann (New York: Princeton Architectural Press, 1998), 275-285. Assemblage processes, De Landa states, are adaptive, giving them the ‘capacity to further differentiate differences.’ De Landa, *Intensive Science*, 73.

⁸¹ Yates, “Towards a Theory of Agentive Drift,” 50.

⁸² ‘A dynamic open whole, never fully given as it is always creating new connections and new potentials for further connection’. Brian Massumi, “The Interface and I,” *Artbyte: The Magazine of Digital Arts* 1:6 (1999): 52.

⁸³ Manning & Massumi, “Propositions for an Expanded Gallery: Generating the Impossible,” 34, 35.

⁸⁴ Maturana & Varela, *Autopoiesis and Cognition*, 79.

⁸⁵ *Ibid.*, 80.

Concretisation, as Simondon thinks the concept⁸⁶, involves a system in which each component ‘is part of a system in which a multitude of forces are exercised and in which effects are produced that are independent of the design plan’⁸⁷. Such systems attain some level of structural unity, Simondon states, with each element co-determining, implicit in what other elements become. It requires that the component parts develop a ‘plurality of function’ and negotiate their operations, rather than fulfilling a predesigned or ‘ideal’ function⁸⁸. It is precisely because of the presence of potential indeterminacy – a flexibility of future relations, rather than a fixed and linear set of actualised relations – that machines are able to develop such self-organising capacities⁸⁹.

While the components in a machine retain their individual potentials, it is the shared potentials that they develop through machinic operations – their shared ‘associated milieu’ – that forms a base for their collective individuations through drift. This is the drawing of elements from a field as a ‘system of virtualities, of potentials, of moving forces’⁹⁰ into implicit relation with each other, a gathering of a field of relation. These processes of drift do not just happen within established concrete assemblages. Rather, the drift itself can be seen to draw disparate components into productive relation⁹¹. Creating dynamic systems of drift must here strive to be not simply about a connection between component parts through actualised systems of feedback and

⁸⁶ While Simondon conceives concretisation as a process exclusive to technical (as opposed to biological) entities, it is possible to see it more generally as a process by which a set of entities are brought into increased co-causal relationship with each other.

⁸⁷ Ibid., 31. In this, concretisation relates directly to a process of drift in a ‘natural object’, setting up circular, coherent systems of distributed agency expressing potentials rather than being driven by external factors. Ibid., 40-41.

⁸⁸ Ibid., 20-21. In the interactive example given, the components function not only to produce vibrations in relation to changes to light, pressure and movement, but are drawn into a system where they also function to moderate each other’s individuation.

⁸⁹ Ibid., 13-14. This is in contrast to an ‘abstract’ system, where each component is designed to perform a ‘determined function’, ‘has no intrinsic limits’ and requires external input or organisation. Ibid., 22.

⁹⁰ Ibid., 51.

⁹¹ In the example above, the light sensor machine began to exhibit an ongoing potential to form a relationship with, for example, the sound waves produced by the pressure sensor-electron flow-computer-speaker assemblage that moderates both expressions of vibration. It is not limited in the ways or number of actualisations of the expression of this relationship, nor is it limited to this particular multiplicitous set of light sensor-machine to pressure-sensor machine relations. Entities gathered from a field of potential relation, into an actualised relation with each other, retain potential for different future individuations, and it is at this level of potentiality that such a system continues to exhibit its molecular or minor nature. Such a gathered, collective, virtual milieu it is always sensitively balanced on the point of reorganisation – that is, a deterritorialisation and a reterritorialisation.

(flexible) causal chains⁹², but the enabling of conditions in which it might continue to disrupt relations.

None of this is to necessarily promote autopoiesis as an answer to rethinking interactivity⁹³, as machinic modeling disrupts any discrete boundaries⁹⁴. Rather, there might be degrees to which a machine is capable of intensively becoming: of organising itself within a field of potential. The potential of transduction and feedback in systems of drift to modulate the intensive relational forces, suggests that they are important elements in thinking a system capable of generating and sustaining rich potentiality. Moreover, such modeling provides a path towards thinking differentiation as an intensively generated process, rather than one purely reliant on extensive stimuli.

Relational art events capable of drift might take many forms, creating many differing events. For interactivity, this does not mean that drift drives towards making events necessarily different. Such systems are indifferent to the quality or quantity of difference they generate, and indifferent to the *demonstration* of change and relation that haunts so many interactive works – the focus on representation over open exploration identified as a criticism of interactivity in the first chapter⁹⁵.

⁹² The more simplistic notions of drift concentrate excessively on the establishment of actualised feedback loops – rather than enabling the conditions for feedback loops to evolve – without an understanding that these can in themselves become rigid and programmatic. See: Jon McCormack, *Computers and Creativity*, eds. Jon McCormack & Mark d'Inverno (Dordrecht: Springer, 2012), 45; and Mark Dery, *Escape Velocity: Cyberculture at the End of the Century* (New York: Grove Press, 1996), 309.

⁹³ See Luciana Parisi, *Contagious Architecture: Computation, Aesthetics and Space* (Cambridge, MA: MIT Press, 2013), 10-13, for a critique of the turn towards autopoiesis in second order cybernetics as a false 'solution' to the problem of the quantitative nature of computer software. Self-organisation is of course a dominant characteristic of capitalism, subsuming all to an equivalence of exchange (in this sense it is molar while still self-organising). See Shavero Steven, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics*, (London: MIT Press, 2009), 128, n. 16.

⁹⁴ Since machines nest within other machines and are complexly enmeshed in each other's individuations to posit the idea of a completely discrete creative system seems merely a matter of the limited scope scale of investigation. There must always be a larger machine with some at least potential degree of prehensive influence on an event, and a smaller machine nested within any machine, down to at least the scale of an atom as a machine, an electron or proton as a machine within this atom, and on to quantum particle machines within these sub-atomic particles. At the other end of the scale, perhaps here the universe as a whole is the only system that might be said to be purely autopoietic or self-organising without external input.

⁹⁵ Systems in drift settle where they settle. On some days, the events generated in a work would be markedly variable, on others it might seem to settle around the same outcomes. The artist must relinquish some control over this, leaving or encouraging it to work itself out: it does what it does, whether disappointing on one occasion and surprising the next. Perhaps this is the most challenging

Thinking in terms of drift requires a thinking of interactive systems composed of component parts that are able to affect each other in a more-than-linear process. It requires a system of components capable of retaining flexibility in the *order* in which they affect other entities, the *ways* in which they affect entities, and the *direction* in which such affectual relations operate. What is required is the fostering of conditions within the system to afford future drift, to allow increased self-organising abilities to arise, rather than the placement of a specific drifting in the event⁹⁶.

This leads to the key question of this research: how to propose systems that can continue to express creative potential of differentiation, while maximising their relational interdependence. It is in seeking practical solutions to this issue that this chapter now examines the potential of noise within relation as a force of differentiation.

2.3 The parasite

*'Life degenerates when enclosed within the shackles of mere conformation. A power of incorporating vague and disorderly elements of experience is essential for the advance into novelty.'*⁹⁷

A turn towards a minor form of interactivity might be seen as a move to an ethical configuration of such events. It addresses not the representation of relation but its immanent construction, enabling an opening to further expression and connectivity, and an ability to affect and be affected: to affirm both the singular nature of events and openness of relational potential⁹⁸.

shift in thinking for an artist: creating a place for the participant in an event that is an 'active ecology' without, as Manning says, 'necessarily putting the participant in the role of direct activator of change'. Manning, *Always More Than One*, 130.

⁹⁶ This is the invention of 'techniques for the proliferation of drifts'. Manning, *Always More Than One*, 200.

⁹⁷ Alfred North Whitehead, *Modes of Thought* (New York: Free Press, 1968), 79.

⁹⁸ Gilbert Simondon, cited in Muriel Combes, *Gilbert Simondon and the philosophy of the transindividual*, trans. Thomas LaMarre (London: MIT Press, 2013), 65. Murphie similarly defines

Such a brief definition⁹⁹ of an ethical interactivity might be seen to concern not only the ability of relation to remain open in its connective potential, but also the way relation emerges out of a play of affectual forces collectively taken into consideration. The problem for an interactive art event, as Murphie argues, is that as a work will always re-stratify after an event of deterritorialisation. Therefore, to retain this ethical potential to explore collective creative expression and defer stasis, the pull of continued potential movement or change is required¹⁰⁰. How then might a continuous and vigorous drive towards reinvention be structured into an event? Rather than just concentrate on the agency of the event to establish layers of relation, how can their perishing and replacement also be driven internally?

To become an event that gains the power of continual self-invention of the everyday experience requires a system that is able to include not just a positive connectivity, but disconnections, failed, disruptive, competing and destructive relations. For a system to continue to approach a molecular state, it must continue to agitate¹⁰¹. As a minor assemblage, its 'health' lies, as Murphie says, in an ability to conserve creative possibilities¹⁰². What is needed within a machine capable of drift is potential machinic difference – a capacity to intensively produce change that then acts on a local level to agitate and destabilise¹⁰³. To remain intensively relational here, we must look for a disruptive movement that has a causal logic, however complex.

Michel Serres proposes that 'noise' in a relation is a necessary condition of its existence, stating that 'if a relationship succeeds, if it is perfect, optimum and immediate; it disappears as a relation'¹⁰⁴. That is, relations are a condition of difference in a system or assemblage, rather than arising out of harmony or equilibrium. Relations are full of 'losses, flights, wear and tear, errors, accidents,

ethics in art as a 'series of practices...which promote expression and machinic connections'. Murphie, "Computers Are Not Theatre," 105.

⁹⁹ A discussion on ethics will be entered into further in this exegesis.

¹⁰⁰ Murphie, "Computers Are Not Theatre," 105.

¹⁰¹ This molecular agitation needs only to exist on a virtual plane that is a feeling, luring prehension towards further individuation, an 'unrealized potential', to keep the actualised at the point of 'supersession by novel actual things'. Whitehead, *Process and Reality*, 45-6.

¹⁰² Murphie, "Becoming Interactive," 164-5

¹⁰³ Deleuze & Guattari, *Kafka*, 50.

¹⁰⁴ Serres, *The Parasite*, 79.

opacity' that are their creativity, as Serres states, and without this differential capacity composed of excesses, interferences and disruptions, such systems collapse back into a molar configuration¹⁰⁵.

Serres terms these noises within relation 'parasites', and explores the parasite as a potential mechanism to complicate and expand the idea of co-causality¹⁰⁶. The parasite here has multiple meanings, being both a literal parasite – feeding off the energy, both physical and social, of another – but also more importantly as the noise in the system of relations. In a 'relational' system there is a 'noise' – the parasite – to propose a potential third position (and then a noise within this parasitic relation – a third position of this third, and so on) that creatively interferes from within the assemblage.

As the noise or disruption to a force, the parasite is the emergent difference in relation; relation's potential to differentiate from itself. It is a force that pulls towards a more-than, towards a continued individuation or movement of the system that differentiates from the actualised. The parasite, as Yates says, acts against any 'fantasy of control or mastery'¹⁰⁷. It demonstrates how systems generate their own 'open or dissipative' differentiation through interdependence produced by disruption: 'systematic orderings, local ecologies or drifts' produced by 'momentary deployments of forces'¹⁰⁸.

The parasite is creative, in that it forces into existence new logic, new combinations, and new orders of exchange¹⁰⁹, as a difference that unifies through the production of relation¹¹⁰. It disrupts clear communications, but produces something else through its (mis)translation of relations. This third position in the system is itself unstable, Serres argues, the roles interchangeable and fluid – each position is potentially noise for the other two – they lie in between any absolute or fixed position, always fuzzy and

¹⁰⁵ Ibid: 92, 127. That is, it becomes a system of no relation, as relation can only exist within difference. As Serres says elsewhere, '[e]xistence is a derivation from equilibrium.' Serres, "Variations on the Body," unpaginated.

¹⁰⁶ Serres, *The Parasite*, 2007.

¹⁰⁷ Yates, "Towards a Theory of Agentive Drift," 50.

¹⁰⁸ Ibid.

¹⁰⁹ Serres, *The Parasite*, 35.

¹¹⁰ Deleuze, *Difference and Repetition*, 56.

multiple, contradictory and irresolvable. This destabilises any hierarchy or relational equilibrium, making each position implicit in the relation of the other two¹¹¹.

This is the ‘disorder’ or unpredictability of relational systems in drift that is inclusive of the disjunctions and failures that are always initiating new orders¹¹². The parasitic proposition is a machine that produces a continued evolution of difference: a difference in relation and then further difference within this difference. As a movement or molecularisation within any system, the parasite is potentially an engine capable of driving drift through its continued problematisation of relation. Parasites turn any linear system of relations into a complex and intertwined set that is never fully resolvable, making ‘chains of contingency’¹¹³ and then continuing to activate or reactivate these chains¹¹⁴.

But the parasite is more far reaching than simply a disruption to established relation. It is a potential that is immanent to relation in-the-making, a potential of relation at the stage of prehensive lure towards connection that always positions relation at the point of splitting and differentiating¹¹⁵. This is a system of differentiation¹¹⁶ – potential difference – as much as actualised differentiation. It is a system of internally organising and foregrounding the lure of instability and difference in creation. The parasite is a self-organising multiplier of relations – it bifurcates any stable exchange as a derivation from equilibrium, with ‘abuse-value’ rather than exchange-value¹¹⁷.

This creates new relationships through the eruption of difference that ‘recharges the activity of relating from which all experience emerges’, as Massumi states, it is not

¹¹¹ Serres, *The Parasite*, 182.

¹¹² Whitehead, *Process and Reality*, 91.

¹¹³ Michel Serres, *Genesis* (Michigan: University of Michigan Press, 1995), 71.

¹¹⁴ Yates, “Towards a Theory of Agentive Drift,” 51. These chains are that are more a ‘series of frictions’ than a linkage – ‘tangential, contingent [and] unstable’. Serres, *Genesis*, 73.

¹¹⁵ In this the parasite is, as Serres states, ‘a third [that] exists before a second’. Serres, *The Parasite*, 63.

¹¹⁶ ‘Differentiation’ is a virtual difference that can then actualise into individual instances of ‘differentiation’. Joseph Bracken, “Whitehead and the critique of logocentrism,” *Process and Difference: Between Cosmological and Poststructuralist Postmodernisms*, eds. Catherine Keller & Anne Daniell (Albany: State University of New York Press, 2002), 92.

deconstruction but ‘recharging and resaturation with potential’¹¹⁸. This implies creating a propositional structure where relations not only layer, but also have the inbuilt potential to interrupt each other. Even as virtual noise, parasites create open-endedness – potential disruptions that can create a tension acting on any actualised relation to keep it on the verge of change or collapse, multiplying its virtual qualities rhizomically¹¹⁹.

On an interactive design level, the productive implications of the parasite might involve firstly the acknowledgment and encouragement of a wider range of potentially disruptive relations. Secondly, utilising the flexibility in relational positioning that the parasite forces into existence, and, thirdly, the more concrete construction of generative systems – with the inbuilt potential to interrupt and distort each other on multiple scales, and within many differing types of relational forces. The first of these factors involves understanding ways in which sensorial, affective and social relations can creatively alter and disrupt the actual individuated experience in any event, for example:

- Utilising the disruption of personal propositional tendencies – styles of movement, for instance – with which the participant disrupts the artist-artwork propositional relationship;
- Understanding how participants’ emotional tonality may affect their experience, magnifying some aspects, minimising or negating others, connecting their experience to memories;
- Considering how the participants’ movements might disrupt any stability of software/sensor relations;
- Understanding how the vibrations of sounds felt through the floor will complicate the sense information gained through the ears;

¹¹⁷ Serres, *The Parasite*, 17. Exchange, Serres argues, ‘does not mobilize things, it immobilizes them’, whereas the parasite is always interrupting exchange and a ‘derivation from equilibrium’, in essence parasitism is ‘taking without giving’. Ibid., 156, 221, 16.

¹¹⁸ Brian Massumi, *Semblance and Event* (London: MIT Press, 2011), 102.

¹¹⁹ As Massumi says: ‘the virtual is the mode of reality implicated in the emergence of new potentials...its reality is the reality of change: the event’. Brian Massumi, “Sensing the virtual, building the insensible,” *Hypersurface Architecture*, 68, 5/6 (1998): 16.

<<http://www.brianmassumi.com/textes/Sensing%20the%20Virtual.pdf>> [Accessed 13/4/2010].

- Acknowledging how the affective tonality of the room might be disrupted with the arrival of another body, creating a hyper awareness or ‘transparency’ of temporality within one’s body in relation to the event, making a participant hyperconscious of posture, disrupting their image of themselves¹²⁰.

Secondly, the parasitic model embraces fluidity in relation to any art event, enabling numerous interchangeable parasitic diagrams that could be described. For example, in *A Chorus of Idle Feet*: from one position, the participant is the host; the software draws energy from their body, and the parasite is the rhythmic sounds that disrupt the participant’s movements. From another position, the software can be the host, in relation with the sound that draws the energy to mutate from its wave patterns, while the participant is the parasite, interfering with their simple communication through speed and rhythm of the body’s movement. The sound might also be considered the host, in communication with ears/brain/kinesthetic functioning that draw stimulation from the vibrations, with this communication disrupted by the additional difference in rhythm that the software insistently implants in the relation. The exploitation and enhancement of these naturally slippery relations brings to the event an unpredictability of any planned interaction – continual, subtle re-tunings of relations that modulate and invent.

Thirdly, the parasite provides a focus in the more overtly concrete design of sensor-machine interactions, factoring in potential perishings or negations as primary creative propositions within intensively active systems. In *A Chorus of Idle Feet*, the various sensor-machine produced vibrations could be seen to be parasitic in their potential diffractive actions on each other and to involve a drifting. Much of the system still seems linear and predicable in its relational connectivity – with a trigger from a sensor activating a sound via connecting wires, computer interface, sound program, and speaker system (see *Figure 2.2*). In the design, however, this was

¹²⁰ This might, as Varela proposes, create a hyper-awareness of temporality within one’s body in relation to the event, making a participant hyperconscious of posture, disrupting their image of themselves. Varela argues that shifts in the affective tonality cause bodily functions, which were operating at a sub-conscious level, to suddenly rise to ‘transparency’ (i.e. consciousness), creating in their hyperawareness a sensation of slowed or stretched temporality. Francisco J. Varela, “The Specious Present: A Neurophenomenology of Time Consciousness,” *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, eds. F. J. Varela, J. Petitot, J. M. Roy & B. Pachoud (Stanford: Stanford University Press, 1997), 300.

complicated through building in multiple competing relations with the potential to act parasitically on each other.

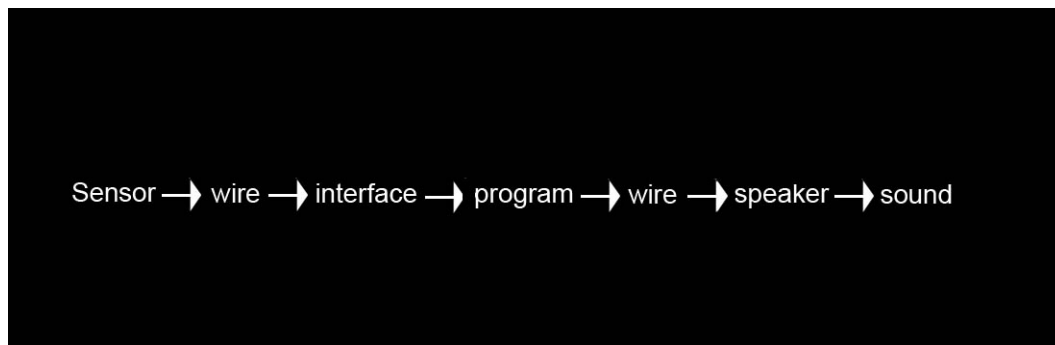


Figure 2.2 *A linear chain of relations.*

The application of a series of parasitic propositions, in even one small part of this chain, altered the nature of relation. For example, in the relations between the sensor output that triggered sounds, a series of competing propositional potentials were designed that complicated any actualisation of a sound. Other sensor events had the potential to turn off the sound sample, and/or swap it for a different sound, and/or modulate its volume so that it might be inaudible or dominant, and so on (*Figure 2.3*). In such relatively simple ways, the design moved from a linear causation of relation of movement equals sound – a realisation of the possible – to multiple complex potential events intermeshed within a nexus of relations – the ‘noise’ of disruption, a continual force moving the process into reconfiguration¹²¹.

The nexus of relations here can be seen to operate not just as independently self-satisfying, but also as complexly and fluidly interrelated through disjunctive events of emergence, as potential noise within relations, constructing through disrupting. This enriched connection to the virtual proposed relation as more than just complex vector relations of physical interdependence. Here a technological system began to approach a relational modeling, as a trigger became a factor within a complex series of interrelated events that were concerned with rhythms, intervals and disruptions that built an ‘ecology’ of interdependent components¹²².

¹²¹ This need not be seen in oppositional terms, rather a distinction between a differentiation that leads to the possible, and a ‘hyper-differentiation’ that ‘seeth[es] with fractal future-pasts’ of the unactualised potentials. Massumi, *A User's Guide to Capitalism and Schizophrenia*, 91.

¹²² Manning, *Relationships* (Cambridge: MIT Press, 2009), 74.

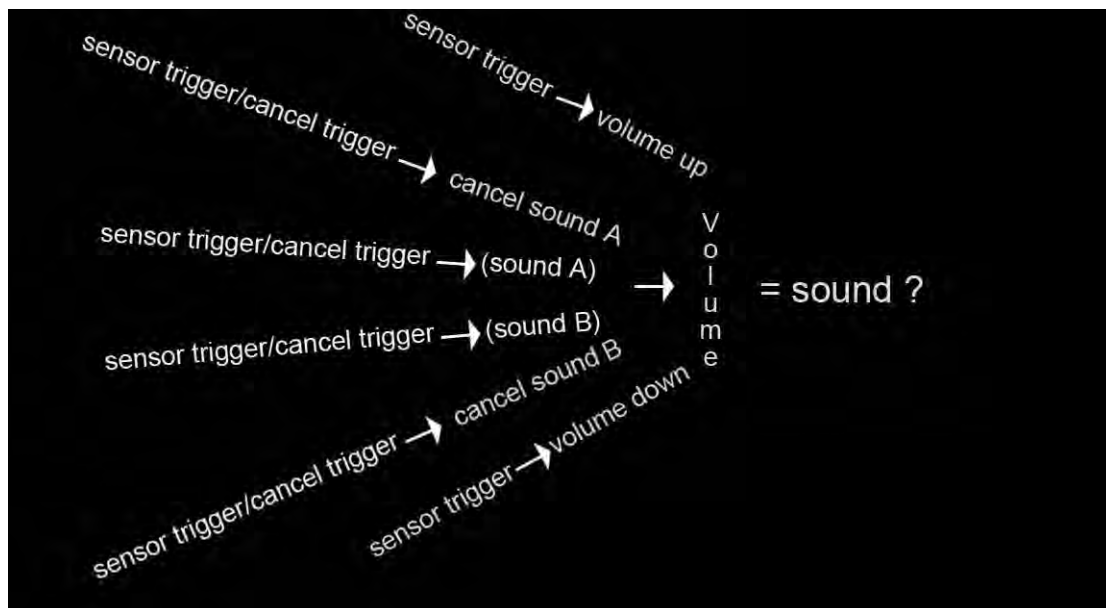


Figure 2.3 Parasitic potential relations.

This complex system of relations was then multiplied exponentially for each sound event, and its virtual potentials also added to the equation¹²³. Triggers that shifted the sound emitted from one speaker to another also disrupted the spatial relations of the sounds. Other triggers proposed competing shifts in the tonal qualities of the sound produced – changes to the equalisation, reverberation, and so on – potentially disrupting the perception of sound by bodies. Relations in the system not only moved toward complexity over time – rather than stability and as established orders of linear causality – they were disrupted and the expressive potential of the events were now also expanded.

In this example, the parasitic potentials of the system have drawn the various machines into implication in each other's individuation through its entangled chains of cause and effect. Not only are these machines all concerned with the production of sounds, they are also involved in the actualisation of each other, as they begin to affect the success or failure of each other's productive expressions. Differentiation

¹²³ Components of these individual sounds were also constructed as micro-perceptions¹²³ – not necessarily capable of being individually recognised, but layered in combinations of tones, timbres, overtones, rhythms and textures, to produce a 'society', the perceived sound, while retaining difference

here is the unifying element – activating the individuation of relation between entities and assemblages that implicate within each other’s actualization. This is, at the same time, a differentiation that creates a shared potential or priming for further disruptions and relational entanglement, and reveals the potential of disruptive noise to open a system¹²⁴.

The artist here proposes a multiplicity of potential sound events, in excess of possible actuality. With causality dispersed, notions of an artist as ‘agent’ are replaced by a co-causal ‘agency’ or conversation between competing forces. Within such simple tactics, we begin to understand sounds within the system becoming free floating events, inhabiting a virtual soundscape – sounds as societies, vibrating internally and externally with the tensions of relation – they begin to hum with difference and potential.

The parasitic embraces Deleuze’s concept of a ‘difference without negation’¹²⁵: firstly, that all the differences have a productive or creative role to play in the drive towards novelty of the system; and secondly, that those differences not actualised in any one event remain open to further potential influence on the future of the event. The competing forces of the parasitic potential disruptions within the system here create a logic by which the system ‘works out’ what sound will actualise. It is a ‘self creative unity’ that in each instance creates a set of competing propositions, which drift according to local and singular conditions in any one instance, rather than according to any preconceived outcome.

Relations within a parasitically activated system have a new intensity, in as much as that they continue, even after splitting, to contain the tension of potential further such

and their atomic nature. See Chapter 5 of this exegesis for an extended discussion of the parasitic potential of sound as micro-perception.

¹²⁴ While increasing component events’ implication in each other’s various actualisations, this is not presented as a definitive example of the scope of the parasite. Such tinkering represents both small, seemingly inconsequential moderations, and at the same time, a paradigm shift: the death of the (software) author to be replaced by the propositional event.

¹²⁵ Deleuze, *Difference and Repetition*, xx. The parasite operates as what Deleuze terms a productive or ‘positive’ differentiation, rather than an oppositional difference. Ibid., 205. That is, rather than acting as a negation that ‘subordinates difference to itself’, it creates problems within a system that are positively productive. Ibid., 266-7.

actualisations of disruption¹²⁶. There is always a pull towards multiple, incompatible future splits, and therefore relational forces remain in a problematised state that cannot be resolved into stasis.

As parasitic tendencies evolve, not simply in reaction to established relation, but as a force of relation themselves. Here the virtual and the actual parasite exist only as a condition of the relation; they are emergent events in and of themselves. While there is always difference contained within a system, constructing an event that accentuates the parasitic tendencies of relations to creatively disrupt themselves perhaps shifts it from structure-differentiation to hyper-differentiation. In placing the emphasis on the splitting of relation – an unsettling, opening up and a disruption, as much as a production of the new – the parasitic action is clearly a molecularising or becoming-minoritarian tendency.

This parasitic modeling remains emergent, embracing change and contradiction, constantly at a point of rearranging. Importantly, it is a way of enabling the conditions for difference to arise within the event, rather than a prescription of actualised differences. This conception of the parasite allows a way of describing a dynamic, emergent and complex series of relations, a methodology that embraces the potential fluidity. In the advocated shift to a parasitic modeling of the interactive event, the point is, in a sense, to not have a point: to rescue such art-events from purposefulness, to encourage growth, mutation and destruction, to enable an event to generate its own forces of concrescence, and find its own satisfaction. This does not imply an absence of artistic input in any negative sense, but a shift towards propositional, speculative structuring. It places emphasis on the intensification of relation through differentiation, a shift that embraces the richness and lure towards future creativity of a dynamic virtual milieu.

The task for the artist is to steer interactivity towards the propositional, to invent ways to keep the event and the temporal experience of participation unstable, to keep assemblages fluidly creative. The point of this multiplication of the virtual is twofold:

¹²⁶ The potential for further iterations and workings out – that molecularise and concretise the system by demanding a reconfiguration of each relational pull in relation to every other actual and potential force – is always in excess to what is actualised.

Firstly, it makes the work as the event, the temporal experience of participation, unstable; it keeps the assemblage fluid and emergent – always reconfiguring, inventing new relationships of connection depending on the specifics of involvement.

Secondly, this instability begins to apply not just to the actual experience, but to the language that is used to articulate the event – it becomes a kind of meta-modeling of the experience, which combines various potential relations and interferences into a model that describes the event.

This combination is an immanent critique, always at a point of change or dissipation; it applies only to a specific viewpoint, and a specific moment, and must always be reinvented. As a model, it remains emergent, embracing change and contradiction, always needing to be rearranged. What this language of the parasite then begins to allow is a way of describing the dynamic, emergent and complex events of relation that embrace their potential fluidity, rather than a concentration on the form and comprehensible movement. The remainder of this exegesis is dedicated to such an open exploration, with a series of different parasitic tactics, potentially capable of driving interactive events through the intensive production of difference.

Section 2

Chapter 3

Walking with the world: towards an ecological approach to performative art practice.

‘One walks down the path to get somewhere, but one enjoys walking, and one leaves one’s house just to walk.’¹

3.1 Walking

Walking is intrinsically inventive and relational: to space, to the body itself, and to the potential that it both creates and differentiates. Walking moves us beyond a stable configuration of relations between a subject and objects, and towards a more complex experience that begins to escape such boundaries. It is, in the broadest sense, a parasitic tactic for the disruption of social, physical and mental structuring, capable of folding the body into the world – and world into body – a molecularization that excites and disrupts.

This chapter considers the potential of walking as a ‘minor’ practice – a tactic with which to pervert or trouble the structure of an oppressive system². For Michel De Certeau, cities are just such excessively stratified and homogenising systems that might be troubled through a technique of walking. Walking, de Certeau argues, is a ‘soft resistance’ that seeks a creative flight through reactivating connections between bodies and their environment. As Ben Highmore articulates, such walking is ‘minor’

¹ Alphonso Lingis, *Sensation: Intelligibility in Sensibility* (New York: Humanity Books, 1996), 21.

² Giles Deleuze & Felix Guattari, *Kafka: Towards a Minor Literature*, trans. Dana Polan (Minneapolis: University of Minnesota Press, 1986), 10.

in that it is positioned less as direct opposition to structure, and more as that which ‘hinders and dissipates the energy flows of domination’³.

Every walk we set out on, even the most mundane and functional, is inherently an adventure into the unknown, into improvisation and discovery. If we are too jaded or numb to notice, then we have only to invite a small child or dog to accompany us to realise or invent creative and connective possibilities. With a child in tow or towing us, our walk can never be simply a blinkered move from ‘A’ to ‘B’. Instead, it is rich with potential. It splits to become multiple: consisting of many foci, intensities, and heterogeneous singularities⁴. A particular smell, a pretty tree, a siren, a cat, a game instantly evoked out of the walk: all layers of an experience that is being continually reinvented in response to stimuli. Our bodies rearrange and respond to the rock underfoot, cold wind, the effort of a hill, the anticipation of a busy road ahead, the pull of the dog’s leash. Such a walk is capable of being expansive without necessarily getting lost. It is for de Certeau a spatial practice that ‘slips into the clear text of the planned and readable city’⁵.

Stratified forces exist not only within cities, but also within bodies that are constrained by habit and subjection⁶, succumbing to stasis and a loss of connectivity and breadth of expression. As movement complicates and disrupts established spatial relations, multiplying and creating new immanent connections to extend the potential of the body in space, it might also allow a becoming-minor of a body. Walking, as Erin Manning argues, is a temporal, re-combinatory operation of becoming that decentres subjectivity and troubles stasis⁷; thus a moving body is always more than a fixed identity⁸. Arakawa and Madeline Gins conception of the ‘landing sites’⁹ – nodes of attention that the moving body produces – further explores minor procedures where

³ Ben Highmore, *Everyday Life and Cultural Theory* (London: Routledge, 2002), 152.

⁴ Manning, Erin, *Relationescapes* (Cambridge: MIT Press, 2009), 7.

⁵ Michel De Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1988), 93.

⁶ Gilles Deleuze and Félix Guattari term this subjection a body’s own capacity for ‘micro-fascism’. Gilles Deleuze & Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 215.

⁷ Manning, *Relationescapes*, 23.

⁸ *Ibid.*, 63-4.

⁹ Arakawa and Madeline Gins, *Architectural Body* (Alabama: University of Alabama Press, 2002), 5-22.

bodies and environment fold into one another and disturb boundaries. The intermeshing of body-world potential that Arakawa and Gins articulate is always in-process – emphasising that the minor is never a stable position outside the major, but rather a performative exploration within an established system, be it a body or a place.

In this chapter, Nathaniel Stern's *Compressionism* performance is examined for its ability to enable exploration of a minor potential of walking. The configuration of technical objects and bodies in *Compressionism* contributes to a reactivation of the streets as de Certeau proposes, and allows a reconfiguration of intensive bodily relations through the activation of new internal and external sites of attention¹⁰. *Compressionism* can be viewed as a procedure to 'escape or "reenter" habitual patterns of action' in order to reinvigorate our attention to these processes of contraction¹¹, to explore alternative routes, reinvent both processes and outcomes, and to embody a minor practice.

3.2 Making the world/performing space

For de Certeau, walking through the streets recreates the city as more than a fixed 'geometrical or geographical space of visual, panoptic or theoretical constructions'¹². The immanent movements and 'tactics' of everyday life produce a relational, contingent experience. In 'walking the city'¹³, de Certeau examines ways that deterritorialisation of spatial order is enabled through the act of walking, and the

¹⁰ In considering this artwork, I do not mean to imply that the technological components of the work that help to transport the body beyond habit are an 'augmented awareness', one that might be viewed as a postmodern counterpart to some romantic or mythical past of 'pure' non-stratified relation to place. Rather, it is that the work problematises the habitual acts of walking and engaging with the environment, and demands that the participant's body itself seeks out new intensive and extensive minor relational potential.

¹¹ Ibid., 62. In this sense, it is potentially a process of 'becoming-other', even if the outcome is ostensibly similar. The emphasis here is squarely on shifting the awareness of 'becoming' – the immersion in the emergent process – not on the 'other' (individuation not individualisation). As Lygia Clark says of her own work, its function is to encourage the spectator to 'rediscover the meaning of our routine gestures.' Quoted in Rudolf Frieling, *The Art of Participation: 1950 to Now* (San Francisco: San Francisco Museum of Modern Art, 2008), 104.

¹² De Certeau, *The Practice of Everyday Life*, 93.

¹³ De Certeau, *The Practice of Everyday Life*, VII.

positive personal and social implications of these movements. This is positioned as a ‘tactic’ that destabilises from below, a fragmentary insinuation into place to reappropriate it ‘without taking over in its entirety’¹⁴. In walking’s immanent recomposition of static place as ‘vectors of direction, velocities, time variables...intersections of mobile elements’¹⁵, it molecularises or reenergises these territorialised ‘places’¹⁶.

Michelle Lamant comments that de Certeau’s tactics allow pedestrians to ‘create for themselves a sphere of autonomous action within the constraints that are imposed on them’¹⁷. The walker, she argues, reconfigures the impersonal, visible and knowable space of the city streets through minor methods born of creativity rather than passive or active resistance¹⁸, replacing the productive and pre-structured place with an improvisational experience that operates inside the established systems. Of interest here is not the problematic and romantic return to the *flâneur*, as de Certeau’s argument can be read¹⁹. Rather, that in emphasising the reconfiguration of relations out of existing entities, and the continual differential action of movement that keeps these relations at this point of splitting, rejoining and re-layering, de Certeau’s walker activates a becoming-minor potential of their relationship to a space.

Walking invites an intimacy and active engagement with the singularities composing an experience that enriches the homogenising actions of a place. The streets we

¹⁴ Ibid., xiv, xix. The tactic destabilises without necessarily imposing new order, remaining immanent and essentially *per-formed* rather than a preformed strategy. Ibid., xx.

¹⁵ De Certeau, *The Practice of Everyday Life*, 117.

¹⁶ Ibid., 117. Manuel De Landa’s distinction between ‘state’ and ‘meshwork’ structuring of space is useful here as it avoids the naïve concept that a deterritorialisation of space is either sustainable in itself or necessarily positive. Rather, he distinguishes between centrally organised and rigidly-controlled space (state) and a ‘bottom up’ approach to organisation of space that consists of complex, intertwined heterogeneous elements largely self-organising (meshwork). The point is to develop strategies to replace the former structuring with the latter, which is the potential that the tactic of walking proposes in the city space for de Certeau. See Manuel de Landa, *A Thousand Years of Nonlinear History* (New York: Zone Books, 2001), 257-74 & passim.

¹⁷ Michelle Lamant, “Untitled,” *The American Journal of Sociology*, 93: 3 (1987): 720, <<http://www.jstor.org.ezproxy.lib.monash.edu.au/stable/pdfplus/2780302.pdf>> [Accessed: 20/4/2010].

¹⁸ Lamant, “Untitled,” 720.

¹⁹ I am aware of the somewhat simplistic and potentially problematic image of the walker in de Certeau’s writing, who at times does come perilously close to the image of the *flâneur* with its implications of (at best) idle dandyism. De Certeau’s walker remains untroubled by social constructions of the actual city (race, class, gender) that would potentially constrain ‘his’ actions. See Driscoll, Morris, and Beryl for such critiques. (Cf. Brian Morris, for a measured and sympathetic debate on this issue).

navigate or describe through remembered movements and sensations might perhaps disrupt any idea of an absolute organisation of space with our shifting experience over time. Instead, as de Certeau says, they become a ‘story, jerrybuilt out of elements’ that is both ‘allusive and fragmentary’²⁰, layering and splitting the existing structure, filling the streets with ‘forests’ of ‘desires and goals’²¹ to make the world habitable. An ‘in-between’ is created that allows a movement, a flow of forces, bodies and affects.

Walking becomes a technique of differentiation, positioned not as a negative to the actualised, but as a creative derivation from that which is already in existence that extends and complicates²². It is a positive parasitism that is minor or ‘molecular’ in allowing new communication or exchange between components²³.

3.3 Differentiating the body

‘It is the mobility of life – its productive potential – that gives it its seemingly infinite range of specific virtual and actual individuations.’²⁴

While walking can disrupt and reconfigure relations to space, Manning argues that it can also work to differentiate bodies through movement, allowing exploration of new potential intensive connections. Imagine that you are standing stationary in a doorway, about to walk out. Except that ‘stillness’ undermines itself: you are already always moving in two important ways²⁵. Firstly in a literal and physical sense, the

²⁰ De Certeau, *The Practice of Everyday Life*, 102. Roland Barthe’s essay ‘No Address’ explores such an experience in describing the attempted navigation through the streets of Tokyo, where there are no street names and directions take on a subjective, relational nature, shaped by the forces of rhythm, habits, durations and memories – position enacted through discovery that is ‘intense and fragile’. Roland Barthe, *Empire of Signs* (London: Jonathan Cape, 1982), 36, 33-37.

²¹ Ibid., xxi.

²² Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), xx.

²³ Deleuze & Guattari, *Kafka*, 41.

²⁴ Andrew Murphie, “Differential Life, Perception and the Nervous Elements: Whitehead, Bergson and Virno on the technics of living,” *Culture Machine*, 7 (2005): 1.

<<http://www.culturemachine.net/index.php.cm/rt/prINTERfriendly/32/39>> [Accessed 23/1/2013].

²⁵ Manning, *Relationships*, 43-7.

body is always in a state of intensive micro-movement²⁶, perceptual disruption and differentiation²⁷. Secondly, the continuous gathering and incipient pull of the virtual also undermines stillness. As you are about to begin, Manning proposes, milieus of virtual possibilities are composing themselves, creating tensions, an ‘elasticity’ that is released as the possibilities resolve into an actual movement. The choices are not infinite but are limitless in that they are being endlessly created, and each choice generates another equally complex series of choices. They resolve in the satisfaction of an actual event (your left foot takes a small step straight ahead), and all the virtual movements perish. This event ‘propels the preacceleration of a new occasion’²⁸. The new sets of virtualities begin composing possibilities for the next step or micro movement²⁹.

Movement here, Manning says, cuts across the body³⁰, connecting and disrupting the actualised body’s relation to its larger potential, which is always also reconstituted by the activity. It is a technique by which a body accomplishes the shifting beyond itself of ongoing individuation. This evolving potential for new connections is a minor ‘flight’ from stasis, a flight that is not an escape from oneself, but an increase in intensity, or richness of potential³¹.

²⁶ Heart, lungs, eyelids, and eyes are the more obvious aspect of this, even though for the most part they operate below an overtly conscious, willful level, but there are also the efforts of the muscles as they continue to exert force in opposition to gravity to keep one upright, and as the body performs constant micro movements and adjustments to keep balanced. The relatively still body, Manning states, is in fact a series of ‘micro-postures that move in tandem with the rejigging of micro-movements’. Ibid., 44.

²⁷ Similarly, one could argue, the body is always in a process of perceptually differentiating, in that the body has its own differential machines – technics – built into the sensory distributions of the body. These operate in the interval – the differential. It is this gap between – a qualitative intensity – that is meaningful: the felt experience *between* the data processed from one ear/eye/nostril/foot and another, a contrast before a relation. Movement here activates the continuous streams of noise that are perceptual differentials, and this ‘perception/action continuum’ of differentiation is emergent with movement, intrinsically composed of and with such movement. Murphie, “Differential life, perception and the nervous elements”, 6. Cf. Steven Connor on the asymmetrical nature of the body and world: ‘The world is sensible because it lists, because it has orientation or laterality’. Steven Conner, “Michel Serres’ Five Senses,” *Michel Serres Conference* (Birbeck College, London, May 1999), 2.

<<http://www.michelserres.com>> [Accessed 10/9/2010]. As Deleuze states: ‘Sensation is the master of deformations, the agent of bodily deformations.’ Gilles Deleuze, *Francis Bacon: The Logic of Sensation* (Cornwall: MPG Books, 2002), 36.

²⁸ Manning, *Relationescapes*, 38-9.

²⁹ These virtual movements are shaped by many things, such as the limits of body, habits, responses to the space, and so on, and it is movement that both generates and selects from the potential actions.

³⁰ Manning, *Always More Than One: Individuation’s Dance* (Durham: Duke University Press, 2013), 46.

³¹ Deleuze & Guattari, *Kafka*, 13.

3.4 Landing Sites: worlding the body

*'Things subsist not as givens, but as tasks to which perception finds itself devoted.'*³²

Walking the space of the city is never without constraints: proposing and conditioning movement, the body's projection and diffusion into space. Environments provide conditions – platforms of potential actions – that affect the actions of the walker. A park bench, for example, creates anticipation of a certain habitual action (sitting), and in this way works to order the movement in the space³³. These conditions can enable as much as they constrain, proposing new actions. Propositions, as 'lures towards feelings'³⁴, construct potential from which events can draw, providing a virtual field from which the actualised differentiates. For example, a patch of grass might invite many responses from the walker: a place to lie down, the danger of snakes in summer, wetness to be avoided after rain, the smell of the countryside, and so on. These propositions potentially operate on multiple levels – sensorial (softness underfoot/wetness/smells), affectual (inviting tiredness and an urge to rest, fear of hidden danger, joy of free space to play), and kinesthetic (sitting, lying, running, walking). The conditions of the space do not necessarily impose a habitual bodily response; rather, they can lure a range of potential actions into being.

Such spatial propositions invite individual responses – actualities – triggered by common constraints. These constraints are immanently performed by the body-in-composition as it walks. The ground, for example, is an 'enabling constraint' of movement intrinsically related to the form and practice of walking³⁵, as gravity plays a role in shaping some movements (exertion increasing up a steep hill) as much as it

³² Lingis, *Sensation: Intelligibility in Sensibility*, 35.

³³ Brian Massumi, "Urban Appointment: a Possible Rendez-vous with the City," *Making Art of Databases*, eds. J. Brouwer & A. Mulder (Rotterdam: V2 Publishing, 2003), 4. The bench is a 'storage of repose' that creates suggestions of actions. While one could sit on the ground or stand on the bench, Massumi argues that the image of the bench creates anticipation of a certain habitual action (bench = sitting), and in this way works to order the movement in the space.

³⁴ Alfred North Whitehead, *Process and Reality*. (New York: The Free Press, 1978), 259.

³⁵ Manning, *Relationscapes*, 70. A shifting level underfoot, as Manning describes it, makes palpable to the walker the ground-gravity-body relationship, disrupting and reconstituting it as one stumbles: an 'active prehending' that 'reconstitut[es the ground] as novelty, intertwining with the capacities of what a gravitational body can do'. Ibid., 70-1. To begin to understand how gravity helps shape body-movement machines, think, for example, of the different movements that the lower gravity pull of the body in water produces.

precludes others (leaping walls), wrapping the feet into sensorial relationship with surface textures and resistances of various materials underfoot.

Certain activities and spaces more forcefully and productively disrupt habits by requiring an active and attentive care that brings to the fore the processes of connection and projection into the world. The urgency of movement and the complex negotiations required to enter or exit a peak hour train, for example, brings to our consciousness the continual negotiations and collective reconfiguring of space required by moving in the city – calculating who will allow passage, who must be edged around, intuiting minute adjustments of tempo and posture to keep a free space ahead. Positional information comes at the body from all directions as we compose a provisional line through the chaos. With every step, the space available, and the potential for the next move, shift and both body and path must always be renegotiated, making premeditated, planned paths redundant. It is in such moments of intensely improvised movement that the space might begin to approach a contingent, immanent quality. Such an encounter with the city is far from the free and idle wandering of the *flâneur*; it is a series of conversations between competing forces and potentials affecting both the configuration of the space and the composition of the body³⁶.

The in-process ‘portioning out’³⁷ space to provisionally deposit sited awareness around the body that such situations demand are described by Arakawa and Gins as ‘landing sites’³⁸. The body, they state, takes cues from the environment to ‘assign volume and a host of other particulars to the world’³⁹. These sites are a way that the body contributes to and distributes itself into the world: a ‘holding of the world’ in attention⁴⁰. They are a process by which differentiation of the field occurs, to different degrees of specification and diffusion. This, Arakawa and Gins argue, is a process by which, perceptually and kinesthetically, the world and body are immanently enfolded. In this sense, the body not only differentiates the *space* through movement, but also

³⁶ Ibid., 15.

³⁷ Arakawa & Gins, *Architectural Body*, 5.

³⁸ Ibid., 7. Arakawa and Gins propose three categories of landing sites: ‘perceptual’ that are ‘specific to what presents itself; ‘imaging’, which cast a wider and more diffuse net; and ‘dimensionalizing’, which combine the previous two categories to attach more fully to an environment. Ibid., 7-8. See also Manning, *Relationships*, 211.

³⁹ Ibid., 7. All perception – ‘a bit of substance, a segment of atmosphere, an audible anything, a whiff of something, whatever someone notices’ – creates these dispersed foci of attention. Ibid., 9.

distributes *itself* within the space, contributing its awareness towards things in the world⁴¹.

Processes of landing sites productively disrupt the limits of the body, constructing through dispersion a new extended and enriched potential *bodying*. These projected landing sites fold, nest, diffuse and focus dynamically while the body moves. It is a constant, creative, noisy process of splitting stable relations. Landing sites work to enrich experience with a potential further fielding of body in the world⁴², a kinesthetic body that is always dispersing and reorganising.

Returning to the space of the peak-hour train, where spatial relations shift quickly, this process by which the space-body-movement relations enfold the body and object/world into shared individuations becomes more consciously attended to⁴³. Entering the train carriage⁴⁴, we begin to create landing sites, distributing awareness on both the more physically concrete (arrangements of bodies and objects), and on more vague and diffuse levels, such as the ephemeral (reflections of light on surfaces or affectual tonalities). A change in height or texture underfoot as we enter creates a foot-floor site, a commuter's headphones or conversation sites attention vaguely in one direction, the line of bodies exiting the train deposits attention towards this flow. The vacant seat in front of us concentrates attention not only on the object itself and the seat/body kinesthetic potential (stopping, sitting, a virtual becoming-with of seat/body that makes the seat also part body and body part seat), but also on the kinesthetic possibilities of surrounding floor space (the potential of moving to or beyond the seat).

⁴⁰ Ibid., 81.

⁴¹ 'What stems from the body, by way of awareness, should be held to be of it'. Ibid.

⁴² For example, landing sites at their 'imaging' end (beyond the register of perceptual actuality) create the conditions (potential) for perceptual or dimensionalising sites. See Manning, *Relationscapes*, 80.

⁴³ These are the kind of spaces Arakawa and Gins have proposed and constructed, where shifting levels, varying gradients, columns of different circumferences, and so on, create a space that defers totalising comprehension and demands considerable and continual attention to negotiate. Arakawa & Madeline Gins, *Reversible Destiny* (New York: Guggenheim Museum, 1997). The 'elastic point' at which the body 'culls from the movement's potential its becoming-form' is extended through such propositional spaces that demand a clear and ongoing shifting beyond habit. Manning, *Relationscapes*, 35.

Landing sites thus move through, over, around, and inside other landing sites, each divisible into smaller sites, continually complicating relations as the body moves and redistributes itself in the environment. The point we are pressed against other bodies in the train carriage becomes a shared site⁴⁵ of focused attention, located within a general awareness of the other passengers. As we move through the space, the sites make such navigation possible, and begin to propose relational and kinesthetic possibilities. The landing site on the exit opposite not only creates another site of attention, but also wraps both body and door in potential future kinesthetic relation (an exit from the train). Vision here is haptic and kinesthetic, with, as James Gibson states, ‘the optic array...not only provid[ing] base information but also the possibilities for action on the basis of that information’⁴⁶.

⁴⁴ Landing sites are always tied to styles and techniques of bodying and moving – they are specific (even in their fuzziness) and singular – for example, a baby crawling or person in a wheelchair will create different landing sites, zones of attention directly relevant to their ambulatory procedures.

⁴⁵ Landing sites are constituted both within the space around and within what we think of as the discrete body and mixtures of the two, in a way that fundamentally disrupt boundaries. ‘(T)he body is part of the external world, continuous with it. It is as much a part of nature as anything else there...we cannot define where a body begins and where external nature ends’. Alfred North Whitehead, *Modes of Thought* (New York: Free Press, 1968), 4. This is evident with landing site operations, thought in terms not of materiality – where it is also true (shared atoms or bacteria, for example) – but the production of an immanent world-body through moving and sensing.

⁴⁶ James J. Gibson quoted in Roberta Mock, *Walking, Writing, Performance* (Bristol: Intellect Books, 2009), 96. This is far from the role de Certeau assigns to vision as inextricably linked to power. De Certeau begins his meditation on walking the city with a description of the distancing and totalising effects of sight, Vision here separates from life and works to reduce the living complexity of the city to representation – ‘a projection that is a way of keeping aloof’. De Certeau, *The Practice of Everyday Life*, 92-3. More recent technologies of vision (CCTV, GPS, and mobile phones with ability to immediately capture and send images from the street, and the ability they give authorities to trace users) perhaps confirm Certeau’s fears of ‘the cancerous growth of vision...measuring everything by its ability to show or be shown’. De Certeau, *The Practice of Everyday Life*, xxi. The concept of occularcentrism, and the role normally assigned to perspectival notions of vision, also critiques the repressive functions of vision. For a discussion on the merits and limitations of this argument, see: Martin Jay, “Scopic Regimes of Modernity”, *Vision and Visuality*, ed. Hal Foster (Seattle, WA: Bay Press, 1988), 3-28. This is not to argue that vision cannot operate in this manner – as Foucault has shown, vision has panoptic potential as an agent of control and separation, but it has other potential operations of an enactive and synesthetic nature. See, for example, Massumi’s discussion of vision and perspectival painting for another way of thinking through the bodily implications of the system. Brian Massumi, *Semblance and Event* (Cambridge: MIT Press, 2011), 127-30).

Manning proposes a synesthetic operation of vision that is part of a co-mingling of the various senses that themselves are linked to movement and also kinesthetic; *Relationscapes*, 49. Thus on a walk, we not only see the gravel on the road but ‘feel’ its texture through sight, as Massumi says, as vision becomes haptic; *Parables for the Virtual*, 158. As we move towards some landmark – a tree for example – vision operates not just to recognise the image of a tree, but also proprioceptively to create the feeling of self within the space; Manning, *Relationscapes*, 49. This we might think of as a landing site that has been deposited, situating part of the body at the landmark ahead. As we move, we see continual variation in image of the tree – parts come into the field of vision or disappear, become larger or smaller, so that our eyes as they move across the tree might act not as ‘a capturing of the world, but a captivating by it’. *Ibid.*, 86. Furthermore, although at any one instant we can see only one side of the tree, we experience it as a three-dimensional object – this is a ‘depth perception’ that is, Massumi argues, a seeing of the potential to move around, through or over the object – a kind of prehension of

These landing sites are in-the-making – as Manning says, a ‘tending towards relation’⁴⁷. This again is a process of becoming-minor, a decentring through movements that recombine components of an event⁴⁸. The act of depositing landing sites agitates or molecularises boundaries between body and world – destabilising distinctions through the creation of shared potential collective individuation.

3.5 *Compressionism*

Transdisciplinary artist Nathaniel Stern’s ongoing *Compressionism* performances (2005–)⁴⁹ comprise a customised, scanner-battery pack-laptop assemblage worn or carried by one participant, while another holds and moves the scanner surface across objects to ‘perform images into existence’⁵⁰ through a kind of shared seeing-moving within an environment. These scans are literally a ‘compression’ of the temporal act into a two-dimensional image (see *Figures 3.2*⁵¹ and *3.3*⁵²), seeking, as Stern says, to ‘accent the relationships between the performance, myself, my subjects and the tools’⁵³.

What does the performance of *Compressionism* add to the already dynamic becomings of the moving body in space, or, rather, how does it reinvent and re-

the possibilities of movement. Brian Massumi, “Sensing the Virtual, Building the Insensible.” *Hypersurface Architecture*, 68:5/6, (1998): 23. Manning states that even before we adjust our movement to accommodate for the tree in our path, vision activates in our bodies the ‘preacceleration’ that is the gathering of energies, an opening up to potential; *Relationscapes*, 14.

⁴⁷ Manning, *Always More Than One*, 12.

⁴⁸ Deleuze & Guattari, *Kafka*, 50.

⁴⁹ This work was performed as part of a larger project, *Into the Midst*, by the Senselab research group in Montreal in October 2012. Of interest in this iteration is that the work was performed within the city environment as an extension of a project within the immersive dome at the Society for Art and Technology (SAT), and that the work was enacted by a number of different bodies (including the author’s), and was often collaboratively performed, with several people carrying connected technical components to perform a larger cooperative action. See Chapter One, ‘Bridge’, and Appendix A for further discussion of the *Into the Midst* project.

⁵⁰ Nathaniel Stern, “Compressionism Documentation”, Nathaniel Stern, accessed 20/2/2013, <<http://nathanielstern.com/artwork/compressionism/>> These scans are literally a “compression” of the temporal act into a two-dimensional image, and perhaps begin to operate as much as an affectual expression as a representation of the act.

⁵¹ Nathaniel Stern & Annette Jakobsen, *Compressionism Scan*, Montreal, 2012. Digital Image.

⁵² Nathaniel Stern & Gerko Egert, *Compressionism Scan*, Montreal, 2012. Digital Image.

⁵³ See Nathaniel Stern, “‘Compressionism’ - scanner performance art and printmaking” (online video), accessed 20/2/2013 <<http://www.youtube.com/watch?v=ws2ymIITvdl>> for the artist’s brief explanation of the process and its development.

molecularise these processes, doubling them with new levels awareness?

Compressionism, I want to argue, does not alter *being*, but the *manner* of being⁵⁴: it creatively performs the body (and space) in a new way, not to return it to an imagined pre-stratified form, nor to replace previous space-body modulations, but to enfold it with existing relations. The work here challenges habits, provoking participants to intuit new minor ways of being.

3.5.1 *Compressing the city*

Performing *Compressionism* was an awkward act. The size and weight of the scanner required that it be held in both hands away from the body, with feet braced to maintain balance. This created a tension running through the body, stretching toward objects to be scanned. Keeping the scanner steady required a clumsy cooperation between both scanner and bodyweight as counter-balance, and also between the holder of the scanner and the person carrying the battery pack and laptop capturing the image (see *Figure 3.1*⁵⁵). There was a zone of intimacy established, both between the collaborating bodies and between the scanner-body assemblage and the objects being scanned. Scanner, body and space all conjoined through the act of moving.

*Compressionism*⁵⁶ involved a close investigative walking – through back alleys, parks, along surfaces of objects, architecture and bodies. It was an exploration of texture, colour and contrast, held together by the collective movement of the bodies-scanner machine. The intensive, explorative, close-visioning movement in the city enacted through the ‘*Compressionist*’ event was remembered through the personal, composed from actions, disjunctions and sensations. One’s experience of the event was composed of particular colours, surface textures and variations, the sounds of the scanner, the effort of a particular stretching of the body – each of these coloured one’s experience of the event. It was a fragmentary mapping of a space – a haptic or closely

⁵⁴ Félix Guattari, *Chaosmosis: an Ethico-aesthetic Paradigm*, trans. Paul Bains & Julian Pefanis (Indianapolis: Indiana University Press, 1995), 109.

⁵⁵ Bianca Seliar, *Compressionism Documentation*, Montreal, 2012. Digital photograph.

⁵⁶ As performed in Montreal in 2012.

focused narration of layering intimate, personal actions onto the surface of the city space⁵⁷.

Participants performing the scans improvised new literal connective passages that opened gaps between systems of place⁵⁸ – moving up walls or through holes, over horizontal, vertical and angled surfaces, backtracking to points of interest – inventing new affectual connections. The space scanned was understood, not through a stable image or representation, but as a dynamic expression of the relationships between moving bodies and environment – felt through rhythm, tempo, shifts and variations. *Compressionism*'s movements insinuated into the city the experience of a 'plurality of centres, a superposition of perspectives, a tangle of points of view'⁵⁹.

⁵⁷ This was a haptic experience both in encouraging engagement with multiple sensations, and in bringing attention to the surface of the objects scanned and to participants' interior/exterior boundaries.

⁵⁸ That is, in its intensive searching-out of the incidental and the singular, the body-scanner ignored the established networks of movement: paths, roads and doors. Gaps were also multiplied and troubled in the 'proper' space of art (in this case, the SAT Gallery), as the *Compressionist* act in the street extended and diffused the event into a larger, perhaps less passively receptive environment, requiring negotiation with a new, more complex set of parameters. The weather, hostile or friendly public, incidental noise, available light, traffic, and so on, all became factors folded into the event by the act of walking the performance beyond the gallery, disrupting or *mutating* the event itself through chance encounters, emotional tonalities, sounds heard, time spent on detours.

⁵⁹ Gilles Deleuze, *Difference and Repetition*, 56.



Figure 3.1 Bianca Scliar, *Compressionism Documentation*, 2012. Digital photograph.

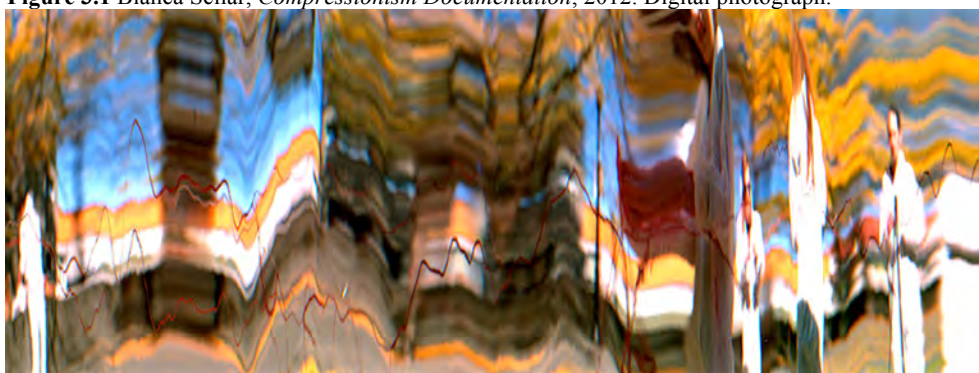


Figure 3.2 Nathaniel Stern & Annette Jakobsen, *Compressionism Scan*, 2012. Digital Image.

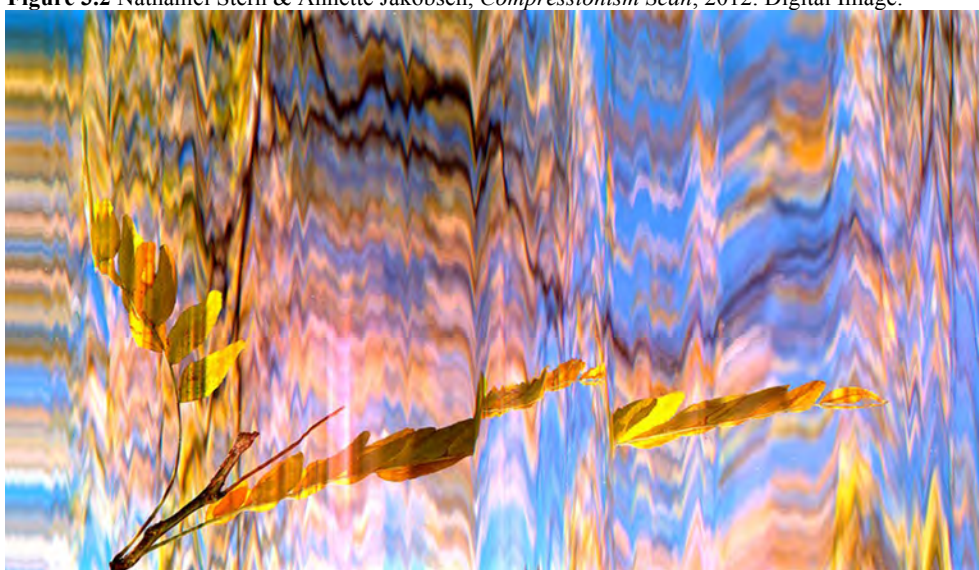


Figure 3.3 Nathaniel Stern & Gerko Egert, *Compressionism Scan*, 2012. Digital Image.

3.5.2 Dancing objects

*'Each time an organ – or function – is liberated from an old duty, it invents.'*⁶⁰

As participants slowly moved the scanner over the surface of an object, these actions were translated into a larger movement of the hands and arms – creating an awareness of contours and small deviations that was heightened by the fact that the object itself was always partially obscured from view by the scanner. This was a blind, groping approximation of the shape that was performed: a scramble of image memory, a drawing of the shape with the hands, a constant reforming of posture and balance, an attention to the sound of the scanner's processes that resonated with the rhythms of bodies moving. Each object invited potential movements in relation to its form. For the minute or two before the laptop compressed the data into a viewable image, the event existed on its own as an awkward dancing of the object, an approximation of vision performed by a loose assemblage of other senses, drawn together by movement.

Compressionism made new connections between senses through movement, as vision became situated 'along the tendons and the muscles'⁶¹, and the event approximated a new eye-organ out of hands/feet/balance. What would normally be felt as the small-scale movement of the eyes traversing an object was explicitly performed as a full body movement, and brought to attention through this shift in registers. The body-scanner assemblage performed sight, inscribing it in space. This embracing of the scanning/visioning technics was a minor tactic in that it consisted of 'adding to' and 'perverting' habitual configurations of sense organs to increase the intensity of felt experience⁶².

The *Compressionism* event deposited a series of (mobile) landing sites in addition to those that walking the space might normally require. Part of the conscious attention landed on the held scanner, as the mechanics of holding and operating the equipment

⁶⁰ Serres, *The Five Senses*, 344.

⁶¹ Michel Serres, *Variations on the body*, ND, unpaginated. <<http://www.michelserres.com>> [Accessed 2/4/2011].

⁶² Deleuze & Guattari, *Kafka*, 10.

forced new improvisation of relations and landing sites in the muscles of the hands and arms, in the feet maintaining balance – depositing more defined sites of attentiveness onto the surface, gradient and texture of the ground. Less qualified sites were also deposited in the vague attention given to those carrying the rest of the equipment, and to the space around the object or surface being scanned. The more defined and useful landing sites were in the mobile spaces between object and scanner surfaces, while the unseen object itself remained a more generalised ‘imaging’ landing site, in Arakawa and Gins’ terms, nesting within the particular, while resisting definition. In this splitting and siting of attention that occurred, *Compressionism* perhaps created ‘molecular agitations’⁶³ that ‘escaped’ the known capacities of bodies in the space through the multiplying of attention and of local connections⁶⁴.

Compressionism might be seen to address a heightened awareness of, and engagement with, the processes of the virtual in two ways. Firstly, it literally created new potential that the assemblage’s heterogeneous component parts did not hold on their own – such as new capacities for seeing, new postural explorations, and new prehensive potential to trigger actualisations. Secondly, through continued disruption of any settling into habit, it promoted a suspension in its own continued unfolding that made the ongoing individuations perceptually felt. Here the assembling of body and scanner equipment provided new levels of potential intensive sensory difference, for example: the rhythms of the scanner head moving that the body attempted to follow, but never quite duplicated; the new decentring weight pulling on bodies that had to be resisted or followed; and new restrictions on the range of movements of the limbs; all these factors created tensions and difficulties. The technological components were not specifically the producers of these new relations, but were a technique to activate the conditions under which bodies began to explore minor ‘sideways and decentered movements’⁶⁵.

3.6 Conclusion

⁶³ Deleuze & Guattari, *Kafka*, 50.

⁶⁴ *Ibid.*, 37.

Compressionism invited novelty into the processes of moving, interacting and seeing.

The movements produced relations by requiring new cooperation between bodies, equipment and space. What *Compressionism* produced as its primary outcome were new expressions of movement – new improvisational collaborations between bodies/scanner/objects/surfaces/space that reconstituted each as enactive and extensively relational, both collective and singular⁶⁶. The event demanded an augmented or composite awareness, larger than that of the body on its own and prior to the event, reconstructing the body's field of sensitivities.

In walking, as both de Certeau and Manning argue, a body already exercises potential to produce minor iterations of streets, bodies and their relations. As Deleuze and Guattari are at pains to emphasize, the minor is not a place of refuge, but an activation that involves becoming a 'sort of stranger' within a known system⁶⁷. Perhaps then the key to this artwork's capacity to activate minor potential lies in its problematisation of any mastery of conditions or movement, creating awkwardness in the negotiations between limbs, bodies and space that made the performers strangers within their own movement capacities.

Compressionism might then be seen as neither an attempt to return to pre-stratified states, nor as some new prosthetic melding of bodies and technologies to take us beyond the limits of the biological, but as a technique for bodies to disorganise their own forms in order to experiment with new expressions of relations⁶⁸. If the 'minor' is concerned not with outcomes but enabling the conditions for new connections to arise⁶⁹, then perhaps the role the technological component of the work plays is less about creating new relations itself, than with disrupting habit and turning the body's attention to the capacity of movement to gather bodies into emergent and dynamic new ecologies.

⁶⁵ Deleuze & Guattari, *Kafka*, 50.

⁶⁶ Manning, *Relationescapes*, 22.

⁶⁷ Deleuze & Guattari, *Kafka*, 40, 26.

⁶⁸ *Ibid.*, 28.

Bridge: Psychopomp

In *Psychopomp*⁷⁰, a performance work for two bodies produced as part of this research, performers moved around a darkened space inside two costumes that generated internal light and sounds that played through four speakers arranged around the edges of the space (see *figures 3.5, 3.6 and 3.8*). The costumes worn during the performance were embedded with sensors so that movements, contact and pressure and shifts in posture generated the soundscape and caused LEDs in the costumes to operate (see *figure 3.7*). Each individual's actions had the potential to affect the lights in both costumes and to displace sound samples triggered by their movements.

The headpieces of the outfits curtailed participants' vision, so that they could only make out bright spots of light, thus they were more reliant than usual on touch and hearing to navigate the space. Their ability to fix stable positions was complicated by the disruptive actions of their movements, which triggered changes in sounds and shifts in the locations of sounds from one speaker to another. In addition, the lights they could see in the costumes altered in response to both body movements and the volumes of sound from various speakers. Navigation further complicated by the weight, volume, and soft texture of the new 'skin' wrapping their bodies, which made tactile sensations vague and somewhat alien.

All this created a scenario in which movement was necessary as a means to any level of cognition in body-body and body-space relations, yet movement simultaneously kept these relations highly mobile and caught in a web of co-causality. Movement – a dancing of the space – was a tactic by which participants tested their new capacities to interact and relate to sounds, lights, surfaces and bodies (both their own, newly made strange, and the other participant's body as a potential site of connection).

With reduced vision and unreliable hearing, participants were forced to turn attention to new and mobile collaborations of sensory input informed by the movements, that distributed comprehension throughout the body and space rather than relying on the

⁶⁹ Ibid., 18.

eyes. This was an exploration of disturbances to the ocular, an imaging that was in the service of, and serviced by, a synesthetic coalescence of sensations – touch, hearing, balance, temperature of another body – that were cobbled together some workable alliance to make sense. Perception was fragmented as peripheral sensations were brought to attention by bodies attempting to make connections. This cooperation between surfaces beyond their usual functioning caused unexpected and intensified conjunctions to arise – an arm pressed against the weight of a back, a foot cautiously feeling out the terrain underfoot, the slight vibrational ripple and noise of costumes brushing lightly past each other, all became central to any comprehension of spatialisation and the boundaries of the performer's own body. These challenges to bodies forced them to configure combinations of sensory organs and information in new and more mobile ways to create a new sense machine. This was precisely a 'becoming-minor' – a disruption to established ways of working in order to experiment with more flexible, improvisational – and therefore molecular – connections.

As bodies reached out, groped in darkness for certainty, they battled with the problematics of their new clumsy relation to the field. Landing sites could be cautiously projected here – onto the new augmented surfaces of the body, the spots of light perceived on the other performer's costume, a particular sound emanating from a speaker, a shared site between foot and floor, and so on – distributing attention onto the surface of the body, the collaborator, and into the space. But these alliances quickly dissipated as the conditions continued to shift. In this way, senses continually turned out to these edges in an unresolvable searching for a stable point of location, an attention to these new shared but fuzzy spaces between body, costume and world: an attunement to the collective event in its unfolding. Again, this fragmentation of attention and the increased mobility of sites of attention could be seen as a molecularization of perception, always requiring the projection of new sites in the search for usable information.

A collective style of movement attuned to the event began to evolve in response to the new weight, size and wrapping of the cocoon-like outfits augmenting their bodies, and

⁷⁰ See Appendix A for a more detailed description of the work.

to the new uncertainty of sense information in attempting to stabilise the field. Such tentativeness might be a suspension in the becoming of the event, an emergence of form, or, perhaps even less definite, an emergence of the conditions for form to begin to arise. Perhaps it was the inability to filter or prioritise sense information – to order and stabilise the field of experience – rather than a lack of information, which caught participants in a looping state of ‘always just beginning’ to make sense of world. The flooding with sensation of something not yet comprehensible is described by Manning as the ‘activation in the here-now of the not-yet’⁷¹ – a tuning towards and slowing down of the process of ‘parsing the object from the field’⁷². It was a disruption to the usual processes of perception, separating causal comprehension from the richness of undifferentiated sensual immersion. It was a movement of bodies that provoked, as Manning has written of such experiences, an encounter with the shaping of the ‘more than’ of the event⁷³, of the crystal point at which the actual and its larger potential begins to split, and the pull or lure of the virtual can be felt.

⁷¹ Erin Manning, *Always More Than One*, 179.

⁷² Ibid., 277. Manning uses the term ‘chunking’ to describe the ability to filter sense information. She describes the difficulty that autistics have in efficiently controlling and ordering the flood of information, and the special attunement to the field in its emergence that this gives – in a sense, an excess of receptivity to relation, rather than a lack that creates this experience. Ibid., 172-83, 275.

⁷³ Ibid., 179.



Figure 3.4 Andrew Goodman, *Psychopomp*. 2012. Digital video still.



Figure 3.5 Andrew Goodman, *Psychopomp*. 2012. Digital video still.



Figure 3.6 Andrew Goodman, *Psychopomp Costume documentation*. 2012. Digital photograph.



Figure 3.7 Andrew Goodman, *Psychopomp*. 2012. Digital video still.

The tentativeness that was evoked might approach what Arakawa and Gins have termed a ‘biotopological thinking’, encouraging an attention to the field, as much as to the body proper⁷⁴. Such thinking they describe as a ‘self-diagraming’, a coordinating of one’s world that portions spatial relations both approximately, as always evolving, and yet rigorously, as intensely relational across multiple scales of engagement⁷⁵. It was both the fuzziness of relation, and the new attuning to the emergence of sensations in *Psychopomp* that began to break with the participants’ habitual cognitive processes.

Psychopomp accentuated a felt quality of ‘not knowing’ – not quite knowing what delineated one’s boundaries anymore, where either oneself or the other performer were positioned in the space, where a sound emanated from, how movement translated into sound events. This might be viewed not as a ‘lack’ as such, but, as Stengers notes, a ‘characterization of a mode of working’⁷⁶ that foregrounded the multiplicitous nature of the point of actual/virtual at which bodies moved. The ‘not knowing’ was a parasite within the knowable – the already-formed relation, the stable object of representation – minoritising by disrupting and forcing into existence new paths and further complications: an advance through differentials with which movement problematised and molecularised the body. Not knowing was here commissioned as a tactic of production, positioning bodies at the ‘edge of virtuality’⁷⁷ that movement then stretched out. In this it was perhaps a system ‘advanc[ing] through problems and not through victories, through failures and rectifications rather than by surpassing’⁷⁸; a system charged with new indeterminacy. It required a new in-process attention that drew the creative processes of ‘worlding’ and bodying, which are always occurring, bringing the gathering of relation to a perceptible level.

⁷⁴ Arakawa & Madeline Gin, *Making Dying Illegal* (Berkeley: Roof Books, 2006), 60.

⁷⁵ *Ibid.*, 73-4.

⁷⁶ Isabelle Stengers, *Thinking with Whitehead: a free and wild creation of concepts* (Cambridge, Massachusetts: Harvard University Press, 2011), 286.

⁷⁷ Manning, *Relationships*, 35.

⁷⁸ Michel Serres & Bruno Latour, *Conversations on Science, Culture and Time* (Ann Arbor: University of Michigan Press, 2011), 188. The ongoing internal struggle could perhaps be likened to the ‘mangle of practices’ that Pickering describes, a process of resistance and accommodation, which creates a ‘dance of agency’ within the system rather than passive and active components. Andrew Pickering, *The Mangle of Practice: Time, Agency and Science* (Chicago: University of Chicago Press, 1995), 22-3.

Chapter 4

Entertaining the environment: towards an ethics of art events.

4.1 Introduction

In the late 18th century, the Abbé Nollet created entertainment by passing electric current from a Leyden Jar (an early battery prototype) through a line of 300 Carthusian monks holding hands, causing them to simultaneously jump in the air¹. This was one of a series of early experiments exploring a fascination with this newly discovered force in the world, capable of passing through and rearranging subjects and objects. Such works demonstrated a shift in positioning the human and the environment: an enthusiasm for exploration of a distinctly non-human agency active in a lively world of forces, and an entrancement with the capability of such forces to traverse and reorganise human body potential into a decidedly ‘post-human collective body/assemblage’².

Erin Manning has proposed ‘entraining’ and ‘entertaining’ the environment³ as a way of thinking through Alfred North Whitehead’s perceptual categories of ‘causal efficacy’ and ‘presentational immediacy’⁴. ‘Entrainment’ concerns the ‘immanently relational intertwining of perception with action’⁵. Isabelle Stengers explains causal efficacy as a construction of chains of cause and effect, often based on prior

¹ Arthur Elsenaar & Remko Scha, "Electric Body Manipulation as Performance Art: A Historical Perspective," *Leonardo* 12, Pleasure (2002): 19.

² Erin Manning, in Andrew Goodman & Erin Manning, "Entertaining the Environment: A Conversation," *Fibreculture* 21, (2012): 2.

³ Ibid., 6. See also: Erin Manning, *Always More Than One: Individuation's Dance* (Durham: Duke University Press, 2013); and "Weather Patterns, or How Minor Gestures Entertain the Environment," *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, ed. Jay David Bolter, Ulrik Ekman, et al. (New York: Routledge, forthcoming, 2014). Manning’s recent artworks also experiment with this concept: *Stitching Time* (2012) at the Biennale of Sydney, and *Weather Patterns* (2012) at the University of Wisconsin, Milwaukee, Deakin University, Latrobe University VAC, and Bus Projects, Melbourne.

⁴ Alfred North Whitehead, *Process and Reality* (New York: The Free Press, 1978), 310-21.

⁵ Erin Manning, in Goodman & Manning. "Entertaining the Environment," 6.

knowledge or habitual response to sense data⁶. While a succinct description, it is a simplification of the potential of causal efficacy, which more expansively can be thought of as a ‘lure’ towards prehension – ‘call(ing) forth new immanent associations and new assemblages’⁷.

‘Entertainment’, on the other hand, is indifferent to such concerns⁸. It is the process by which an art event might ‘place us immediately in a relational framework rather than investing in the hierarchy of subject and object’. Concentrating on ‘the direct perception of the fielding of experience such that it brings its qualitative resonances to the fore’⁹ entertainment centres on the felt quality of the experience of the activities of the field organising itself, rather than on the resulting objects or subjects.

‘Entertainment’ is resolutely concerned with the activities of the field or environment and the collective individuations of an event that might arise.

Art events, like all other events of perception, necessarily contain causal efficacy and presentational immediacy to some degree. However, as Massumi has articulated, interactive artworks have tended to overshadow direct experience in their insistence on demonstrating and fixing relational connections, foregrounding ‘causal efficacy, instrumentality, [and] affordance’ at the expense of their ‘own artistic dimension’¹⁰. Massumi argues that this reduces and contains relation in problematic and prescriptive ways as representational¹¹. The question of how to foreground the felt qualities and

⁶ Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, MA: Harvard University Press, 2011), 401.

⁷ Erin Manning, *Always More Than One*, 23.

⁸ Alfred North Whitehead, *Process and Reality*, 324. In Manning’s usage, the ‘environment’ – which includes what remains of the human – is pure ecological process, an autopoietic system capable of self-modulation through the accommodation of internal difference and increased relational interdependence. This is in line with Felix Guattari’s concept of ‘ecosophy’, a generalised ecology that ‘questions the whole of subjectivity and capitalistic power formations’; Félix Guattari, *The Three Ecologies*, trans. Ian Pinder and Paul Sutton (New York: Continuum, 2008), 34-36, 52. As Manning says: ‘to feel ecologically is to directly perceive the relations out of which space-time is composed. Perceiving environmentally does not imply giving meaning to form, but forming environmentally.’ Erin Manning, *Relationescapes* (Cambridge: MIT Press, 2009), 73.

⁹ Erin Manning, in Andrew Goodman and Erin Manning, “Entertaining the Environment”, 1.

¹⁰ Brian Massumi, “The Thinking-Feeling of What Happens,” *Inflexions* 1 (2008): 7-8. This, Massumi says, is ‘why you so often hear the comment from participants that [interactivity] feels like a video game’. Ibid., 8. See also: Claire Bishop’s critique of the disavowal of the aesthetic in relational works, where, after Rancière, she argues that the redistribution of the sensible is as politically a charged act as the redistribution of social relations. Claire Bishop, “The Social Turn: Collaboration and Its Discontents.” In *Rediscovering Aesthetics: Transdisciplinary Voices from Art History, Philosophy and Art Practice*, eds. Julia Jansen Francis Halsall, Tony O’Connor (California: Stanford University Press, 2009), 248-9.

¹¹ Ibid., 8-10.

intensities of an interaction over causal comprehension is therefore a pertinent one for interactivity – the kind that wishes to step beyond the representation of relation toward an experience of its felt emergence.

While an emergent awareness of the processes by which causal efficacy folds into presentational immediacy to provides a sense of the ‘withness of the body (as) an ever present’¹², here, I propose disruptions to causal efficacy as a means to immerse within the immediacy of sensation of the event. This parasitic disruption is examined through Lygia Clark’s propositional artwork *Caminhando*, where the lack of causal comprehension within the work disrupts habitual perceptive processes and instead works to activate a felt resonance with environmental fields – produced through processes of transduction, bringing a new engagement with other entities in the environment and felt implication in a larger shared potential. This opening of the body to a wider field of sensitivities might then evoke a suspension in-process and a moment of slippage out of habitual relations.

This chapter attempts to ‘think with’ Manning’s concept of entertaining the environment in order to unpack the experience of *Caminhando*, concentrating on its potential for the opening of the body to a wider field of agency, and for the production of a phasing, a moment of slippage, a crack through which to escape the limitations of subjectivity. The question of how to think beyond the human subject is, as Simon O’Sullivan states, not as simple as a turning away from the human. Rather, it is a becoming-minor that is ‘a kind of stretching or twisting, a rupturing and stammering, a releasing of forces from within and the contact of forces that are without’¹³.

I relate *Caminhando* to a concept of an ecological ethics – in that the work addresses not the representation of relation but its immanent construction – and to argue that it is ethical in enabling an opening to further expression and connectivity. This is

¹² Alfred North Whitehead, *Process and Reality*, 312.

¹³ Simon O’Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (New York: Palgrave Macmillan, 2006), 64.

increase in an ability to both affect and be affected¹⁴ – to recognize and respond to the ‘agency’ of other components of an event.

4.2 From agency to transduction

‘Agency’ is a problematic term, with a tendency to imply the primacy of ‘agents’ – discrete stable entities positively exerting force, while somehow remaining internally immune to change. Even those seeking to position agency beyond the human often think in those terms – actor network theory at its most programmatic, for example, or Andrew Pickering’s language in *The Mangle of Practice* of ‘resistance and accommodation’ and the ‘capturing’ of agency¹⁵, staged as a kind of epic battle of wills between scientist and material world. As Karen Barad says, Pickering’s concept ‘takes for granted the humanist notion of agency as a property of individual entities’¹⁶. How then to think ontogenetically of agency as a more radical, primary force, shaping entities and the relation between them, not as a force to be distributed amongst entities, but co-emergent, making and in the making of entities: a ‘system of intensities’ that is the event¹⁷. How to think in the language of forces and the transformation of these forces as they move through entities is a question this chapter addresses in relation to an art event.

¹⁴ Gilbert Simondon, cited in Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, trans. Thomas LaMarre (Cambridge: MIT Press, 2013), 65. Ethics may seem a burden on such a humble relational work, however aesthetic acts that extend and prolong contrasts might, as Massumi argues, be seen as ethical politics in that they make felt ‘different capacities for existence...different life potentials’ and novel relational connections. Brian Massumi and Joel McKim, "Of Microperception and Micropolitics: An Interview with Brian Massumi," *Inflexions* 3 (2009): 12.

¹⁵ Andrew Pickering, *The Mangle of Practice: Time, Agency and Science* (Chicago: University of Chicago Press, 1995), 65, 92.

¹⁶ Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter," *Signs: Journal of Women in Culture and Society*, 28:3, (2003): 807, n. 7. <<http://www.jstor.org/stable/10.1086/345321>> [Accessed 30/04/2013]. Pickering’s work is, however, of interest for the fact that it at least begins to head towards a process-based understanding of physics and scientific practice, but comes to this from a different direction than most philosophically based texts on the subject. Barad’s own work is perhaps a more thorough investigation of this approach. Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007).

¹⁷ Graham Livesey, "Event theory and creative agency," *Event and Decision: Ontology and Politics in Badiou, Deleuze and Whitehead*, eds.. Roland Faber, Henry Krips & Daniel Pettus, (Newcastle on Tyne: Cambridge Scholars Publishing, 2010), 338.

In *Vibrant Matter*, Jane Bennett thinks such forces as a ‘distributed agency’, a ‘swarm of vitality at play’¹⁸. We might think it as a process of transduction by which, as Gilbert Simondon says, we can understand individuation and that ‘operates beneath all forms [and] is inseparable from a pure ground that it brings to the surface’¹⁹. It is an ongoing and, in itself, multiple process that underlies individualisation. Individuation is the ‘more than of becoming’²⁰ – becomings being dephasings of ongoing field-entity relations, singular expressions (differentiations) of larger ecologies of forces. Transduction then is the process by which such ‘an activity sets itself in motion’ at the same time as it generates ‘processes of modification’²¹. For Simondon, it is a way of understanding and expressing the ongoing relation of a gathering of pre-individualised forces to an individualised entity that then exists as a ‘partial and relative resolution’ to these internal tensions²², while still allowing potential for further change.

Transduction describes the integration of formerly disparate things within a concrete system, the evolution of a shared associated milieu. It is how the becoming of an entity generates further unfoldings: becoming a force for further change, though not as a linear progression, but a series of overlapping, always transforming forces of differing viscosities, driving ongoing individuation. Whitehead similarly describes such a process as a system of concrescence and continuity: an entity, having achieved actualisation, becomes an ‘object’ for other entities, potentially influencing these entities’ unfolding concrescence²³. Thus an entity draws prehensively on every other actualised entity and the further potentials of the system, by whatever degree of separation, becoming a dynamic point in a complex ecology of relations²⁴. In such a complex and intertwined system, the transduction that triggers prehension must be seen as a vast nexus of complex forces, rather than a simple cause and effect paradigm.

¹⁸ Jane Bennett, *Vibrant Matter: A Political Ecology of Things*, (Durham N.C.: Duke University Press, 2010), 31-2.

¹⁹ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 152. It is an ongoing and, in itself, multiple process that underlies individualisation.

²⁰ Brian Massumi, in Manning, *Always More Than One*, xi.

²¹ Gilbert Simondon, "The Genesis of the Individual," *Incorporations*, eds. Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 313.

²² *Ibid.*, 300.

²³ Alfred North Whitehead, *Process and Reality*, 235.

²⁴ An entity canprehend other actualized entities positively or negatively. *Ibid.*, 239.

4.3 *Caminhando*

*'Make yourself a trailing: you take the band of paper wrapped around a book, you cut it open, you twist it, and you glue it back together so as to produce a Mobius strip. Then you take a pair of scissors, stick one point into the surface and cut continuously along the length of the strip... When you have gone the circuit of the strip, its up to you whether to cut to the left or to the right of the cut you've already made. This idea of choice is capital. The special meaning of this experience is in the act of doing.'*²⁵

Following *Caminhando*'s instructions creates a body-tool-object machine producing movement or an expression of connectivity rather than representation²⁶. The work is per-formed rather than pre-formed, opening potential for a process of collective individuation to occur – a new event of assembling between its component parts – a drawing together through the force of shared movements between hands, eyes, scissors and paper²⁷ (see figures 4.1²⁸ and 4.2²⁹). As Clark says, 'at the outset, the *Trailing* is only a potentiality'³⁰; the paper and the cutting are, in themselves, nothing substantial. In the end, the result seems inconsequential and leaves little trace³¹. The art exists as a moment of resonate intensity, of prehended phasing, its beauty lying in the delicate capacity to activate and foreground transduction.

²⁵ Lygia Clark, in Yves-Alain Bois & Lygia Clark, "Nostalgia of the body," *October* 69, Summer (1994): 99.

²⁶ That is, the event is a 'mechanics of expression rather than a signifying apparatus'. Andrew Murphie, "Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought," *Convergence* 2, no. 2 (1996): 104. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

²⁷ If art is not an object but an event, then this is never more obvious than in *Caminhando*.

²⁸ Lygia Clark, *Caminhando*, 1963. The University of Texas at Austin. Photographer uncredited. ARTstor image ID ABARNITZ 10310363804.

²⁹ Lygia Clark, *Caminhando*, 1963. The University of Texas at Austin. Photographer uncredited. ARTstor image ID ABARNITZ 10310365197.

³⁰ Lygia Clark, in Yves-Alain Bois & Lygia Clark. "Nostalgia of the body," 99. Clark translates 'caminhando' as 'walking' in Jaroslaw Suchan, *Katarzyna Kobro / Lygia Clark / [Curated by] Jaroslaw Suchan* (Lodz: Muzeum Sztuki, 2008): 6; and as 'trailings' in "Nostalgia of the body," 99.

³¹ Lygia Clark, in Jaroslaw Suchan, 6.

Process philosophy clearly views transduction as a ubiquitous event, enabling the ‘drive towards novelty’ in the universe that Whitehead describes. What then differentiates *Caminhando* from the everyday? It reveals the process of translation of forces moving through hands, scissors and paper, but it does not make the process ‘conscious’ in any articulate manner. It makes the effects of transduction felt by slowing down the process of phasing, provoking a suspension in the flow, and making evident the potentiality of the event. With opportunity for re-construction and invention, it brings attentiveness to the environment, not as ‘other’, but as a collective gathering of a potential dynamic ecology.

At the point where you have cut an entire loop of paper and are back to the beginning, the scissors are no longer next to the original incision, they are somehow on the other side. Sight contradicts expectation, hand/scissors contradict paper: the habitual perceptual schema is problematised and cohesion falls apart. The causal efficacy gleaned from the skin/hand sense datum leads one to expect that the cuts in the paper will match up, but this is contradicted by the presentational immediacy. The link between perceptual processes of perception is felt through their failure to smoothly orchestrate. Any stable sense of fixed space instantly dissolves, briefly becoming purely relative to the movement: a sudden plunge into the depths of presentational immediacy.

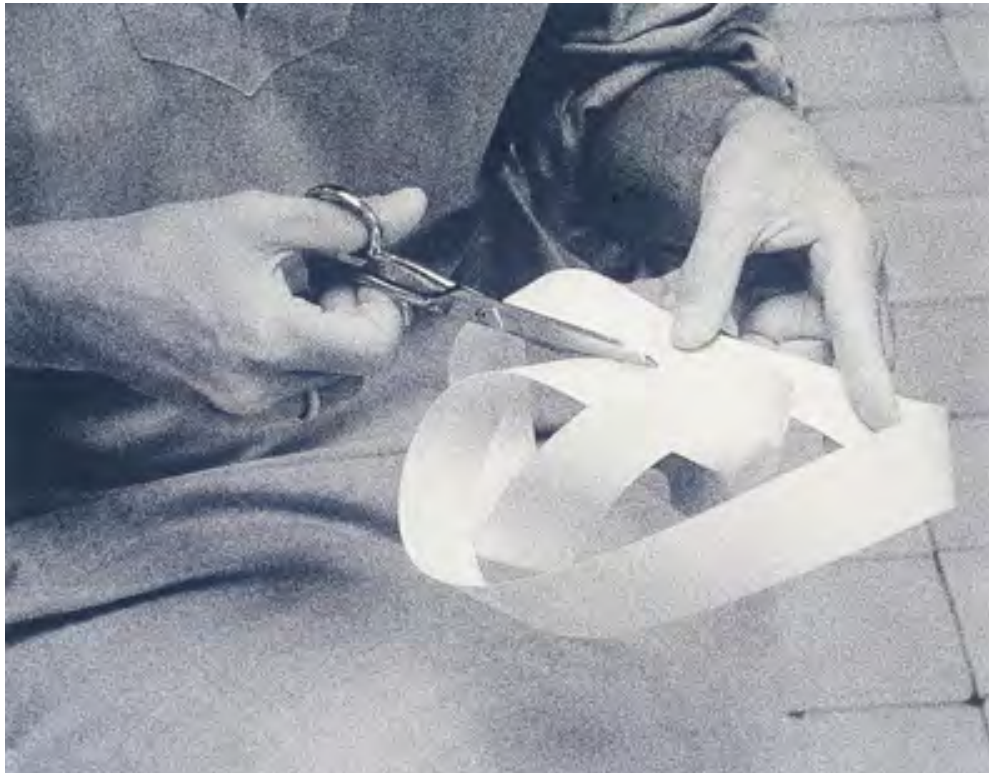


Figure 4.1 Lygia Clark, *Caminhando*, 1963. The University of Texas at Austin. ARTstor image ID ABARNITZ 10310363804.



Figure 4.2 Lygia Clark, *Caminhando*, 1963. The University of Texas at Austin. ARTstor image ID ABARNITZ 10310365197.

4.4 Tentativeness

This jolt shifts one out of habitual inattention, forces a new concentration on what is going on in the moment, rather than on preformed assumptions of relation. This sensation of disorientation might be experienced in the everyday when there is an unexpected loss or distortion of sense perception – such as being plunged into darkness, or a sudden change of auditory conditions like the disorientating effects of echoes in a tunnel, or the tactile strangeness of one's mouth after dental anesthesia. Such occurrences make the familiar world uncanny, and force improvisations with new combinations of sense information³².

This process of re-gathering and reconfiguration that follows such a shift is the focus of *Caminhando*. Faced with a sudden loss of causal logic and a confusion of sensory data, completing the delicate task at hand requires a response to the unfoldings of the event in the present – and, indeed, to care *more* for what is being felt in the moment. The work demands a slowing down, a care towards the developing relationships between hands, paper and scissors, and how their potentials begin to merge and interact: sympathy with their own particular capacities³³. We are asked to pay careful attention to what is being felt: to be immersed in the feeling of a re-gathering of forces. In navigating such conditions, 'tentativeness' naturally arises, as Arakawa and Gins might say³⁴, as both cause and affect of a body rearranging.

Such tentativeness might be thought as a feeling-out of the future potential of the event, an immersion in its goings-on. It requires that we gather what sense

³² For the sighted person, for example, sudden darkness might trouble any sense of stability of objects and their relations and boundaries, and force a temporary fluidity and experimentation as the body cobbles together some kind of workable new 'organ' to make sense of the available data. In such a space, to those habitually reliant on sight to make quick spatial decisions, the whole body surface becomes a groping hand. Skin feels the edge of an object – as a resistant force – to gain information about the object, but never really know it as a whole: an edge could as well belong to a table, as a bookcase or doorway. Nerves respond only to the immediacy of the hard flatness, reinventing the object and body in relation at the next, cautious groping forward. As Whitehead says, sense relations here become 'vague', losing spatial definition yet retaining and even amplifying the emotional tonality of the event³². Causal efficacy becomes less distinct here, while the immediate sensory information – and its felt lack – is drawn to the fore.

³³ This, for Whitehead is an extended prehensive resonance with other entities. Alfred North Whitehead, *Process and Reality*, 220.

³⁴ Arakawa & Madeline Gins, *Architectural Body* (Alabama: University of Alabama Press, 2002), 45.

information we can, and backtrack from assumptions. This slowing down the shift from shaping to content allows a felt awareness of the pull of forces towards recomposition to arise³⁵, feeling out the ongoing transductions of the ecology.

Caminhando problematises any sense of subjective control over the event, it begins to evoke tentativeness into a simple habitual cutting action.

For an art event seeking to re-energise relations to the evolving field, we might ask how this kind of tentativeness evokes the momentum of future potential and its relation to the field – how it might be made evident or brought to the fore.

Caminhando enacts Manning's proposition by unlinking the processes of entertainment and entrainment (however briefly or incompletely) in order to become submerged in the flow of individuation, of the gathering and transduction of forces from the field³⁶. If the 'ethical task' is, as Bennett says, to 'cultivate the ability to discern non-human vitality', to become affectually open to the larger ecology³⁷, then it is in this increased attention and sensitivity towards emergent relation that art might have a potential role to play in engaging us in ecologies.

4.5 The wisdom of rocks

All things, Whitehead states, are capable of feelings³⁸, sensitivities that allow them to navigate, to form workable assemblages, to become with their environment: wasp and orchid, pen and hand, scissors and paper. Such 'Whiteheadian' feelings are not necessarily conscious, they do not privilege sentient over inanimate beings. Nor is feeling attached to preformed entities³⁹. Rather, it is feeling as a force gathering towards form, immanent with the occasion, moving the event.

If we accept Whitehead's challenge and carry this to its limit – beyond entities with attributes easy to anthropomorphise, such as animals and plants – we can ask instead:

³⁵ Manning, *Always More Than One*, 189.

³⁶ This, Manning says, is the 'no-time of the decision in the present passing'. Erin Manning, *Always More Than One*, 106.

³⁷ Jane Bennett, *Vibrant Matter*, 14.

³⁸ Alfred North Whitehead, *Process and Reality*, 220.

³⁹ Erin Manning, *Always More Than One*, 21.

what does a rock feel? To which forces are its sensitivities tuned: rain, salts, wind, tides, heat? How does the becoming form of the rock instigate new force – shape the wind, give new direction to the current, absorb or dissolve salt solutions? We begin to see the rock-world relation anew: the rock's continued fielding in the world – its continued effect on or transduction of the ecology's forces – and the field's continuous expression through the force of the rock, becomes an ecology of operations. We learn from the 'wisdom of rocks, from which we can derive an ethics involving the notion that, ultimately, we too are fluxes of matter and energy'⁴⁰.

In *Caminhando*, affects pass through, initiate assemblages, new forms, and instigate new forces. The arrangement of fibres in the paper form tendencies – tearing in one direction, resisting in another way – that shape the displacement from the hand-scissors' force. The kinesthetic tendencies of the scissoring action collect and direct the expressed pressure of muscle energies; the rhythm of vibrations of the cutting of paper is transduced by the ear and skin. *Caminhando* engages with not only the extension of what is perceptible to the participant, but also the dynamic negotiation between what is felt by all components of the event, and the feelings not immediately perceptible but essential to the forming of the event⁴¹. The event requires attention to how scissors, fingers and paper feel, to the sensitivities that form their worlds. It questions how their combined individuation – their folding into one another, their eventful assembling – creates, mixes and shapes their shared responsibility for events and further potential.

In itself, this is a potential extension of interconnectedness with the larger ecology of the event. The forces instigating the unfolding individuation flowing through the entities – the event of cutting and their intertwined affectual relations, their ability to feel – that forms the assemblage, distributes the agency, not within objects per se, but in the event itself, contradicting the animate/inanimate divide. The 'environment' here is not some stage for a theatre of operations, but the field of forces resonating with entities. Here we might say that rather than things having feelings or sensitivities to an environment, entities have types of forces that can pass through them, that can

⁴⁰ Manuel Delanda, "Nonorganic life," *Incorporations*, eds. Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 143.

⁴¹ Erin Manning, in Goodman and Manning. "Entertaining the Environment," 1.

transduce them, activating phasings, and that an increase in affectual sensitivity is therefore an increase in involvement with a larger ecology.

4.6 Multiplicity

The *Caminhando* assemblage is more than a binary machine. It is more than a multiple; the event is a multiplicity with its own logic, a concrete system of objects and field that exists in its entirety or not at all⁴². Such multiplicity lies in the gaps between molar opposites – between hand/scissors, body/paper, subject/artwork – and in the transduction, the movement of forces through simultaneous individuations that pull apart the molar, making sieves of its boundaries and, in the excess of ongoing further differentiation, its shared potentiality.

Such transduction integrates disparate realities into a system of relation⁴³, a relation not only of the actual, but also the virtual. Multiplicities are irreducible: the sound of the ocean, wind, fog, flocking birds. The earth's multiplicities are 'nebulous set(s)...whose exact definition escapes us, and who's local movements are beyond observation'⁴⁴, that we are thrust into or born out of (already always re-phasing): always from the middle of things⁴⁵. Leaderless birds, for example, can collectively navigate so gracefully because their shared individuation brings into being not only the individual, but also an associated milieu, a collective pool of potentiality⁴⁶. Subjects themselves are not communicating, but rather are 'regimes of individuation that meet'⁴⁷.

⁴² Gilles Deleuze & Claire Parnet, *Conversations II*, trans. Hugh Tomlinson et al., (New York: Continuum, 1987), 2.

⁴³ Simondon, "The Genesis of the Individual," 315.

⁴⁴ Michel Serres, *Genesis* (Michigan: University of Michigan Press, 1995), 103.

⁴⁵ Deleuze & Parnet. *Conversations II*, 23. In the middle, Massumi says 'we become conscious of a situation always in its midst, already actively engaged in it. Our awareness is always of an already ongoing participation in an unfolding relation.' Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation*, Post-Contemporary Interventions (Durham, N.C.: Duke University Press, 2002), 231.

⁴⁶ That is, the 'complete system in which the synthesis of the individual occurs'. Robert Mitchell, "Simondon, Bio-Art and the Milieu of Biotechnology," *Inflexions* 5 (2012): 73.

⁴⁷ Didier Debais, "What Is Relational Thinking," *Inflexions* 5 (2012): 7.

Caminhando places us in the middle of the tension of events tending towards further becoming, as always-in-process, a reaching towards the next. Paper, scissors, skin each become dynamic points in a system, singular expressions implicated in the modulation of a shared multiplicity. This is the assemblage (which is also always the assembl-*ing*⁴⁸), more than its component parts, where cause and effect are lost in concrete inter-determined, co-causal transindividuation⁴⁹. The becoming-scissors of the hand, the becoming-paper of the scissors, or the becoming-cutting of all the components, are combined in their shared potential – an indeterminacy that is the richness of the event. To begin to feel part of such a gathering of future potential of forces might be a lure tending towards – giving attentive care to – the qualities of how and what emerges, towards a shared responsibility in an ecology.

The power of the forming multiplicity here is that it takes us beyond the stalemate of the dichotomous, denouncing ‘simultaneously the One and the many, the limitation of the One by the many and the opposition of the many to the One’⁵⁰. *Caminhando* draws attention to our shared individuation with the ecology of the event, and that our individualisation is an expression in and of this individuation that neither halts nor contradicts the latter process, but is a partial solution to an ongoing field of negotiations. Here it is made evident that we cannot have the individual without environment, that the two are points on a path of symbiotic enaction, individuation driven by transduction that is the becoming of the whole system, both the actual and the virtual with which it resonates. Assemblages in *Caminhando* create a shared ecology in the largest sense – a shared milieu or potential alongside a connected actuality – a system with ‘internal coherence’⁵¹, because the enaction of the assemblage is co-causal with its field of potential: field and individual are a multiplicity.

⁴⁸ Deleuze’s term *agencement* is usually translated as ‘assemblage’, however, as Manning notes, this inexact translation ‘does not convey [the] force’ of the act of assembling that is implied in the French term. Manning, *Relationscapes*, 237 n 71.

⁴⁹ Manning, *Always More than One*, 24-6.

⁵⁰ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 203.

⁵¹ Gilbert Simondon, *On the Mode of Existence of Technical Objects* 1980, 40.

<<http://aaaaarg.org/text/3070/mode-existence-technical-objects>> [accessed 2/2/12].

4.7 Tactics

Clark says that, through participation, *Caminhando* causes the figure of the participant to ‘deterritorialize itself’⁵². Deleuze and Guattari state that everything can have a microbrain⁵³, a topological system of forces for a nervous system. While Arakawa and Gins say we are organisms that ‘choose to person’; it is a routine of expected behaviors⁵⁴. Implicit in *Caminhando*’s instructions are challenges: choose something else; embrace your multiplicity, your connections with the world, the forces that exceed your body, invent procedures, tactics to free yourself, learn to ‘swim’ in the tentativeness that is the ‘more than’ of bodying⁵⁵.

Arakawa and Gins’ work shows how bodying makes ‘landing sites’, mobile points of connection penetrating the world, dispersing the body and intertwining with environment. *Caminhando* is such a technique for reaching into the world, transducing the body into emergent assemblages, to spark new individuations. It is a procedure that gives rise to new microbrains: in the hands/scissors, in the ears/eyes/paper, and so on. The art event here is a machine that might open up a gap in the subject, that moment of ‘felt phasing’ to create a flight path: an option to embrace multiplicity, to accent individuation over personhood. *Caminhando* begins to question the contained subject; the work is more a diagram-*ing* than an art object with a dynamic relation to the virtual, ‘the combination of mutating fluxes, on their productions of speed’⁵⁶.

4.8 Conclusion: Towards a new politics

The relationship to an environment is not something separate with which to engage, but is enactive: formed through collective individuations always occurring from and in the middle of other processes. I am proposing that the agencies driving this are best

⁵² Lygia Clark, in S. Martin, A. Ruiz & S. Rolnik, *The experimental exercise of freedom* (Los Angeles: Los Angeles Museum of Contemporary Art, 2000), 76.

⁵³ Gilles Deleuze & Félix Guattari, *What Is Philosophy?* (New York: Columbia University Press, 1994), 213.

⁵⁴ Arakawa & Gins, *Architectural Body*, (Alabama: University of Alabama Press, 2002), 1-5.

⁵⁵ *Ibid.*, 84.

understood as the flow of forces and their transduction as they pass through and trigger the individuation of entities, integrating such individuations into an ecology of a concrete system that drives invention.

This is not to say that the everyday does not contain subtle but strange occurrences when the body schema becomes momentarily confused – moments where causal efficacy and presentational immediacy fail to align – and the body has to scramble to reassemble itself, allowing a brief glimpse into the processes of exchange and emergence in individuations (the confusion of tying a tie while looking in a mirror, where right becomes left, for example). But it is in *Caminhando*'s ability, despite the banality of the actions, to detach the event from the habitual inattention to transduction, and instead create a 'semblance' that such processes are drawn to the fore. Semblance, as Massumi uses the term, is the virtual's felt ingression into the event⁵⁷, its felt presence allowing a diagramming to take place, a thinking-feeling of the 'dynamic form' of relation and its connection to ongoing potentiality⁵⁸.

All this, I suggest, is a step towards a new politics of art that attempts to engage in the creation of lines of flight, with the composing of, as Massumi says, techniques for inventing (new) potentials for existence⁵⁹. It is *political* in that it 'connects up different aspects of life' – new lines of causality and experience⁶⁰. This is an *ethical* art in Deleuze's definition, a practice of pursuing expression and connection, rather than representation⁶¹. It is an *ecological* approach that activates attentiveness to life and the field, to the conditions of the event expressing itself⁶², an ontogenetic

⁵⁶ Deleuze & Parnet, *Conversations II*, 88.

⁵⁷ Brian Massumi, *Semblance and Event* (Cambridge: MIT Press, 2011), 15-16.

⁵⁸ *Ibid.*, 15.

⁵⁹ *Ibid.*, 14.

⁶⁰ Simon O'Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation*, (New York: Palgrave Macmillan, 2006), 74. As Rancière also argues, an art that seeks to complicate such division of agency and invest all components of an event with a shared agency is deeply political, as the 'politics of domination' rest on 'sensory division' of the world into the passive (object) and active (subject). Jacques Rancière, *Aesthetics and Its Discontents* (Cambridge, MA: Polity Press, 2009), 31.

⁶¹ Andrew Murphie, "Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought," *Convergence* 2: 2 (1996): 105. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

⁶² Manning, *Always More Than One*, 147-8.

‘technicity’⁶³ for living. This is an ecology-in-the-making: body-becoming-environment, environment-becoming-body. It is ecologically sensitive in assisting the formation of a trans-subjective attentiveness to an affective field across the becoming of space, time, bodies and objects⁶⁴. Art events here, as Guattari states, can create an ‘ecology of the virtual’ capable of engendering ‘conditions for the creation and development of unprecedented formations of subjectivity’⁶⁵.

Caminhando’s politics are those of the ‘micro-political’, as Lone Bertelsen defines it, working at the level of bodily habits⁶⁶, while the event focuses attention on the continued felt emergence from which neither body nor field can be detached, the experience of a trans-human and lively world in the widest possible sense.

⁶³ ‘Technicity’, as Manning describes it, moves beyond ‘technique’ to touch again with its potential or virtual, a ‘more than’ of technique. In other words, it might be viewed as the way art can contract or synthesise a technique to bring new life to it. Manning, *Always More Than One*, 33.

⁶⁴ Lone Bertelsen, "Affect and Care in 'Intimate Transactions,'" *Fibreculture* 21 (2012): 39.

⁶⁵ *Ibid.*, 91.

⁶⁶ Bertelsen, "Affect and Care in 'Intimate Transactions,'" 43.

Bridge: Pnuema and the minor gesture

In the installation *Pnuema* (2011), produced as part of this research⁶⁷, things happened as participants moved around – lights came on and faded or their rhythmic pulses quickened, and stormy sounds erupted and swirled around the space (see *figures 4.3-4.5*). Things happened too when the participant stood perfectly still or left the space, as elements of the work responded to other components' actions⁶⁸, and complex 'behind the scenes' algorithmic processes continued to activate changes calculated from both current and previous sensor input. In this sense, the event began to have a life of its own, entering into relation not only with human bodies, but also into a series of temporal conversations between various elements of the work.

In moving around the space, a participant was able to feel some qualitative connection between their actions and how events evolved: both striding quickly and the movement of many bodies in the space at one time, for instance, seemed to the participant to be linked to the speed at which the aural storm developed, and to the way the lights took on more complex patterns of movement. Similarly, the echoes of qualities of movements continued to style the humming and singing sounds through the 'quiet' phase of the work⁶⁹. But as the work played out connections and disruptions, it also resisted the demonstration of interaction. The complexity of the relation between an event – a movement or a change in light, the effects on other components of the work, the built in time-lag between a sensor event and its repercussions – meant that while the art event itself could, in its own way, 'feel' the relational implications, such quantitative understanding was denied to human participants in the process.

So what happened to the experience when causal efficacy was deferred? What filled this space that was formerly central to the relational or interactive event? Perhaps the

⁶⁷ See Appendix A for further description of the work.

⁶⁸ For example, light variations could affect the tonal qualities of sounds, and the movement of the very lightweight hanging sculptural objects with any breeze could trigger movement sensors.

⁶⁹ *Pnuema* had a 'quiet' phase (in which the main body of objects pulsed simply and emitted layers of singing sounds whose configurations were influenced by past events in the space), and an 'active' phase, (consisting of a layers of stormy surround sounds and movement of these sounds through a series of speakers, and more complex patterns of light modulation).

immediacy of sensation began to assert itself? Perhaps it was something subtler that resolutely refused to address the human, and instead addressed the formation of the work from the field at an imperceptible and undemonstrative level? In this, the effects began to edge into vague perception – a fuzzy awareness of the incipient gathering of an event, the event's ability to feel and respond to itself, toprehend potential individuation.

Manning has defined such relational pulls that 'lead the field of experience' and 'open [it] to its differential' as 'minor gestures'⁷⁰. A minor gesture is not exactly contained in any entity (algorithm, sensor or person), or event (movement, calculation, sound, light or relation), though, in order to individuate, these draw on the potential such gestures open. A minor gesture 'introduces a kind of continuous variability into the work's progress, a variability that is durational', as Manning states, where what is felt is variability in itself, a sense of an opening to (parasitic) potential⁷¹.

This 'tuning' of the event to its future is felt qualitatively, as an aliveness of an event forming. In *Pnuema*, this might be felt through the immediate and sensual connection with the expanded relational value of the lights and sounds as they form new complexities of connections (a variation in connective or transductive potential sitting alongside any material or actualised variation). The minor gestures at the heart of *Pnuema*'s self-tuning made both the actualised and potential relations mobile, always in flux – though not comprehensively demonstrated to the participant. Rather, such causal efficacy addressed, and was sensed by or resonated across, the ecology as a whole – an intensive exploration of the 'environment's *own* capacity to make felt the complex ecologies at work'⁷² – an ecological sensitivity not fully located in any one body, but as a plane with which the event itself engaged.

⁷⁰ Such gestures are 'minor' in that they allow an intensive reconfiguration to occur. Erin Manning, "Weather Patterns, or How Minor Gestures Entertain the Environment," *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, eds. Jay David Bolter, Ulrik Ekman, et al. (New York: Routledge, forthcoming, 2014), 1. Manning discusses the concept in relation to the collaborative work *Weather Patterns* that also forms part of this research, alongside the individual works constructed.

⁷¹ Ibid., 2.

⁷² Ibid., 6. Emphasis in the original.



Figure 4.3 Andrew Goodman, *Pnuema*, 2011. Digital video still.

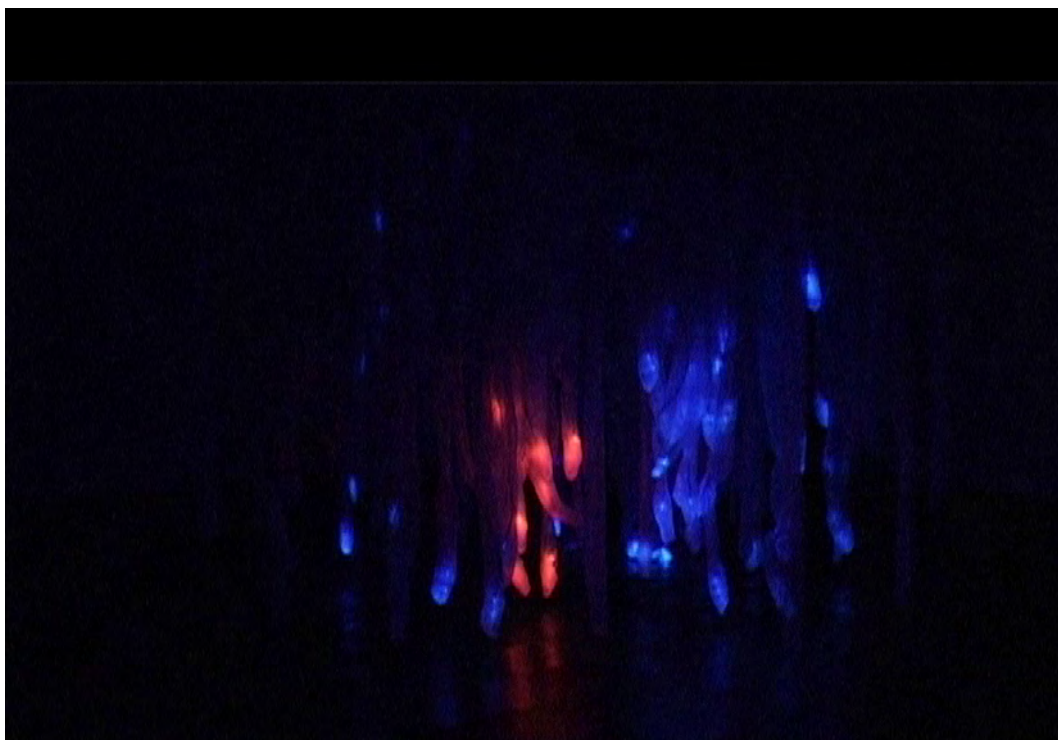


Figure 4.4 Andrew Goodman, *Pnuema*, 2011. Digital photograph.



Figure 4.5 Andrew Goodman, *Pnuema*, 2011. Digital video still.

Participants were addressed here, but not only on a subject-to-object level, they might have tuned to the shifts in the affective tonality, alongside other components that also tuned and aligned in their own ways with such field effects. There was an agency or will at work that was not only dispersed – allowing components to begin to address each other directly rather than only via human mediation – but that resisted residing in objects and remained instead gestures incipient with the event. Did participants feel these gestures? Perhaps as an excess of relation beyond understanding, as a displacement of will, a loss of agency when compared to a normative interactive experience, as a sense of something lurking just beyond comprehension but nevertheless broadly affective: as an immediate but indistinct sense of variation and of a gathering of a more-than-human ecology.

Chapter 5

The noise in the noise: micro-perception as affective disruption to listening and the body.

*'Sounds...dematerialize the substance of things they resounded and extend their own patterns...they drift off things and link up with one another.'*¹

5.1 Introduction: vibrational symbiosis

The pitcher plant and the wasp have come to an arrangement: when the wasp enters the plant's flower and buzzes at a specific pitch the stamen release their pollen in an emphatic burst of rhythmic (vibrational) sympathy. No other pitch will do, the flower is indifferent to all other notes. It waits; it *listens*, attentively, for the wasp's particular calling card.

And yet...this is a plant – it has no ears, no brain. How is it able to listen, with what does it hear, how does it pay attention? And, one must ponder, how is it that it knows what it hears when it has no brain to perceive with? Perhaps, just as the brittle star has no eyes and yet is all eyes², the pitcher is all ears – its entire surface attuned to the potential of a frequency, sensitive to the particular oscillations of the one vibrational speed for which it has an appetite.

The dance of the pitcher plant and wasp hints at the micro-perceptive potential enriching heard sounds – the transversal agency of sound as vibrational force,

¹ Alphonso Lingis, *The Imperative*. (Bloomington: Indiana University Press, 1998), 99.

² Closely related to the star fish, brittle stars have a calcite structure that focuses light directly onto bundles of nerve endings, thus its whole surface functions as a multiple 360 degree eye. It too has no 'brain' with which to perceive such sensations, yet it responds to light. See Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham N.C.: Duke University Press, 2007), 369-384.

coursing through ecologies at pre-subjective, pre-content and pre-contextual levels, enveloping all in resonance: the vibrational diffraction of enmeshed relational difference³. At this affective level, interactions – immanent relations – with sounds are not limited to the ear and the brain, but stretch across the entire surfaces of bodies attuned to the sensations of their particular ecologies: a ‘listening’ independent of cognitive capacities and body boundaries. This strange pitcher-wasp symbiotic relation seems to indicate that sound contains, or is contained within, sonic excess⁴: a silent, contagious life as force and as potential force, enveloping all in the ecology of the unheard.

This chapter considers some of the disruptive potentials of sound – that is, micro-perceptive sound’s potential as a parasitic activator of change. It considers ways in which affective force produces ecologies through vibrational diffraction.

5.2 Micro-perception

The term ‘micro-perception’ here refers not just to perceptions that are literally too small to be recognised – though the physical presence of the unheard begins to indicate some of the potential of micro-perception in relation to sound – rather, as Brian Massumi asserts, it refers to a ‘perception of a qualitatively different kind’⁵. It is, he explains, pitched at the level of affect: ‘hitting’ the body, not with a perceivable content but as a noise or interruption, perceived only as this interruption and transition, thus it is a ‘purely affective re-beginning of the world’⁶. Affect is here a

³ Resonance, as Deleuze defines it, is the ‘combat of energies’ of forces confronting each other. Gilles Deleuze, *Francis Bacon: The Logic of Sensation* (Cornwall: MPG Books, 2002), 65-68. See also: Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* Post-Contemporary Interventions, (Durham, N.C.: Duke University Press, 2002), 14.

⁴ Steve Goodman, *Sonic Warfare: Sound, Affect and the Ecology of Fear* (Cambridge, M.A.: MIT Press, 2010), 9.

⁵ Brian Massumi & Joel McKim. Of Microperception and Micropolitics: An Interview with Brian Massumi," *Inflexions* 3 (2009): 4.

⁶ Ibid., 5. A single sound pulse is micro-perceptible – it is a singular shock to a surface that on its own cannot be understood as sound, but which is perceived only in the interval, rhythm or difference between pulses.

primary creative force⁷, as Jonas Frisch argues, that unifies an event as it is also its extension or excess. Affect is, he argues, ‘pre-personal, pre-individual and non-conscious but real in so far as it offers potential for action’⁸. As such, it questions easy distinctions between event, subject and field⁹. It is a transitive force that connects and remains in excess of its effects, thus retaining further capacity to affect as it moves cross-temporally towards the future¹⁰.

Micro-perceptive sound then might be seen to offer potential as a transductive force, disrupting boundaries as it drives creativity through a resonance of connection. Understanding the act of hearing as one of transduction potentially alters our whole conception of the act. We do not, one might argue, even ‘hear’ the sound per se – rather, the sound waves activate a sympathetic resonance in the mechanisms of the ear, which in turn are transduced into impulses in the nerves and then to neural firings in the brain. This suggests that the act of hearing is intensive, with the sound in the environment prehensible by a body, while the actual ‘hearing-event’ is self-contained and self-actualised as a separate event that is internally-driven and satisfied¹¹. In this sense, sound does not pass into the body as such, but there occurs a sympathetic resonance between the two systems.

⁷ Affect here is seen in a process-based understanding of the universe as a force existing prior to, and bringing into existence, object and subjects and relations between such entities, which arise out of the play of forces. This has a basis both within ‘process’ philosophies and within non-Newtonian (quantum) physics. See Karen Barad, *Meeting the Universe Halfway*, for a clear example of a process-based approach from the perspective of quantum physics that is compatible with Whitehead’s philosophical schema. Affect can be distinguished clearly, in this definition, from emotion, which might be thought of more as the qualification or cognition of the *effects* of affect on a body. Lone Bertelsen & Andrew Murphie “An Ethics of Everyday Infinities and Powers: Felix Guattari on Affect and the Refrain,” *The Affect Reader*, eds. Melissa Gregg & Gregory J. Seigworth, (Durham: Duke University Press, 2010), 148.

⁸ Johan Frisch, “Understanding Affective Engagement as a Resource in Interactive Design,” *Nordic Design Conference* (Oslo: Nordes, 2009), 5.

⁹ *Ibid*, 6.

¹⁰ Lone Bertelsen & Andrew Murphie, “An Ethics of Everyday Infinities and Powers,” 140, 145.

¹¹ Deleuze here uses the example of a needle in the thigh: the pain felt is not the needle, but the actions of the nerve endings in the flesh. Gilles Deleuze, *The Fold: Leibniz and the Baroque* (Minneapolis: University of Minnesota Press, 1993), 96. In this, as Whitehead states, an entity is responsible for its own ‘satisfaction’ or concrescence, even as it draws prehensively on its relation to other entities. Alfred North Whitehead, *Process and Reality* (New York: The free press, 1978), 126, 153-156, 236-8. In terms of an act of hearing, this means that there is a process of selection (prehension) of vibrational data from the field that occurs, rather than a straight transference of vibration, and therefore always the potential for creative divergence. Here the hearing event is separate from, though influenced by, the sound event.

5.3 Body as ear

*'The ear is no more located in one place than the skin...the body itself is caught up in a process of hearing, which implicates skin, bone, skull, feet and muscle.'*¹²

While micro-perception is a pre-bodily force of the world, it must also be recognised that it is always implicated in the bodily, in that it acts on and through a body, shifting it through the creation of a felt difference, both prior to and after the micro-perceptive event: an affective attunement¹³. Affects can be known as such only through their effects on bodies¹⁴, and such bodies – be they speakers, walls, pitcher plants or 'organisms that person'¹⁵ – all have an 'appetite': that is, a potential to affect and be affected¹⁶. Each, in its own way, performs a particular way of 'knowing' the world – a specific engagement with certain vibrational frequencies¹⁷.

The human ear could be thought to engage with vibrations roughly between 20Hz and 20 KHz¹⁸, but the human body is, in fact, receptive to a much wider spectrum. Outside of this audible frequency range lies 'unsound': the infrasonic and ultrasonic¹⁹. To this list of the imperceptible, we might add, as Curtis Roads does, the subsonic – sounds too soft to be perceptibly heard – and ultra-loud sounds – those that are 'felt by the exposed tissues of the body as a powerful pressure wave' more than they are recognised or processed through the ears²⁰. Such vibrations might be said to act synesthetically on bodies – they affect the body at a base level of vibrational force that disrupts and stimulates multiple sensory capacities. This is the pain of high

¹² Steven Conner, "Michel Serres' Five Senses," *Michel Serres Conference* (London: Birbeck College, London, 1999), 4.

¹³ Bertelsen & Murphie, "An Ethics of Everyday Infinities and Powers," 5, 6.

¹⁴ Ibid, 4.

¹⁵ Arakawa and Madeline Gins. *Architectural Body* (Alabama: University of Alabama Press, 2002), 1. Arakawa and Gins write that 'persons are behavioral subsets of the organisms from which they emanate and out of which they compose themselves as agents of action.' Ibid., 2.

¹⁶ An 'appetite' as opposed to the teleos of an 'instinct', the former suggests potential multiplicity of future creativity, rather than the linear and prescriptive nature of the latter system of thinking.

¹⁷ Karen Barad, *Meeting the Universe Halfway*, 379.

¹⁸ See Curtis Roads, *Microsound* (Cambridge and London: MIT Press, 2001), 7.

¹⁹ Steve Goodman, *Sonic Warfare*, 17. See also: Roads, *Microsound*, 7, for more detailed explanation of the physics.

²⁰ Roads, *Microsound*, 7.

volume shock waves forcibly vibrating flesh, the infrasonic beat of a sub-woofer that reaches you through the soles of the feet, the prickling sensation on the skin of high frequencies, and the physiological effects of these frequencies in stimulating neural activity²¹. To this we might add the emotional effects of such unsound: the anxiety or edginess that might be evoked by either the very high or loud, the coercive effects of deep beats, the lure of the just-too-quiet to be heard. As affects, these unsounds come to be known to us through their formative effects on our emergent bodies.

5.4 *Space-Shifter*

Entering the environment of Sonia Leber and David Chesworth's *Space-Shifter* (2009)²² the viewer is bombarded by strange voices – part language, part guttural exclamation – that saturate and resonate every surface, as much unsound as sound in their violent a-rhythmic shaking of the entire space (see *Figures 5.1*²³, *5.2*²⁴, *5.3*²⁵). Floor, walls, air, speakers, sheets of metal, and bodies are invaded, vibrated, penetrated, turned outward, and made into surface. Metal buzzes with secondary resonances, feet become ears as they oscillate with the floor, waves of vibrations bounce off windows, walls and flesh, taking on new and singular speeds through their interactions with the differing viscosities of surfaces. The speakers, room, floor, metal, and bodies all (re)perform or express these vibrations in their own way, transducing according to their own affordances. Thus, a speculative vibration launched into the space by the speakers proposes to these various surfaces a

²¹ Steve Goodman, *Sonic Warfare*, 184.

²² *Space-shifter* was first exhibited at Conical ARI in Melbourne in 2009. Details of the work can be found on the artists' website at: <<http://www.waxsm.com.au/spaceshifter.htm>>, and a short video demonstration can be viewed at: <<http://www.youtube.com/watch?v=3c8gLZq1BQM>>

²³ Sonia Leber and David Chesworth, *Space-Shifter*, 2009. Steel with 2-pack enamel paint, 14 channel audio, audio transducers, speakers, dimensions variable. Installation view at Detached, Hobart, 2012. Photo: Sonia Leber. Accessed 4/7/2014. <<http://www.waxsm.com.au/spaceshifter01.htm>>

²⁴ Sonia Leber and David Chesworth, *Space-Shifter*, 2009. Detail view at Detached, Hobart, 2012. Photo: Sonia Leber. Image courtesy the artists and Fehily Contemporary. Accessed 4/7/2014. <<http://www.waxsm.com.au/spaceshifter08.htm>>

²⁵ Sonia Leber and David Chesworth, *Space-Shifter*, 2009. Detail view at Conical Inc. Photo: Christo Crocker. Image courtesy the artists and Conical Inc. Accessed 4/7/2014. <<http://www.waxsm.com.au/spaceshifter12.htm>>

multiplicity of responses, combining their various and singular capacities to resonate into a machine that produces vibrational difference.

The event of vibrational penetration of the space makes these new and contingent surface assemblages: machines that attract and modulate sound and unsound²⁶. It rearticulates all bodies/entities into ‘shifters’²⁷, new combinatory propositions glued together by the force of vibration. Its ‘choral’ sounds²⁸ are ‘launched like missiles’ to ‘act directly on the space’²⁹ and entities.

5.4.1 Parasitic diffraction: the vibrational as differential force

*‘Affect allows us to think of the human in terms of what surpasses it, undermines it, fragments it, but also in terms of what supports it, energizes it and holds it together.’*³⁰

What then happens when we think of *Space-Shifter* not as ‘sound art’, but as a series of vibratory propositions encouraging trans-body resonances – focussing on the productive disruptive potential that such micro-sound initiates, rather than its aesthetic or representational qualities? How can we think of such vibratory events for their ethical potential as disruptive relational forces that breach thresholds, folding and splitting entities?

To begin this, we need to first understand something of vibrational diffraction, and its role in producing difference through parasitic disruption. To include micro-perception

²⁶ See Manuel DeLanda, *Intensive Science and Virtual Philosophy* (New York: Continuum, 2005), for an extensive discussion of the role of attractors in modulation of forces within states; and Appendix B of this exegesis for a discussion of attractors and force in a different context.

²⁷ ‘Shifters’ are mythical tricksters, capable of changing appearance, who disrupt semiotic order and are invoked by the artists in their explanation of the work. David Chesworth & Sonia Leber, “Space-Shifter,” <<http://www.waxsm.com.au/spaceshifter.htm>> [Accessed 5/7/13].

²⁸ The soundscape of the work uses a choir singing nonsense sounds and part-words. Kristeva proposes the ‘Chora’ as a depository of pre-language sounds in the body that work to disrupt significations through bodily material presence. In this category, she includes such eruptions of sound as sighs, burps, yawns, sneezes and song. See Elizabeth Grosz, *Sexual subversions* (North Sydney: Allen & Unwin, 1989), 43; and Julia Kristeva, ed. Toril Moi, *The Kristeva reader* (Oxford: Basil Blackwell, 1986), 95.

²⁹ David Chesworth & Sonia Leber, “Space-Shifter,” <<http://www.waxsm.com.au/spaceshifter.htm>> [Accessed 5/7/13].

³⁰ Alan Borassa, “Literature, language and the non-human,” *A Shock to Thought: Expression after Deleuze and Guattari*, ed. Brian Massumi (London: Routledge, 2002), 65.

in any discussion on sound is to acknowledge a more expansive definition of sound as vibrational force. Here it is a ‘variation in pressure over time’³¹ encompassing all the perceived elements of a sound that will be contracted into a perception – tone, pitch, rhythm, volume³² – and the unsound, the micro-perceptible remainder. The physics of sound, Roads argues, clearly demonstrate that the basis of all these components of sounds is events of vibrational difference³³ – questions of speed and interval of oscillation. Sound itself is then an expression of this modulating difference³⁴.

But a vibration’s actualisation must also always act parasitically on other waves in the space through the physics of diffraction. Diffraction ‘has to do with the way waves combine when they overlap and the apparent bending and spreading of waves that occurs when waves encounter an obstruction’³⁵. As waves, sound then ‘intra-acts’ in this manner³⁶, with individual wave patterns engaging in disruption and interference with one another. These entangle in complex ecologies, always immanently expressing their differences. In *Space-Shifter*, for example, a sound wave generated by the speakers hits and reflects off a surface – returning as a repetition but at a different speed – diffracting with the incoming wave, producing new modulations that then also interfere and combine with both incoming and reflected waves, producing further modulations, and so on. Each wave is implicated in the individuation of all the others. Such noisily productive enfolding, disruption, complication and interference are parasitic actions. It is the noise in relation that is its creative force – multiplying vibrational difference, blurring distinctions between cause and effect³⁷ as a resonance of a resonance.

³¹ Aden Evans, “Sound Ideas,” *A Shock to Thought*, 171.

³² Composed from waves that differentiate in frequency, amplitude, phase and shape. Ibid.

³³ Pitch and rhythm, for example, as a continuum of the same wave phenomena of differing duration – 1/16” to 1/3200” for the former, and 6” to 1/16” for the later. See: Roads, *Microsound*, 55, 73. Vibrational difference disrupts any continuum, converting it instead to a rhythm of contrasts.

³⁴ Evans, “Sound Ideas,” 171. The vibrational is felt as duration: change over time. This duration is then contracted in perception to a quality – in itself timeless.

³⁵ Karen Barad, *Meeting the Universe Halfway*, 74. See pages 71-96 for a detailed explanation of the phenomena.

³⁶ ‘Intra-actions are non-arbitrary, non-deterministic causal enactments through which matter-in-the-process-of-becoming is iteratively enfolded into its ongoing differential materialization’. Ibid, 179.

³⁷ Michel Serres, *The Parasite*, 57. This noise is a third and mobile position, in that each position operates as parasite on the other positions. Parasitic actions create equivalence between positions, interrupting orders and hierarchies. Ibid., 55-7.



Figure 5.1 Sonia Leber and David Chesworth, *Space-Shifter* (detail view), 2009.



Figure 5.2 Sonia Leber and David Chesworth, *Space-Shifter* (detail view), 2009.



Figure 5.3 Sonia Leber and David Chesworth, *Space-Shifter* (installation view), 2009.

Due to diffraction, we can say that a vibration in *Space-Shifter* always also produces parasitic vibrational forces intrinsic to its event. *Space-Shifter* proposes to construct vibration-surface assemblages that form parasitic machines operating on multiple fronts: producing intensive difference within wave events through diffraction that multiplies and drives towards novelty. The work here employs micro-perception tactically in several different ways, revealing the experience of *Space-shifter* primarily as an event that explores the parasitic potential of sound and unsound.

The heard and unheard components of the sounds affectively engage the body with vibration in ways that create new contingent bodies from components of the body-artwork assemblage (machines within machines). Over and above the sound that is perceived by the ear itself, there is also the vibrational excess of sensation experienced by the ‘skin-as-ear drum’³⁸ that envelops the body. This creates a shared vibrational zone of feedback loops between skin and world, an intra-active ecology of diffractions. Surfaces are implicated in each other’s becoming(s): speaker surfaces affecting and affected by the vibrational capacities of the metal plates, floorboard oscillations meeting and conversing with vibrations of shoes, skin and walls bifurcating each other’s projected vibrations in the shared space in-between, bodies remade as speakers, receivers, reflectors – together resonating surfaces.

Space-shifter proposes space, floor, feet and metal as the ears/transducers³⁹, connecting surfaces to make vibrational ecologies that nest within ecologies. This is a doubling of the surface into a field-body machine, an in-between that is alive with productive potential – a ‘sound envelope’ that is as much a sieve as a container, a ‘sensate surface’ of connection⁴⁰. The force of this sensorial meeting of surfaces –

³⁸ Michel Serres, *The Five Senses: A Philosophy of Mingled Bodies* (New York: Continuum, 2008), 119. As Connor states in reference to Serres’ work on the senses: ‘Just as the ear consists in part of a skin, so the skin itself is a kind of ear, which both excludes and transmits exterior vibrations’. Steven Conner, “Michel Serres’ Five Senses,” 5. Sound, as Goodman asserts, is synesthetic, ‘us[ing] the full body as ear, treating the skin as an extended eardrum membrane’. Steve Goodman, *Sonic Warfare*, 149.

³⁹ These entities act as conductive surfaces, transducing vibration.

⁴⁰ Didier Anzieu, *The Skin Ego* (New Haven: Yale University Press, 1989), 62-9. Anzieu theorises a ‘sound envelope’ as one of a series of sensorial envelopes (also including olfactory and thermal envelopes), extending the body into the world, which construct a ‘skin ego’ that both supports the construction of the psyche, and provides an extended space of exchange with the world. Some parallels might be drawn with the ‘landing sites’ of Arakawa and Gins that extend the body. Anzieu proposes the sound envelope as an initial primary envelope, drawing an awareness of the internal space through bodily sounds and the external space through environmental sounds, but also most importantly of the exchange between the two. See 157- 171 and passim.

pressure/resistance meeting pressure/resistance – is a vibrational interaction with another that leads us out of ourselves⁴¹. It is a worlding that the sympathetic resonances enact: our surfaces taut drum skins⁴². This is perception as performed by the body⁴³ in sympathy with the forces of the world (re)generating.

Here *Space-shifter* makes explicit the vibrational forces surrounding and interpenetrating the body. The diffractive resonances with, and resistances to, the power of the external vibrational rhythms are folded into the body's own rhythms and speeds to create a third shared potential – a parasitic body disrupting prescribed boundaries.

Both audible and inaudible elements of a sound set up diffractive patterns with each other⁴⁴, a resonance that Goodman terms the 'hypersonic effect'⁴⁵. This parasitic noise, operates on the audible range, parasitically modulating unheard vibrations, producing what we perceive as timbre or tonal colour⁴⁶. In addition, these diffractions produce a rhythmic multiplication or syncopation, with surfaces acting as attractors in the system of modulation of beats⁴⁷. Here *Space-shifter* becomes an affective 'rhythm machine'⁴⁸ organising relations between pulsating bodies. Rhythm is playing out the problem of the disjunction of differing vibrational speeds, a gathering of these differences on a plane⁴⁹.

As such, the parasitic actions of wave diffraction more than multiply the vibrations to be experienced through diffraction. They are micro-perceptive machines that produce

⁴¹ Alphonso Lingis, *The Imperative*, 135

⁴² The skin 'forms a hollow and becomes an ear...[e]verywhere else, be it ear-drum or drum, it hears more widely and less well, but still it hears, vibrating as though auricular.' Michel Serres, *The Five Senses*, 52.

⁴³ An organ here is, as Serres says, 'capacity for doing', a potential for relating. Steven Conner, "Michel Serres' Five Senses," 3.

⁴⁴ Roads, *Microsound*, 33

⁴⁵ Goodman, *Sonic warfare*, 184.

⁴⁶ 'Timbre' is the layering of tones, overtones, intra- and ultra-sonic frequencies that give qualitative breadth and openness to perceived sounds.

⁴⁷ A syncopated rhythm has two or more attractors (potential modulators of forces), while a simple beat has only one. Goodman, *Sonic warfare*, 116.

⁴⁸ Connections between entities are assembled via sympathetic rhythms. Ibid, 111.

⁴⁹ Again, this is a complex ecology, each wave potentially both felt as a vibration in itself, and as a productive factor attracting modulation of forces in which it implicates itself. The parasite always operates within relation as an intrinsic factor. Diffraction through the micro-perceptible is then always built into the levels of the system.

a *multiplicity*, a virtuality, to the sound event, a system of potential disruptive production of ‘new rhythms, resonances, textures and syntheses’⁵⁰ that is immanently produced with the audible. Micro-perception activates an excess that is both potential in producing a multiplicity, and actual, as the waves are distorted and doubled through their machinic play.

Micro-perceptive sounds are parasites on cognition, on the hegemony of perceptive reduction of sensation of vibration⁵¹, and on the easy distinction between listener and the listened-to (receiver and received). The insistent force of vibration in its not-fully-formed or cognisable state requires of a body that it compose organs to cut or actualise perception from a virtual plane of vibration. It also keeps vibration on the edge of the virtual, still at its most open to different combinatory possibilities, suspended in the not-quite decided. This is the parasite as creator of ‘fuzzy’ relation⁵² – as sounds in *Space-shifter* lose their beginnings and ends through refolding and held dispersion. There is unease in the encounter with these heightened disturbances, an edginess that the lure of the unheard performs, it invades enjoyment or contemplation of the work as one is thrust into the middle of its machinations⁵³. In this way, *Space-shifter* acts parasitically on one’s emotion state – a metaphorical diffraction – disrupting the contraction of sound to signification, acting heterogeneously on established language-sound hierarchies.

On all these levels, *Space-shifter* is insistently not just ‘sound’ to be contemplated and comprehended, but affective force in the event, a ‘performance of the world in its

⁵⁰ Goodman, *Sonic warfare*, 191.

⁵¹ Perception, as Bogue argues, is a ‘secondary, rational organization’ of sensation⁵¹. It contracts and abstracts through cognition the concrete sensation that is prehended in the immediate, physical connection of relation. Ronald Bogue, *Deleuze on Music, Painting and the Arts* (London: Routledge, 2003), 116. Bogue draws on the work of Strauss, as he claims Deleuze also did in reaching this definition. Wilden, whom Bogue also cites as an influence on Deleuze’s thinking, equates sensation with the analogue, and perception with the translation of this into code, when he writes that ‘perception involves the transformation of analogue into digital messages to the brain’. Anthony Walden, *System and Structure: Essays in Communication and Exchange* 2nd ed. (New York: Tavistock, 1980), 162. On sensation versus perception and the analogue and digital, see: Massumi, *Parables for the Virtual*, 97-99 & 133-143.

⁵² Serres, *The Parasite*, 57.

⁵³ Gilles Deleuze, *The Fold: Leibniz and the Baroque* (Minneapolis: University of Minnesota Press, 1993), 93. Here in *Shape-shifter* there is a heightened sense of the presence of an excess that cannot be contained within the audible, that refuses contraction but insistently is felt on the body.

ongoing articulation’⁵⁴, a way of ‘knowing’, a specific engagement of the world’⁵⁵ across a vibrational plane.

Refrain: Parasitic unsounds

In *Momo* (2011), an installation produced as part of this research⁵⁶ (see *Figures 5.5* and *5.6*), unheard but affectually forceful vibrations were layered to produce a sound ecology that might impact on bodies beyond the perceptual processes afforded by the ears. Within a sound design – one that already recombined sounds⁵⁷ – each sound sample was itself a layered combination of perceptible and micro-perceptible sounds. Samples consisted of both a dominant sound (a word, phrase, or other vocalisation), and approximately four to eight ‘unsounds’ (see *Figure 5.4*). These sounds were manipulated to sit below a perceptible threshold⁵⁸, and consisted of both altered versions of the dominant sound, and other found sounds chosen for their particular affectual qualities⁵⁹.

While the viewer could not audibly comprehend these additional layers, they did create affects on bodies in ways somewhat more difficult to articulate. These affects could be felt by listening to the difference between the main sample on its own and the layered composite sound. When combined, what was heard gained an unsettling quality that heightened the already abrasive qualities of the vocalization. A sense of uneasiness was added that could be described as a shift and increase in richness or complexity of the affectual tonality – a prehension of the unsaid/unheard. In addition, certain frequencies in the additional sounds produced subtle physical affects on the body (such as a slight prickly feeling on the skin or a tension in certain muscles) that

⁵⁴ Ibid.

⁵⁵ Barad, *Meeting the Universe Halfway*, 379.

⁵⁶ *Momo* was exhibited in August-September 2011 at Paradise Hills Gallery, Richmond, Melbourne. See Appendix A for a general description of the work.

⁵⁷ Sounds were remixed through cutting, layering, echoing and volume shifts in response to fluctuations of light and movement in the space.

⁵⁸ The sounds sat outside the spectrum of human hearing in virtue of their high or low frequency range, and/or because their volume sat below an audible level.

⁵⁹ In *Momo*, these other sounds consisted of guttural and expressive mouth sounds, and sounds taken from the movie *Alien 4* (Directed by Jean-Pierre Jeunet, 20th Century Fox, 1997). In this research, the projects *Psychopomp*, *Orgasmatron*, *Swarm* and *Pnuema* similarly utilised layers of micro-perceptible sounds, drawn both from manipulations of the principle sound sources and selected relevant secondary science fiction texts (see Appendix A).

added to the emotional response, and to the feeling of a ‘more-than’ qualitatively combining with the perceived sound. These layers of the experience might be thought of as disrupting through creative multiplication, a ‘checking’ of the process of clear perception that allowed micro-perceptions to ‘invade’ consciousness⁶⁰.

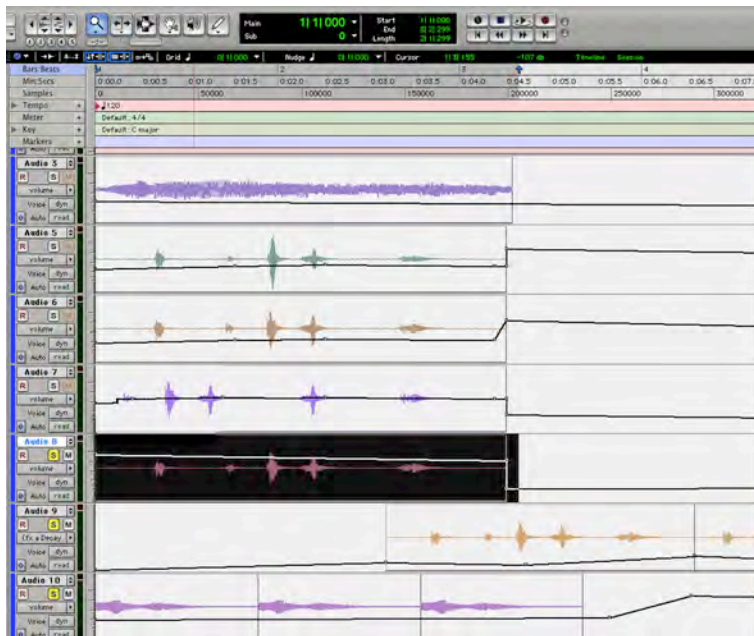


Figure 5.4 Sound layering in a sample from Momo. In this example, the dominant sound is highlighted, while other manipulated copies of this sample, and samples from other sources, sit below a perceivable threshold.

This felt presence of an unheard excess within the sounds perceived might be proposed – at a bodily rather than intellectual level – as the beginnings of an awareness of a larger vibrational ecology at work. In this way, the design sought to experiment with heightening sensitivities to both the excess of sound in the sonic environment, and to the sensitive capacities of parts of the body that interact with vibration. Rather than focusing on communication via the ears, the design experimented with the disruptive qualities of vibrations to encourage listening in a larger bodily sense.

⁶⁰ Deleuze, *The Fold: Leibniz and the Baroque*, 93.



Figure 5.5 Andrew Goodman, *Momo*, (detail view). 2011.
Digital photograph.



5.6 Andrew Goodman, *Momo*, (installation view). 2011.
Digital photograph.

The utilisation of micro-perceptible sound also began to work towards a more complex ecology of interactions. These were concerned not just with ear-to-speaker connections, but also with multiple sound wave-to-sound wave and surface-to-surface connections and combinations. A non-human level of dynamic interaction played out within the work, as vibrations of both sounds and unsounds interfered with each other – as they always do – but were multiplied and complicated by the greatly increased percentage of unsounds present. These played out on an environmental plane, again accessible only as micro-perceptions, exploring – though not demonstrated or represented for comprehension – the combinatory, diffractory and essentially molecular nature of vibration.

Should we still term these as sounds? Certainly they acted on bodies, making connections between surfaces, but perhaps they began to disturb the boundaries between sound and other forces, between one kind of sensation and another, between the capacities of the ear and the potential of the surface of a body to be coopted into an expanded listening machine. These micro-perceptible vibrations remained, to some extent at least, at a level of affect, of trans-objective and trans-subjective force.

These active forces played out their differential equations within the ecology, though below a perceivable level. What was perceived were the effects of this battle of ‘wills’⁶¹, but the vibrational here extended to a more-than-human plane, beginning to position the work as being concerned with a larger play of force within the environment. Micro-perception here operated at the level of the minor gesture, emerging ‘from the field itself’⁶², as Manning says, concerned with an expressive variation not held within an object as a perceived sound, but within the environment’s own capacity toprehend⁶³ and interact with its intensive differential.

⁶¹ Giles Deleuze, *Nietzsche and Philosophy* (London and New York: Continuum, 2002), 61.

⁶² Erin Manning, "Weather Patterns, or How Minor Gestures Entertain the Environment," *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, eds. Jay David Bolter, Ulrick Ekman, Lily Diaz, Morten Sondergaard, Maria Engberg, (New York: Routledge, forthcoming, 2014), 1.

⁶³ *Ibid.*, 6.

5.4.2 Multiplicity: the aliveness of the virtual

*'Every sound masks an entire history of sound, a cacophony of silence. Even our bodies hum along with the noise of the universe.'*⁶⁴

From the 'noise' of micro-perceptions diffracting and multiplying – these potentially heard/felt/expressed relations – how can we perceive sound, whether through the ears or body as a whole, and construct a useable set of vibrations? Clear perceptions, as Deleuze argues, are actualised out of the potential of the micro-perceptions that form their virtual – the multiplicity from which they concreate. Each perception is a singular configuration of 'compossible minute perceptions' that yields perception as a cut in the multiplicity of such potential combinations (a 'zone of clear expression')⁶⁵. These enmeshed micro-relational form an affective entanglement, without necessarily being distinctly expressed in and of themselves. It is the act of perception, productive resonance with vibration, which cuts into this virtual plane and actualises a particular expression of the relations between micro-perceptions. That is, the perception expresses some diffractive combination of micro-perceptions in a particular way that yields a focus, but retains also some relation to all the micro-perceptions of the multiplicity⁶⁶.

As always, perception is a result of the differentials of differential equations, that is, what is perceived is the modulation of difference over time⁶⁷. This dynamic (unheard) virtual of the perceived sound actively disrupts its stable status as 'object' with determinate or idealised status⁶⁸, and becomes, instead, the product of differential

⁶⁴ Evans, "Sound ideas," 177.

⁶⁵ Deleuze, *The Fold*, 90.

⁶⁶ Each perception then is a 'monad', actualising its relationship to the entire field in its own way. Ibid. Thus, one hears the roar of the ocean, a sound gathered from the individual potential combinations of all the waves and drops of water, but each listener from their singular position hears an ocean composed of different combinations of variously distinct and indistinctly expressed sounds – each expresses the whole but in their own way. The multiplicity of micro-perception remains autonomous from individual expressions of it as perception – it is not defined by singular expression, but remains always open to further expressive potential. See also: Whitehead, *Process and reality*, 294-301, on 'extensive connection'; and Massumi, *Parables for the Virtual*, 35.

⁶⁷ Evans, "Sound Ideas," 177.

⁶⁸ It has no primary or ideal identity to which it refers – rather what it refers to is its virtual plane, its unactualised potential – but can be understood only in relation to, and in the movement of, relation. See: Andrew Murphie, "Becoming Interactive – Interactive Becomings: A Deleuze-Guattarian Approach to an Ethics of Interaction" (PhD diss., Macquarie University Press, 1997), 326.

relations of affects expressed in conscious perception. There is always a multiplicity that is alive in its ever-diffracting evolution in each heard or felt sound – a future-feeling drawing the sound towards further perceptive concrescence. *Shape-shifter* draws these unheard relations into a clearer zone of expression, just as it positions what would habitually be clear into a zone of indeterminacy. This makes evident the dynamic complexity of vibrational forces present, and makes felt something of their relation to the perceived sound in a way that disrupts clear, distanced or stable readings, just as it invites us to suspend ourselves in this individuating process. One is thrust into – or emerges tentatively out of – a seething ecology of sensations: the body reconstructed as synesthetic machine, drawing vibratory sensation from its various surfaces-as-organs to construct a perception⁶⁹. In this respect, the work might be seen to be ‘ethical’ in a sympathy with Jane Bennett’s proposition of ethics, in that it cultivates sensitivity to a wider range of forces instigating sound events, encourages awareness of a ‘vitality’ of nonhuman composition, and the ability ‘to become perceptually open to it’⁷⁰.

Shape-shifter makes problematic the experience and concrescence of a remarkable or clear perception⁷¹ out of the field of noise, insistently bringing micro-perceptive or affective qualities of the environment to the fore. ‘Perception’ of sound is revealed as contingent and in process⁷²: sounds that have denied representation on a more superficial level – by emphasising part words and vocal expression over easy signification – work to draw the participant into implication in the processes of

⁶⁹ Here the skin is a sensual topological palette. Michel Serres, *The Five Senses: A Philosophy of Mingled Sense* (London & New York: Continuum, 2008), 79-80. The skin, Serres writes, is a sense organ, it ‘flows like water, a variable confluence of the qualities of the senses’. Ibid, 52. It is synesthetic in that it enhances the more-than qualities of sound in a way that emphasises how these elements combine to provide a clearer zone of perception. More than simply demonstrating synesthesia, it opens one to the possibility of becoming a new synesthetic machine, hearing with an extended body – composed of both body parts and relations with other surfaces – it invites a fuller participation in a vibrational ecology. See: David Abram, *The Spell of the Sensuous: Perception and Language in the More-Than-Human-World* (New York: Vintage Books, 1997), 59.

⁷⁰ Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham N.C.: Duke University Press, 2010), 14.

⁷¹ See Deleuze, *The Fold*, 91.

⁷² As differentials differentiating, which is ‘an expression of the in-between’. Murphie, “Becoming Interactive,” 326.

diffraction and production, as a series of interactive surfaces that assemble as differential machines⁷³.

Micro-perception is here configured as a problem, which finds an expression in perception (though not as a 'solution' as such, more a 'working through'). One tries, when engaging with *Shape-shifter*, to comprehend, to make the vibrations coalesce into readable 'sounds'. But the magnitude of the differentials, the speeds at which they move, and the unbalanced relationship between the heard and 'unheard', disrupts this contraction. The richness of the work's affectual force leaves one disorientated, perceptually unresolved, still searching for a defined body, space and sound. This process of disruption of vibrational wave by vibrational wave is not only foregrounded but stretched or preserved. It is the vibrational 'aliveness' of the event that the body of the participant comes to feel itself explicitly implicated in. Thus, as feelings – as prehensive resonance with other entities⁷⁴ – the affectual qualities of micro-perceptible vibrations become evident, and new sensitivities to the vibrational ecology in which we are immersed are proposed and can be experimented with⁷⁵.

5.5 Conclusion

Shape-shifter works against easy synthesis and resolution, emphasising instead singularity and the temporal through the mediation of rhythms of the vibrations disrupting and combining⁷⁶. The work places the emphasis in listening clearly on the act of combining and disrupting relational vibrational processes and the inherent further parasitic potential, rather than on the perception of individual 'completed' or explicated sounds. In this it approaches what Braidotti has proposed as a 'nomadic music', concerned with a becoming-interval – difference differing – and a dynamic

⁷³ Writing about other art events in a similar context, Murphie says: 'Such performative interactivity tends to create a series of skins as planes of interaction'. Andrew Murphie, "Vibrations in the Air: Performance and Interactive Techniques," *Performance paradigm* 1, (2005): 34. <[http://www.performanceparadigm.net/journal/issue-1/articles/vibrations-in-the-air-performance-and-interactive-techniques/.Issue 1](http://www.performanceparadigm.net/journal/issue-1/articles/vibrations-in-the-air-performance-and-interactive-techniques/.Issue%201)> [Accessed 18/12/12].

⁷⁴ Whitehead, *Process and Reality*, 220

⁷⁵ The field of micro-perception is in this way *propositional* of perception, propositions being 'not primarily for belief, but for feeling at the physical level of unconsciousness'. Ibid, 186.

relation to the field, to the inaudible and imperceptible, to ‘the roar which lives on the other side of silence’⁷⁷.

A ‘nomadic’ music suggests shifting ideas of sound design – from completed or wholly realised sounds to mobile assemblages of micro-sounds as micro-perceptions – enabling a shift from a representational model to one of production. That is, a shift towards a focus on enabling conditions for the production of perception of sounds out of a field of micro-perceptions, with their inherent and parasitic diffractive resonances. Here perceptions are actively produced by the machinic operations of these micro-perceptions, as the broadcast and reception – which are in themselves conflated – play out differences in rhythm, interval and texture. *Shape-shifter* approaches the limit of what can be heard or understood as sound, and in addressing this limit of the perceptible, it proposes new organisations of surfaces (assemblages) with which to perceive.

Here sound in an art event is potent, not for its ability to extend meaning and communication beyond the capabilities of the eye, which is often how it is utilised, but rather to problematise such notions of communication-between – it is harnessed at the level of affect to open potential for new bodily individuations. It is the space of the body that *Shape-shifter* vibrates, as much as the air or floor, and sets resonating to awaken new appetites, new sympathetic resonances and dissonances, as it is tuned into the multiplicity of the vibrational ecology within which it becomes.

⁷⁶ Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming* (Cornwall: MPG Books, 2002), 154.

⁷⁷ Ibid, 155.

Chapter 6

A thousand tiny interfacing: fertile acts of resistance.

6.1 Introduction

*'These spaces between are more complicated than one might think...less a juncture under control than an adventure to be had.'*¹

Brian Massumi has argued that the interface is an unsustainable concept within a process-centered world. In its usual understanding, the interface is positioned as a 'privileged site of mediation' within a system, Massumi states², and this idea of the interface as a prime site of creativity and interaction denies what in process philosophy might be seen as the relational nature of all entities. Massumi's philosophical stance emphasises the 'primacy of processes of becoming over the states of being through which they pass'³, that is, that any entities interfacing with each other are themselves composed of relations. As such, discrete interfaces are problematic in that they might be seen to imply a world inhabited by ideal, internally-stable objects, between which interactions occur. The interface's role, in such modes of thinking, is to rejoin entities that are by implication discrete, where the complexity

¹ Michel Serres & Bruno Latour, *Conversations on Science, Culture and Time* (Ann Arbor: University of Michigan Press, 2011), 70.

² Brian Massumi, "Interface and Active Space: Human Machine Design", *6th International Symposium on Electronic Art*, Montreal, 1995, 7. <<http://www.brianmassumi.com/essays>> [Accessed: 20/3/2012]. For example, Hansen describes the interface as 'a bridge and a channel', and Grau sees it as a distinct 'point of contact', while Poissant says they are 'devices that link humans to machines'. Lone Koefoed Hansen, "The Interface at The Skin", *Interface Criticism: Aesthetics Beyond Buttons*, eds. Christian Ulrik Andersen & Søren Bro Pold (Aarhus: Aarhus University Press, 2011): 68; Oliver Grau, *Virtual Art: From Illusion to Immersion* (Cambridge: MIT Press, 2003), 198; Louise Poissant, "The Passage from Material to Interface", *MediaArtHistories*, ed. Oliver Grau (Cambridge: MIT Press, 2007): 236.

³ Brian Massumi, Arne De Boever, Alex Murray & Jon Rolfe, "Technical Mentality Revisited: Brian Massumi", *Parrhesia*, 7 (2009): 38

of continued unfolding and relation to the dynamic virtual or potential is greatly diminished.

There is much to be critical of in the privileging of the interface. As Massumi notes, it can promote a naïve excitement in undifferentiated flows of information; an unquestioning, utopian promotion of interface ‘for interfaces sake’⁴, that fits in perfectly with capitalist models of circulation and surplus value⁵. To this, one might add the cybernetic conflation of the biological and technical, of which Simondon is so dismissive⁶, and which Massumi describes as the ‘industry philosophy’⁷. This extension of the ‘prosthetic function’ of the interface, is utilised as a method of controlling, erasing real difference as the body ‘disappears behind a techno-logical shield’⁸. This subjectification of the technical object, which Munster has pointedly termed ‘interfaciality’, is a codification as face to face, rather than body to machine relation⁹.

Nevertheless, the primary sticking point for discussion of the interface within process philosophy remains: that its distinctive identity relies on hylomorphic concepts that see the interface as a privileged site of interaction within an otherwise inert representational system¹⁰. Within a process-based conception of the world that recognises the primacy of forces and relation over form, all is interface; everything is dynamic communication, incipiently co-forming.

⁴ Brian Massumi, “Interface and Active Space”, 1.

⁵ Ibid., 9.

⁶ Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, trans. Thomas LaMarre (Cambridge: MIT Press, 2013), 79-83, for a succinct discussion of Simondon’s critique of cybernetics.

⁷ Brian Massumi, “The Interface and I,” *Artbyte: The Magazine of Digital Arts*, 1, 6 (1999): 33

⁸ Brian Massumi, “Interface and Active Space,” 3. Here the interface is utilised as a method of controlling: ‘a relay point in the dissemination of human ordering activity into space...transform[ing it] into a realm of expansion onto which the human projects itself’. Ibid.

⁹ Anna Munster, *Materializing New Media: Embodiment in Information Aesthetics* (Hanover & London: University of New England Press, 2006), 122-124.

¹⁰ Stengers terms this ‘scientific materialism’: ‘the explanation of all change in terms of changes in “external” relations between beings that do not change in themselves’. Isabelle Stengers, *Thinking with Whitehead: a Free and Wild Creation of Concepts* (Cambridge, M.A.: Harvard University Press, 2011), 128. Such concepts of ‘enduring substances’, Whitehead argues, while expressing an at times useful abstraction, nevertheless prove themselves mistaken when taken as a ‘fundamental statement about the nature of things’. Alfred North Whitehead, *Process and Reality*, (New York: The Free Press, 1978), 79.

So here we have our paradox: maintaining clear and distinct interfaces between things requires us to ignore the actual flow and enmeshed quality of lived experience, while acknowledging the primacy of the relational means everywhere we look are a thousand tiny interfaces – neither proposition is of much use, for either thinking or constructing dynamic, immanent art events. In this chapter, I want to show some ways in which we might think through the process of interfacing as a creative force within an art event, and without succumbing to the type of static, representational models of which Massumi is justifiably critical.

To do this I will examine a particular incidence of interfacing that occurred in Raphael Lozano-Hemmer's work, *Re:Positioning Fear: Relational Architecture 3*, (1997), in order to consider ways in which unplanned interfacing between a public and the technical assemblages of the work helped to develop a greater level of both self organisation and openness in the event. An interesting shift in agency in the work occurred – moving from those preconceived by the artist to a new shared and emergent agency developed through an interfacing of a public bringing their own intentions and tonalities to the event¹¹. This example provides an opportunity to consider some of the creative potential of interfacing, and its ability to complicate the event. In putting the interface to productive use as a differential tactic within an art process, I propose that it might provide a logic of self-regulation, one capable of internally driving the creation of intensities of resonance or disturbance through connection.

6.2 Interfacing

If we begin by thinking temporally rather than spatially, it is possible to consider these interfaces as moments rather than points of action or relation. This suggests that

¹¹ While these events are of particular interest here, I do not wish to overstate the uniqueness of the case. As Lozano-Hemmer has said, the events were significant in his rethinking of the ways in which he staged further *relational architecture* iterations, however this does not necessarily imply that the occurrences were extraordinary for such large-scale interventions, which are necessarily always composed of multiple and often contradictory intentions and forces, and can potentially head in numerous directions, both predictable and surprising. For Lozano-Hemmer's reflections on the significance of this event for his practice, see Jose Luis Barrios and Rebecca MacSween. "A Conversation between José Luis Barrios and Rafael Lozano-Hemmer," *Sala de Arte Público Siquieros (SAPS)*, eds. Jose Luis Barrios & Itala Schmelz, (Mexico City, 2005), 5-6.

the interface might now be thought of more as a process of interfacing¹², as an unfolding or contingent process within a larger nexus of relation, as an in-action moment of intensity of disruption, contrast and invention rather than a privileged or static position within an art event.

As earlier noted in Chapter Two, a machinic conception of both bodies and technical objects allows us to think of them as assemblages that are productively relational, rather than fixed – always capable of further expression of some potential¹³. I will briefly consider the idea of an art event as a machine producing transductions of forces, before attempting to unpack the creative role of interfacing in *Re:Positioning Fear* by suggesting that interfacing might productively parasitise.

6.2.1 Transduction

It is common to think of interfaces as translators of code, points of information exchange, from digital to analogue or vice versa, or as a ‘point of contact where humans and machines meet in order for exchange to take place’¹⁴. However to assert the primacy of the flow of forces, rather than the secondary exchanges of text, I would argue transduction is a better way to fully think the event of interfacing. Transduction positions interfacing as the integration, through the flow of forces of differing viscosities, of formerly disparate things within a becoming-concrete system¹⁵.

An art-event might be such a machine: regulating and producing affectual flows, a ‘machinic of expression rather than a signifying apparatus’¹⁶, a producer of

¹² This follows Deleuze’s tactic of utilising infinite verbs, not nouns, to escape representation. Gilles Deleuze & Claire Parnet, *Conversations II* (New York: Continuum, 1987), 50. As Whitehead says: ‘if we start with process as fundamental, then the actualities of the present [derive] their characters from the process’. Alfred North Whitehead, *Modes of Thought*, (New York: The Free Press, 1978), 99.

¹³ These organic and non-organic machines have the potential to both contain other machinic combinations nesting within them, and are also capable of co-operating with other assemblages to form larger contingent and pragmatic (and resolutely non-unified) machines. See Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming* (Cornwall: MPG Books, 2002), 254.

¹⁴ Oliver Grau, *Virtual Art: From Illusion to Immersion* (Cambridge: MIT Press, 2003), 198.

¹⁵ We might say that it has shifted *towards* the pole of concretisation (becoming-concrete), rather than conceiving of the terms as absolute and exclusive.

¹⁶ Andrew Murphie, “Computers are Not Theatre: The Machine in The Ghost in Gilles Deleuze and Felix Guattari’s Thought,” *Convergence* 2 (1996): 104. < <http://con.sagepub.com/content/2/2/80> > [Accessed 13/1/2013].

movement¹⁷ or difference. If, as I want to demonstrate, the transduction that occurs through interfacing produces difference, then this, positions interfacing as a prime creative force-form – for, as Deleuze states, ‘difference, potential difference and difference in intensity [is] the reason behind qualitative diversity’¹⁸. Seeing interfacing as a machinic action implies a shift in designing art events to emphasise their machinic potential, their productive capacity or capability to produce difference, rather than for their aesthetic qualities. It is this operation of the interface as a *differential machine* that is addressed below through an unpacking of *Re:Positioning Fear*, in light of three, related actions of creative differentiation: parasitic noise, folding and the resonance of the impossible, and concretisation.

6.3 *Re:Positioning Fear*

Re:Positioning Fear consisted of an orchestrated shadow dance composed of a projected conversation thrown onto the architecture of the city that was made visible within participants’ shadows, which were also cast on the surface, creating silhouettes of differing sizes depending on their distance from the light sources (see *Figures 6.1*¹⁹ and *6.2*²⁰). As Andreas Brockman writes, the work initiated a dynamic ‘social interfacing’, constructing a ‘fragmented and heterogeneous system of engaging different publics in a variety of specific ways’²¹. Here the bodies of the participants performed disruptive interfacings within a machine composed otherwise of technical objects. This melding of technical objects with the unpredictable input of a public presents one possibility of providing the technical elements with an expanded potentiality. Its

¹⁷ Anna Munster, *Materializing New Media*, 15.

¹⁸ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 57.

¹⁹ Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Landeszeughaus, Architecture and Media Biennale, Graz, Austria. Photo: Joerg Mohr. Accessed 4.7.2014. <http://www.lozano-hemmer.com/showimage.php?img=graz_1997&proj=RePositioning%20Fear&id=10>

²⁰ Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Landeszeughaus, Architecture and Media Biennale, Graz, Austria. Photo: Joerg Mohr. Accessed 4.7.2014. <http://www.lozano-hemmer.com/showimage.php?img=graz_1997&proj=RePositioning%20Fear&id=6>

²¹ Andreas Brockman, *Vectorial Elevation: Relational Architecture no. 4*, ed. Rafael Lozano-Hemmer (Son Torge: Mexico National Council for Culture and the Arts, 2000), 172.

‘relation with elements outside itself’ provides a level of indeterminacy²², with the body always in an ideal position to make connections with the technical, as Combes states, to ‘become with’, to play the role of ‘transducer between machines’ as it has an ‘always active virtual’²³. Here the connection between biological and technical objects was a tactic to *generate* difference, not collapse it²⁴, to produce ruptures or gaps in the process of ‘dephasing’, in which a stable identity is delineated from ongoing processes of becoming.

6.3.1 Parasitic noise

Part of the appeal of this work is undoubtedly the inbuilt complexity with which it enables or creates potential to engage various components of the city in a new and playful manner²⁵. However a more interesting and radical disruption also occurred in the unfolding of this work, which was already primed for playful intervention and evolution. It was in this catalysing moment, through parasitic action, when a new and more complex machine was produced. Alongside the positioning of their shadows on the façade to activate the hidden text, participants began to synthesise a different work out of the components by engaging specifically in play between their projected silhouettes. They utilised the potential to radically alter the size of their shadows to engage creatively with one another. For example, a wheelchair bound participant created a giant image of himself and ‘ran down’ everyone else²⁶, while other participants played with shadow puppetry of smaller bodies, and making multi-limbed combinatory beings²⁷.

²² Munster, *Materializing New Media*, 14.

²³ Combes, *Gilbert Simondon*, 60.

²⁴ It should be emphasised that these assemblages that Salter terms ‘hybrid technical objects’ – machines composed of combinations of the biological and technical – must be differentiated clearly from a ‘cybernetic’ model, which LaMarre says seek to blur distinctions between the biological and the technical, collapsing difference. Chris Salter, “Just Noticable Difference: ontogenesis, performativity and the perceptual gap”, *Inflexions*, 5 (2012): 126. Thomas LaMarre, in Combes, *Gilbert Simondon*, 79-80.

²⁵ This, Andreas Brockman writes, was a dynamic ‘social interfacing’, as *Re:Positioning Fear* constructed a ‘fragmented and heterogeneous system of engaging different publics in a variety of specific ways’. Brockman, *Vectorial Elevation*, 172. Thus personal imagery was re-inscribed on architecture burdened with often-oppressive histories, public spaces re-commissioned into dialogues with the performative, bodies unproductively intertwined with technologies of surveillance and control, and so on.

²⁶ Rafael Lozano-Hemmer, “Interview by Jos. Luis Barrios,” 6.

²⁷ See <http://www.lozano-hemmer.com/repositioning_fear.php> for short video sequences of various installations of the work.



Figure 6.1 Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Photo: Joerg Mohr.



Figure 6.2 Rafael Lozano-Hemmer, "Re:positioning Fear, Relational Architecture 3", 1997. Photo: Joerg Mohr.

landeszeughaus, Architecture and Media Biennale, Graz, Austria.

This free shadow play was, I would suggest, a kind of parasitic noise, feeding off the energy already flowing through the work to expressively create new paths, and to creatively bifurcate relations²⁸. It was an action that continued to qualitatively express something of the original relation (moving shadows revealing text on the building's surface), while at the same time producing a new (minor) relation through the same initial forms. The contemplative and reflective rhythm of movement in the large-scale text was overlaid with the noise of a quick and teasing play of shadows, creating a tension, a clash of intentions and tonalities: gaps and miscommunications.

These parasitic actions existed on multiple levels and at different scales; they operated throughout the transductions of form-force taking place, wherever interfacing occurred, producing excess. For example, as bodies overtly disrupted light to create new imagery, there was also a more subtle disruption of intention, with the artist's intentions (or perceived potential of the work) interfacing with the participants' disparate motivations, to create a third, more mobile position, composing an indeterminacy within prescribed events of relation²⁹. Such conceptual forces are, I am suggesting, as capable of interfacing – of immanently joining and modulating together to produce new movement, to drive differentiation/ bifurcation – as anything more materially substantive.

Parasitic machinics here produced not a linear evolution of the work, but rather enabled 'processes of connectivity and interpenetration...[and] the fostering of specifically transversal connections'³⁰. This parasitic action of interfacing was an agent of difference in that it continued to re-express (transduce) relation. It kept the

²⁸ 'Signaletic material', as Deleuze discusses it, is one such excessive expression of interfacing, a conditioning of force-form as it transduces. This can be found in the continual unfolding of pixels on a TV screen; a temporal event that is probably not consciously perceived but which nevertheless has an energy in itself, as a 'plastic mass, an a-signifying and a-syntactic material' – a kind of processual 'grain'. Giles Deleuze, *Cinema 2*, trans. Hugh Tomlinson & Robert Galeta, 3rd ed. (Chippenham, Wiltshire: Continuum, 2005), 28. See also: Bodil-Maree Thomsen, "The Haptic Interface: on signal transmissions and events," *Interface Criticism: Aesthetics Beyond Buttons*, eds. Christian Ulrik Andersen, & Søren Bro Pold (Aarhus: Aarhus University Press, 2011).

²⁹ This is not intended as a metaphor – within process thinking intentions/urges/feelings/desires are not phantasms, but forces and lures towards forces in and of the world. As James states, process thinking must not 'exclude from [its construction] any element that is directly experienced'. William James, *Essays in Radical Empiricism* (Memphis, T.N.: Longmans, Green and Co., 2010), 18. On the place of conceptual feelings and hybrid physical feelings, see: Whitehead, *Process and Reality*, 239, 247.

³⁰ Simon O'Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (Hampshire and New York: Palgrave Macmillan, 2006), 17.

event always on the point of splitting and moving into multiple new forms, suspending it in unfolding differentiation, disrupting any simple or sustained connectivity. While disruptions are not unusual within works such as this, designed to accommodate interference, what is notable is the degree to which such interference overtook the original structures.

6.3.2 Folds - the vibration of the impossible

*'Invention is a plug-in to the impossible.'*³¹

If parasitic action was, in a sense, a continually performed splitting of relation, the interfacing that occurred in *Re:Positioning Fear* might also be thought as producing difference through connecting, through incitation or a 'dynamics of infection'³² that worked to prolong and complexify. That is, through a folding of technological objects and bodies in interfacing, something new was produced (art). As Andrew Murphie writes, this is a doubling that technologies can perform³³, in this case the body becoming-with the lights, the façade becoming-with shadows, portraits becoming-with movement and so on. This folding was achieved not through collapsing difference to produce a new homogenous history or façade, but through multiplication, to produce new singularities that were performed alongside, throughout and in the gaps of the previously existing iterations³⁴. In folding, new complex events arose – shadows that had a single purpose now performed (at least) two operations, for example. This was not simply a doubling of function, but a potentially larger multiplication, as folding overlaid and intertwined the two actions: to complement, overlap, interrupt, and fragment each other, creating multiple shifting moments of differentiation out of what was previously a fairly simple folding – and so

³¹ Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation*, Post-Contemporary Interventions (Durham, N.C.: Duke University Press, 2002), 97.

³² Stengers, *Thinking with Whitehead*, 160.

³³ Murphie, "Computers Are Not Theatre," 89.

³⁴ These were individuations that were 'mobile, strangely subtle, fortuitous and endowed with fringes and margins', that were 'no less capable of dissolving and destroying individuals than constituting them'. Deleuze, *Difference and Repetition*, 257, 38.

the event became ‘polyphasic’³⁵. Folding could be seen here to be powerful in both the creation of actualised and *potential* foldings that the interfacing opened up; a bifurcating of future unfoldings that resonated within the event.

Interfacing here was a performative act by which the machine continued to re-fold its internal systems, and fold elements outside itself (various bodies, intentions, movements, tonalities, and so on) into its workings. This created, as Deleuze writes of such actions, a ‘forced movement’ or ‘internal resonance’ within the system³⁶. Thus it was a tactic that re-immersed or re-saturated the event with the virtual, as it implicated machinic components in each other’s becoming through an ongoing process of variation and re-articulation – repetition that produces difference³⁷.

I want to suggest here that the more radical folding occurring in the interruption of *Re:Positioning Fear*, through the re-commissioning of the shadow-making machine, might be seen as a fold of the outside. The ‘outside’ here is force in non-relation³⁸ – itself a disruptive gap in the relational field – that ‘eats into the interval and forces or dismembers the internal’³⁹. This can produce ‘trans-formation...to the composing forces, [which] enter in to a relation with the other forces which have come from the outside’⁴⁰. The participants’ shadow-body play was an outside of the event (not a potential), which was folded into emergent relation, at the level of force as well as form. By transforming forces shaping the event, this folding transformed the affects of the event, since affect is what is experienced in the transduction of force⁴¹. The new affective tonality that was folded into the event coursed through, transducing, infecting all the systems constructing the event.

³⁵ That is, there is a ‘persistence of the primitive and original phase in the second phase, and this persistence implies a tendency towards a third phase’. Simondon quoted in Combes, *Gilbert Simondon*, 46.

³⁶ *Ibid.*, 118.

³⁷ The technological event is necessarily the producer of these parasites, ‘gaps and remainders’ as Munster says, that mitigate ‘the failure of any fully technologically connected and serially standardized world’. Munster, *Materializing New Media*, 6. As Serres states, the interference in a relation is a necessary condition of its existence, stating that ‘if a relationship succeeds, if it is perfect, optimum and immediate; it disappears as a relation’. Michel Serres, *The Parasite* (Minneapolis: University of Minnesota Press, 2007), 79.

³⁸ Gilles Deleuze, *Foucault* (Minneapolis: University of Minnesota Press, 1988), 72.

³⁹ *Ibid.*

⁴⁰ *Ibid.*, 73.

This outside, seen as the ‘impossible’, or that which was excluded or divergent from the event⁴², defined the limit of the event⁴³. *Re:Positioning Fear* had limits defining its concrescence, both in the types of performances it produced, and the potential from which it was drawn (various potential mutations of shadow playing with text, for example). The introduction of a whole new outside tactic of production, through connections between participants co-composing relations together via the interfacing of their shadows, then delimited the *Re:Positioning Fear* event. The tactic initiated new performances and fields of potential to compose with, even as it continued to drive towards its previously instigated concrescence. In redefining the limits and potential of the event, this folding of the impossible was a more radically differential act. Such folding was, again, a positive generator of multiplicities of difference⁴⁴, the tension between the external and internal providing impetus for changes⁴⁵ – an evolution in the associated milieu. This difference was evident not particularly in a shift in the utility or materiality of the technical objects or other components of the assemblage, but as a force of qualitative change, of affective tonality. Interfacing here might be viewed as a vitality affect on a force⁴⁶, producing a felt moment of creative differing.

6.3.3 Concretisation and the virtual

I suggest that it was through these particular interfacing that the machine of *Re:Positioning Fear* underwent a process of concretisation: shifting systems from a limited, linear or closed functioning, towards self-regulation and sustenance, and

⁴¹ Ibid., 60.

⁴² Gilles Deleuze, *The Fold: Leibniz and the Baroque*, trans. Tom Conley (Minneapolis: University of Minnesota Press, 1993), 60. The impossible, as Deleuze states, is ‘not reducible to contradiction’.

Ibid.

⁴³ Whitehead, *Process and Reality*, 45. See also Brian Massumi, *A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*, A Swerve ed., (Cambridge, MA: MIT Press, 1992), 57–8.

⁴⁴ Deleuze, *Difference and Repetition*, 267.

⁴⁵ ‘The incompatibility of a non-resolved system becomes an organizational dimension in its resolution’. Simondon, quoted in Manning, “Always More Than One: the collectivity of ‘a life’,” *Body and Society*, 16, 1 (2010): 118. <<http://bod.sagepub.com/content/16/1/17>> [Accessed 3/4/2012].

⁴⁶ Vitality affects are affects that are ‘elicited by changes in motivational states, appetites, and tensions’. Daniel Stern, cited in Erin Manning, *Always More Than One: Individuation's Dance* (Durham: Duke University Press, 2013), 5. They are a ‘preconscious verging toward a coming-to-act that tunes to the relational milieu of experience’. Manning, *ibid.*, 187.

consequently, towards a ‘solidarity of openness’, an increase in self-generative capacities⁴⁷.

Re:Positioning Fear shifted from a fairly linear production that was, to a certain extent, its externally instigated functioning, towards the self organisation of a new event that was less reliant on the artist’s conception of the event, the established sequence of linkages between component systems, or on the original conceived utility of the technical objects. The system moved from a more ‘abstract’ configuration to a self-modulating model⁴⁸. The work’s differential tension became an intrinsic component in its production, and consequently its processes became more circular. That is, the machinic components invented more co-dependent ways of interacting (bodies-with-lights-with-façade-with-images-with-shadows-with-bodies), and a ‘recurrent causality’ evolved that is characteristic of concretisation⁴⁹. This individuation was shared between components, drawing them into concrete machinic process through the evolution of a shared associated milieu⁵⁰.

Interfacing here might be seen to have incited a phase or register-shift through transduction, implicating the external. That is, a complexity beyond simple intensive disruption occurred. While the machine’s modulations were driven by the compossible actions of the bio-technical interfacing, these radical interfacings acted more significantly on the system. They were capable of rearranging both how the potential combinations actualized *and* of creating completely new milieus⁵¹. More than modulating transduction, a new machine was produced from the field when the

⁴⁷ LaMarre, in Combes, *Gilbert Simondon*, 92-3.

⁴⁸ It was an ‘abstract’ system in Simondon’s terms in that it required the external input of the artist and the ‘feeding in’ to the system of chaotic elements – new bodies with their random actions – to initiate change, whereas in a ‘concrete’ system ‘effects are produced that are independent of the design plan’. Gilbert Simondon, *On the Mode of Existence of Technical Objects*, 1980, 22, 31.

⁴⁹ LaMarre, in Combes, *Gilbert Simondon*, 93.

⁵⁰ It enacted both the event of the joining of milieus (a contraction/synthesis) and an expanding of potential – that is, the production of a new milieu. Chris Salter provides a lucid account of the process of the development of a common milieu through concretisation, Salter, “Just Noticable Difference,” 117-8.

⁵¹ I would propose that Lozano-Hemmer constructed the work in a sense as metastable – as a kind of supersaturated solution primed for dephasing, sensitive to difference, but sensitive, on this meta-level, only to certain actions. See LaMarre, in Combes, *Gilbert Simondon*, 86.

system passed a ‘threshold of [qualitative] intensity’⁵², forcing new flows, with their attendant individuations, to begin. The interfacing of the impossible, here ‘vibrating against the conformal’⁵³, acted to catalyse both a new actuality and a new milieu with which to engage. It was in this process with the external or field of the machine that the interfacing instigated a leap or jump of registers, whereby a point of ‘absolute origin’⁵⁴ of a new event was produced⁵⁵.

With such a shift, the machine developed new transductive potentials between the internal and external, a ‘charged grounding’⁵⁶ of the two. That is, the connection of internal spacing and external contrast in dynamic virtual relation created a larger machine ecology, a ‘conversation’ between them that gave new dynamism to the event, another scale on which it was self-modulating⁵⁷. Not only the event, but also the *field itself* had changed. *Re:Positioning Fear* had changed its nature, not only by actualising a previously un-actualised potential, but by rewriting the very field of potential available to it. This meant that the work gained a greater capacity to generate its own emergent difference – a parasitic operation – and in this the parasitic actions on relation lead to a state of greater self-regulation and sustenance. To its credit, *Re:Positioning Fear* was an art machine capable of using interfacing-produced parasitic action to draw into relation a wider field of possible actions, affects and intentions, immanently rewriting its productive capabilities. Its power as an artwork was perhaps that this transformation led not to the collapse of its machinic structuring, but to its concretisation.

⁵² Manuel DeLanda, *Intensive science and virtual philosophy* (New York and London: Continuum, 2005), 18-19. This is a point of absolute origin of a new machine from the field producing new modes of transduction.

⁵³ Whitehead, *Process and Reality*, 188.

⁵⁴ LaMarre, in Combes, *Gilbert Simondon*, 86.

⁵⁵ Interfacing, in connecting and producing the machinic, actualises a potential – a paradox in that, prior to their co-joining, the two systems shared no potential. Where does this potential, and the actuality of unfolding connectedness, arise from? Simondon’s answer, as Massumi explains it, is that it is brought from the future, from a point post-concretisation. Interfacing here is the catalyst that instigates both the actual assemblage and simultaneously creates a new potential, a new milieu created immanently with the assemblage on which it has somehow already drawn, a circularity possible only within a conception of time as non-linear (see Massumi, *Technical Mentality Revisited*, 39-40).

⁵⁶ LaMarre, in Combes, *Gilbert Simondon*, 93. As LaMarre says, the internal and external grounds communicate ‘actively across their asymmetry, and have to stabilize that communication. The result is a self-regulating individual’. *Ibid.*, 97.

6.4 Conclusion

The shifts that occur in *Re:Positioning Fear* as a result of interfacing were both materially (ontologically) slight and processually (ontogenetically) significant. What the participants brought to the event that instigated such a shift was, in a sense, no more than a new intention, or perhaps even less distinctively, a new tonality that infected the work to produce something new. This is not to suggest necessarily that what it shifted *to* was in itself significant, but that the way that interfacings performed such a shift was of philosophical and artistic interest, in that it provides a potential tactic towards the thinking of more open-ended systems of interactivity, suggesting a potential machinic, ‘minor’ art event, concerned less with signification than a collective becoming⁵⁸.

This interfacing was performed, not entirely by the biological or the technical systems making up the machine, but by the machinic actions that produced the potential ruptures and the uncertainty of an evolving dynamic virtual that was its fertility. The further potential of interfacing remained present even as it was enacted. It perhaps remained as a ‘lure’ towards feeling, as a pull towards the future⁵⁹, a pre-relational tendency towards affectual relation.

Interfacing here was propositional of differentiation, attuning the conditions for potential trans-force-form events; luring multiple transductive events into being. *Re:Positioning Fear* was concerned not with utility in technology⁶⁰, but with, as LaMarre articulates, Simondon’s plea for relations with machines that might instigate sustained inventive engagement⁶¹. The event, one might say, answered Stern’s call for interactive art to move away from privileging signs and images at the interface, and the demonstration or fetishisation of the technology in the work. Instead the event engaged, as Stern proposes, ‘with the quality and styles of movement’ that were

⁵⁷ That is, as LaMarre describes it, internal and external grounds, being different, ‘have to communicate...actively across their asymmetry, and have to stabilize that communication. The result is a self-regulating individual’. Ibid.

⁵⁸ O’Sullivan, *Art Encounters with Deleuze and Guattari*, 69-71.

⁵⁹ Manning, *Always More Than One*, 57.

⁶⁰ The objects, such as they were, in *Re:Positioning Fear* – lights, buildings, shadows – can then be seen to move towards what Manning has termed the ‘objectile’: propositions for engagement ‘emphasiz[ing] the temporal and qualitative’. Ibid., 148, 149.

performed⁶² – with the invention of styles, with the implicit and the potential – to construct new ways of relating through interfacing.

⁶¹ LaMarre in Combes, *Gilbert Simondon*, 97.

⁶² Nathaniel Stern, *Interactive Art and Embodiment: The Implicit Body as Performance* (Prepublished manuscript, 2012, pdf.), 10.

Refrain: Fuzzy interfacing

In *Momo* (2011), produced as part of this research, interfacing occurred between bodies and the sculptural forms (see *Figures 6.3-6.7*) through a series of light sensors embedded in the main form, and movement sensors positioned throughout the space⁶³. Shadows cast by bodies on the central sculpture increased the volume of various audio tracks, providing a fluid mix of sounds⁶⁴. This operation of interfacing was qualitative in its nature – and, to a certain extent, vague and susceptible to interruption – as multiple light sensors spread over the surface of the sculpture registered subtle variations in the intensity of shadows falling across its form. These variations were dependent on such factors as the distance of bodies from the sculpture, the density of materials blocking light (a thin fabric versus a limb, for example), the exact angle of a particular light sensor in the folds of fabric, or the collective volume of the shadows of bodies momentarily overlapping, alongside subtle potential changes in the overall light in the room.

Such qualitatively-based sensor interfacing was perhaps a step towards a more fluid connection of components (lighting events to sound production and body parts to sculpture), moving away from a focus on delineating and capturing or interpreting individual bodily actions and towards a fuzzy collective expression of the movement of the event itself⁶⁵. Beyond this hardware-based interfacing of the sensors, *Momo* also proposed more ephemeral interfacing, which speculated on the resonance of the meeting of affectual tonalities between the participant and aspects of the work⁶⁶.

⁶³ These light sensors triggered volume changes and the swapping of sound samples, while movement sensors also played a role in switching audio samples. See Appendix A for further description of *Momo*.

⁶⁴ Exactly which sound had its volume manipulated on any particular track was dependent on a series of complex disruptions and swapping of samples, similar to the parasitic system described in *Chorus of idle feet* in Chapter Two of this exegesis. The computer system also watched for the quantity of light variation within a set timespan that, once a tipping point was reached, could then trigger further shifts in the potential range of volume (so that louder volumes were made possible). See Appendix B for some discussion of limits and bifurcation within software patches.

⁶⁵ I do not mean to imply here any set division between analogue and digital sensors, but rather to suggest a distinction between motion capture systems such as those utilized in Wii or Xbox to capture and translate body part movements onto a Cartesian grid (that seek to address not only the participant's body to the exclusion of any other environmental changes, but also to focus rigidly on a relation between the intentional actions of the subject and the software), and the fuzziness of a qualitative sensor registering the variation in the collective sum of a particular force over time.

⁶⁶ Such as the infective tonal qualities of the vocal qualities and the garish colour palette, for example.



Figure 6.3 Andrew Goodman, *Momo*, (installation view), 2011. Digital photograph.



Figure 6.4 Andrew Goodman, *Momo*, (detail), 2011. Digital photograph.



Figure 6.5 Andrew Goodman, *Momo*, 2011 (detail). Digital photograph.

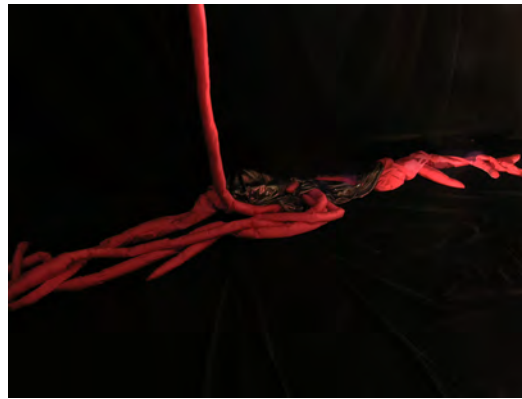


Figure 6.6 Andrew Goodman, *Momo*, 2011 (detail). Digital photograph.



Figure 6.7 Andrew Goodman, *Momo*, (detail), 2011. Digital photograph.

Such partially unintentional interfaces began to capture difference on an environmental level – well outside subjective consciousness, but also outside a larger sense of a single body. This fluidity created inexact, unstable connections: a disruption of clear relation through a vagueness that might be not a lack of connection, but, as Whitehead states, ‘due to an excess of identification’, where the contrasts between groups of actual objects that the sensors sought to hold a relation to were indistinct and appeared as ‘one extensive whole’ (though this whole was divisible), and the feelings prehended were therefore sensed as ‘chaotic factors’⁶⁷. Given the somewhat abrasive and confrontational nature of the sounds emanating from the sculpture, and its increased vocal ‘agitation’ in reaction to the proximity of the participant, these sounds then might be seen to have begun to feed back into the styles of movement of bodies within the space. In this way, the event perhaps began to take on its own collective energy, a folding in the meeting of affectual tonalities of the event and the participant – a resonating of different moods and intensities – a collective shifting and gathering.

This interfacing gathered, to some extent at least, qualitative gestures within the event, rather than enforcing privileged conversations⁶⁸. These might be seen as transversal connections, as acts of the transduction of flows of forces across bodies and objects that co-implicated them in a collective, performative emergence leading towards concretisation – a shared potential. In this, it began to gather a collective field for the event to draw on, beyond the combined individual potential of the component parts. More than simply being entities communicating across an interface, bodies, sounds, colours and lights became fluid genetic components intensively driving an event of collective expression.

Such concretisation, through a shared responsibility for the emergent event, neither subsumed the will of the work to that of the participant, nor vice versa. Though participants affected the modulation and flows of sound, as the installation contained the potential to coax certain styles of behaviour from bodies, the expressions of both added further variation and intensive movement. Connective possibilities generated,

⁶⁷ Whitehead, *Process and Reality*, 111-112.

⁶⁸ That is, the event became sensitive to collective sums of reactions, directions, styles and speeds, rather than subject-to-object interactions.

rather than collapsed, difference. For example (on the most concrete level), a gesture of one arm created subtle variations in shadows across a number of light sensors and simultaneously triggering the switching of audio samples through sensed movement, while the counter-movements of the other arm might temporally combine with areas of shadow and send contradictory sample-swapping messages to the computer system. Interfacing here potentially both directed intentional and accidental movements into multiple and overlapping chains of causality – creating multiple relations between a body part and the work –but also provided mechanisms for variation through instability of its relations. The indefinite, qualitative nature of the forces sensed, and the design of interfacing that disrupted other interfacing events rather than simply connecting – situating relations parasitically within other relations – lent itself to an inherent and future instability, to always a potential for further gathering of forces into the event through the disruptive actions of the interfacing. Again, it is important to note that the event was not concerned with *representing* these interfacing to the participant, or with enforcing any one particular set of relations, style of movement or feeling of connection, but with affording a variety of potential connections.

In this instance interactive interfacing at least began to move away from a mechanism in the service of prescriptive capture and control, towards the consideration of the infective potential of a series of resonating or contrasting styles and tonalities. It began to consider interfacing as an intensive (and therefore parasitic) action within an event – a folding back of the event into itself to gather collective forces – with inexact edges and eddies at which difference might pool.

Coda: towards a gathering ecology

In *Orgasmatron* (2013), participants entered an intimate environment designed for one or two, where their presence within the space contributed – through disruptions and additions – to the generation of rhythmic pulses of coloured light, sounds that surrounded them, and vibrations that coursed through the base of the structure (see *Figures C.1–C.4*)¹.

Entering the *Orgasmatron*, the participant lay down, relinquishing, to some extent, the possibility of feeling in control, and accepting this new posture that emphasised the pull of gravity and what at first might have felt like a ‘passivity’ within the event. Movement shifted in register, being restricted to small, seemingly inconsequential gestures, most performed subconsciously – eye movements, breath expanding the torso, a fractional turning of the head, reflex reaction to vibration under their body, a hand raised, subtle shifts in weight: small adjustments and micro-movements in sympathy with the rhythms of sound, light and vibration affecting the participant. This was a rearrangement and testing of the potential of the body that perhaps began to challenge habitual ways of moving through an interactive work, as the spatial configuration and the shift in postural schema constricted freedom of movement, bringing to attention the way forces challenged the body’s freedom of action.

Lying in the *Orgasmatron*, connection to the ecology of operations in process was slowed down. There was nothing productive to ‘do’: no obvious action that would activate events, with a clear or immediate pay-off or resultant change in the work. Here participants were given the necessary time to tune in to the events building around them, allowing such minor forms of bodies to be noticed and evolve. This was less a space to command, and more one to listen with one’s body, to seek new connections and open out to an awareness of the gathering rhythm of events in which participants were becoming implicated. This required a new sensitivity to the

¹ *Orgasmatron* was exhibited in October–November 2013 at Blindsight, Melbourne. See Appendix A for further general description, and Appendix B for a detailed discussion of the application of parasitic tactics to the software patch used in the work.

prehensive pull of the event that was activated at the surface of bodies. Textures, the pressure of the base of the structure, and the vibrations building and coursing through the base of the *Orgasmatron* brought attention to the skin and the activated shared space in between, beginning to combine body, equipment and space. This was a listening with the whole surface – the body an expanded listening machine (an ear) – conflating senses (as it was perhaps also a new reflexive listening to or doubling of experience, a reflexive consciousness of this disruption of habits). Micro-perceptive vibrations (‘unsounds’) addressed various sensory organs; pulses of light, sound and the participants’ own bodily rhythms combined and syncopated in this surface-to-surface interfacing. Thus the body itself was reconfigured in a minor form as a ‘sensor’ – sensing and transducing different vibrational forces from the event – testing and opening up its affectual capacities to new intensities.

The *Orgasmatron* itself was as a combined ‘sensor’, its components tuned, not only towards the presence of the participant’s body entering, and their micro-movements that reflected slight shifts in attention, but also always tuning towards the multiple expressions of its own machinations. While the *Orgasmatron* was sensitive to a participant’s weight, vibrations, sounds and shadows that were a source of disruption to the systems, it also had sensors capable of interacting with its own expressions of light, sound and vibration. Here, in a complex series of feedback circuits, some sensors fed data from changing pulses of light into the development of sound events, others collected vibrational permutations that then affected lighting, while others sensed pressure changes in the floor of the pod that caused further expressions of vibrations, sound and/or lighting. This was a constantly shifting web of parasitic actions – a molecularisation of components: as pressure differentials disrupted light; light differentials disrupted sound (cutting, layering spatialising); and sound differentials altered vibration. The actions of bodies within this environment provided further parasitic disruptions to these emerging causalities: further variations in pressure, light or vibration as the *Orgasmatron* listened to and fed on (in its own way) its own constant permutations and exploratory combinations.

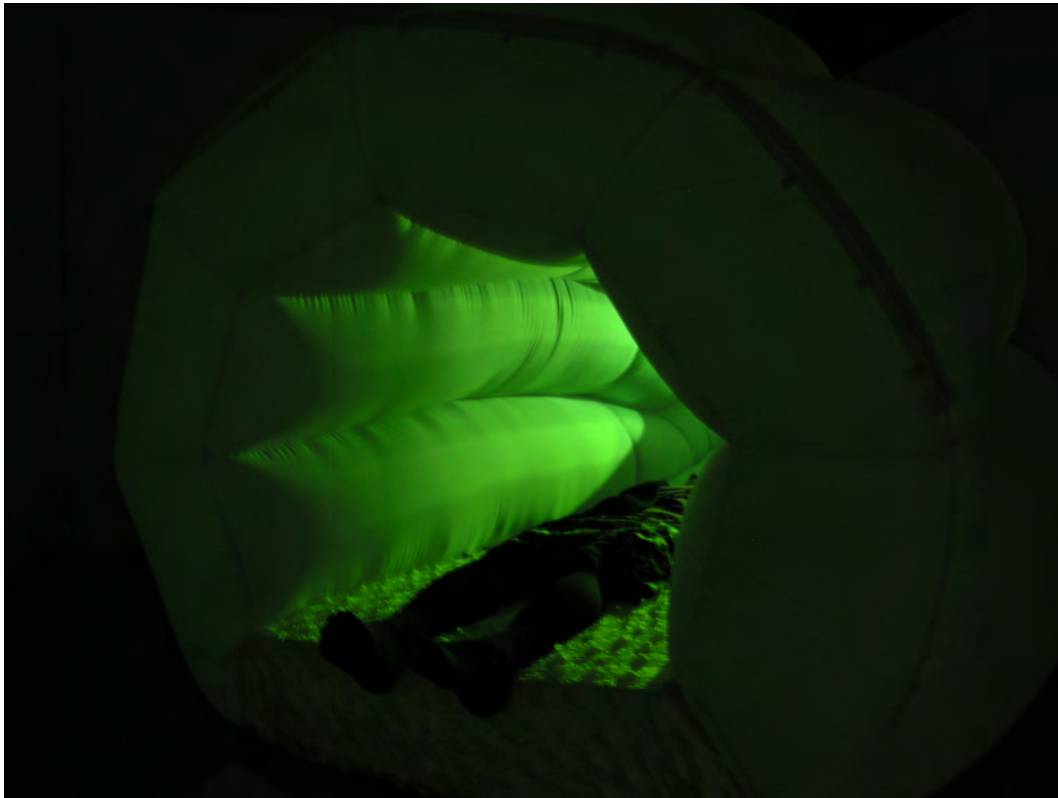


Figure C.1 Andrew Goodman, *Orgasmatron* (detail), Blindside, Melbourne, 2013.

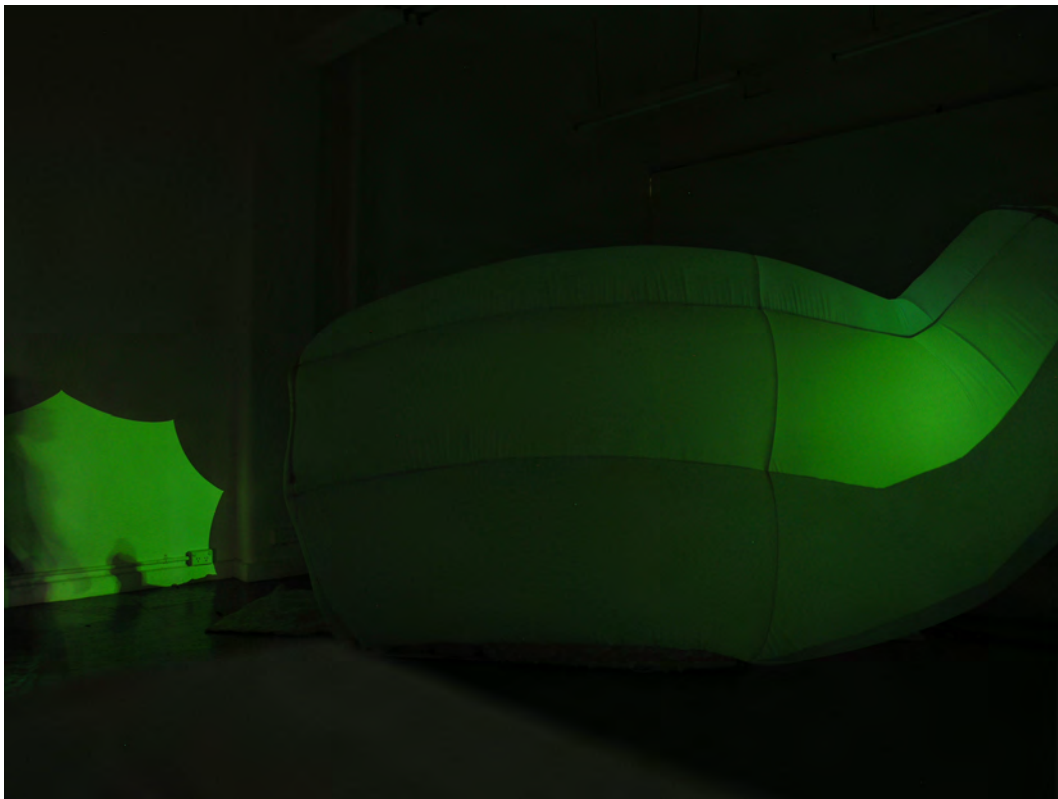


Figure C.2 Andrew Goodman, *Orgasmatron* (installation view), Blindside, Melbourne, 2013.



Figure C.3 Andrew Goodman, *Orgasmatron* (detail), Blindsight, Melbourne, 2013.



Figure C.4 Andrew Goodman, *Orgasmatron* (installation view), Blindsight, Melbourne, 2013.

These sensory capacities of the machine (bodies and technical components) folded into one another, to begin the collective individuation of the event: a mixing and shaping of a shared potential and responsibility. Such a turn towards a collective listening and expressing might be a tending towards a 'self-tuning': the will of the event to emerge and to carry forward. This questioned the position of the participants as the focus of the gathering of forces, as the work perhaps began to trouble distinctions between the subject of the event and the field from which it drew its energies. Rather, participants shared responsibility for this gathering, adding their own attention, care and potential to the attention and sensitivities that the *Orgasmatron* was itself able to generate². The concern here was less with being, but on a communication or engagement across a vibrational plane: a collective feeling for the gathering, located not only in the participant, but distributed throughout the components of the event.

The system disrupted the representation and comprehension of causal chains – how a particular rhythm, sound or pulse of light was connected to previous actions or events – as both participants and work were immersed in the ongoing collection of sensations (relationality in its own right). The engagement with affectual forces – both the collectively engagement of the event, and individual engagement by various components with different appetites or capacities – split, folded and remixed causality. The dynamic, complex and qualitative interfacings and parasitic actions, by continuing to disrupt any finality to the relations, here cultivated a suspension in the gathering of relation – creating a pull towards further relational iteration. In this, the parasite forced an opening to further expression, connectivity, and an ability to affect and be affected: a turning towards immanent construction of relation taking precedence over its stratification. That is, an opening of sense experiences – of both the participant and other components – towards a new preservation of difference³.

² This Lone Bertelsen has termed the beginnings of an 'ecological responsibility', a 'shared attentiveness and an affective field established across space, bodies and objects'. Lone Bertelsen, "Affect and Care in 'Intimate Transactions,'" *Fibreculture* 21 (2012): 39.

The ‘working out’ of these relational disruptions moved the system towards a concretisation. The components of the event were no longer as dependent on ‘outside’ intervention to facilitate communication between them – whether the participant’s body providing this interfacing or the work of a computer that stood outside of the mobile parameters of the work itself. Instead, the components were able to utilise their transductive sensitivities to create their own local relational interactions and to produce effects ‘that [were] independent of the design plan’⁴. But it was a concretising, in that this was never resolved to a fixed state of intertwined sub-systems, fully subsumed to the functioning of the whole⁵, but continued to be challenged by the disruptions that forced a re-gathering.

There was always some further potential for agitation, for the continued parasitic disruption allowing new connections to be performed. This was an agitation that was not reliant on a human participant for its energy, but was able to activate itself, to generate the minor gestures from within the event. This further potential was the tension that drove the transduction of the system, its provisional resolution of multiple potentials, and the ongoing working out of the problem of disruption and reconnection⁶. This was the conversation between the interferences that vibration causes to light, light to sound, and pressure to sound spatialisation that formed a collective individuation located in the event as it gathered.

Orgasmatron proposed a field of potential sensitivities and potential disruptions from which provisional connections and disconnections might begin to form a relational web. Here, I term the act of the *Orgasmatron* tuning into this potential – to begin to become an event – a ‘gathering ecology’. A gathering ecology implies a particular attention to the event’s own ability toprehend the potential of the field and gather or implicate components’ individual and shared capacities for connection and disruption into a collective event, and to give attention to the ‘minor gestures’ that are the

³ Andrew Murphie, *Becoming Interactive - Interactive Becomings: A Deleuze-Guattarian Approach to an Ethics of Interaction*, (PhD diss., Macquarie University, 1997), 163-5.

⁴ Gilbert Simondon, *On the Mode of Existence of Technical Objects* (1980), 31.

<<http://aaaaarg.org/text/3070/mode-existence-technical-objects>> [Accessed 2/2/12].

⁵ Ibid., 30.

⁶ This, Simondon states, is a characteristic of concretization or the intertwining of components in each other’s realisation, a ‘discovery of the dimensions according to which a problematic can be defined.’

event's own intensive drivers of individuation. This focus on a gathering ecology shifts interaction further, from the fixed or linear sets of relations between technical objects and bodies, towards what might be thought of as an ethics of relation, in that it places a focus not just on the flexibility and complexity of relations, but squarely on the opening of conditions for the event's emergence.

A potential politics of interactive art might be an ethics that addresses not the representation of relation, but its immanent construction, enabling an opening to further expression, connectivity and an ability to affect and be affected: to affirm both the singular nature of events and openness of relational potential⁷. It might seek to encourage 'the suspension of normal co-ordinates of sensory experience'⁸, that is, an opening of sense experience towards the new – the preservation of difference⁹ in a gathering ecology.

Gilbert Simondon, "The Genesis of the Individual", in *Incorporations* eds. Jonathan Crary & Sanford Kwinter, (New York: Zone books, 1992), 313.

⁷ Gilbert Simondon, cited in Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, trans. Thomas LaMarre (Cambridge & London: MIT Press, 2013), 65. Jacques Rancière describes ethics as including an 'identity between environments...[and] a principle of action', which perhaps could be seen in the concept of shared individuation, the emergent or gathering of an ecology that this research has promoted. Jacques Rancière, *Aesthetics and Its Discontents* (MA: Polity Press, 2009), 111. Jane Bennett sees that the 'ethical task' at hand is to 'cultivate the ability to discern non-human vitality', to become affectually open to the larger ecology. Jane Bennett, *Vibrant matter, A Political Ecology of Things* (Durham N.C.: Duke University Press, 2010), 14.

⁸ Rancière, *Aesthetics and Its Discontents*, 25.

⁹ Murphie, "Becoming Interactive - Interactive Becomings," 163–5.

Conclusion

*'All that is not information, not redundancy, not form and not restraints – is noise, the only possible source of new patterns.'*¹⁰

1. Parasitic friends and enemies

The parasite disrupts and creates; it 'makes life and kills'¹¹. It is the instigator of the new, it is 'an expansion; it runs and grows'¹². It causes disruption to gather and multiply, it bifurcates all, driving systems towards the novelty of new connection as it makes new systems: it is the best friend of complex emergent relation.

The parasite 'invades and occupies'¹³; it troubles orders, disrupts connections. It is a noise that 'destroys and horrifies'¹⁴, pulls things apart, confuses and obscures¹⁵, lays waste to plans. It is the worst enemy of the clear and simple relation.

Parasitic procedures trouble totalities, creatively disrupting clear communications, orders, hierarchies and dichotomies. Parasites can be thought not only as a third factor in relation, shifting the already established, but also as a difference that might be original, thrusting us always in to the middle of things going on. In the interactive art event, parasites fragment the simple causal relationship of a participant's intentional action and comprehensible change in the work; coaxing into existence minor interactive potentials that are situated within the major, problematising interactivity's boundaries, questioning both its definition and its mechanisms.

Parasitic action is machinic in that it is always productive, forcing into existence some new connection or complication. Borrowing from de Certeau, the parasite might be

¹⁰ Gregory Bateson, *Steps to an Ecology of Mind* (Chicago: University of Chicago, 2000), 386.

¹¹ Michel Serres, *The Parasite* (Minneapolis: University of Minnesota Press, 2007), 168.

¹² Ibid, 253.

¹³ Ibid, 253.

¹⁴ Ibid, 127.

¹⁵ Ibid, 12.

viewed as tactical, ‘insinuating’ itself within relation to rearrange and re-perform it. In this it remains open-ended and opportunistic, forming out of the available material.

The parasite is a noise that, though disruptive, is far from being chaotic. Rather it is intensely and complexly relational, implicating elements of systems into each other’s ongoing individuation. In this, it is potentialising – saturating the actualised with an inbuilt ability to continue to grow, modulate and add to itself.

The parasite is the friend of noise and the noise within friendships, but it is never friendless and never outside of relation.

2. Parasitic organisation

‘By making the system more flexible, it is made more complex, more dynamic; it is saved, given life, multiplied.’¹⁶

This research has attempted to question the programmatic and predictable nature of ‘interactivity’ in art, with a desire to rethink it into a more complex and subtle activity. It has asked what more an interactive work could do to encourage an experience of greater complexity: how else could it be made to operate? The research arises from a critique of the closed and preformed nature of interactive artworks, whose limitations, I have argued, manipulate the participant and limit any expansive or open-ended creative involvement. The potential for an event to intensively drive towards self-creativity and self-organisation has been positioned as an alternative that places the generation of relational forces as the primary concern within the practice. The transduction of relational forces, produced through internal difference activated by parasitic actions, has been proposed as a method for driving increased relationality within the event. At the same time, such disruptions can, I have demonstrated, be shown to create openness or an increase in self-generative capacities within the event.

However, one should not get too naively enthusiastic about self-organisation in and of itself. As Steven Shaviro points out, capitalism is the ultimate example of a self-organising system. Ethics, as a tending and care towards the quality of expression of a system, must also be considered, I have suggested, in order to, as Shaviro says, ‘imagine a form of self-organization that is not exploitative’ but a ‘genuine novelty’¹⁷. Thus this exegesis has argued for attention to both the style of relation instigated and, perhaps more importantly, to careful attention to the manner in which such relations emerge and are performed, together with their implications for the ecology of the events in which they occur. An ethical participation has here been thought of as one that nourishes the potential for creative movement or exploration within an event, a care for the conditions of emergence as well as what emerges.

Within this concept of the rise of self-organising capacities, and an ever-present concern for the manner in which they evolve, this research has then sought to address, both conceptually and practically, how the operations of the parasite might be utilised to drive intensive novelty.

3. Parasitic propositions

*The parasite invents something new...he builds a new logic. He crosses the exchange, makes it into a diagonal.*¹⁸

Both the practical works and this exegesis are constructed as a series of overlapping and intertwined tactical propositions for dynamic modulations of relation.

Propositions suggest, evoke or afford new combinations, and call forth multiple potentials. The directions taken in this research seek to dissipate and interrupt clear paths, to parasite each other in order to produce potentials that extend, rather than re-limit, the field of interactivity. In this sense, the research outcomes seek to avoid the construction of any new formula or unified theory. Instead, the purpose of the

¹⁶ Ibid, 94.

¹⁷ Steven Shaviro, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (Cambridge, M.A.: MIT Press, 2009), 128, n16.

¹⁸ Serres, *The Parasite*, 35.

propositions developed has been to develop a ‘toolbox’ of conceptual and practical parasitic actions that may be put to use to think and construct more open-ended and speculative participatory events. These ‘tools’ remain open to further and differing uses, so, in this, they have attempted to remain speculative while resolutely practical.

This research has been positioned as being within a ‘research-creation’ paradigm, involving parallel written and practical experimentation to test the propositions developed. This takes the form of a ‘thinking beyond’ interactivity’s current limitations, utilising a set of concepts drawn from process philosophy texts that lie at the base of this research¹⁹, and of practical works that experiment with combinations of these parasitic propositions. In utilising a methodology of meta-modeling, the research attempts to address not the representation or codification of relation, but its immanent construction, with potential laid bare, energised and primed for reconstruction. This is an ontogenetic, rather than ontological, approach to both text and artwork. The works engage with the concepts on an experiential level, just as they seek to engage in relational experience, rather than as a demonstration or representation of such forces.

This exegesis has speculated on the creative role of the parasite in relation, and the works created have experimented with these various noises, alongside others less central within the writing²⁰. The examination has concerned the modulations caused by disruptive noise, not only between body and artwork, but also within various assemblages of body, art, affectual and vibrational forces. The role that parasitic disruptions have in enriching the virtual – the multiplicitous future modulations of the event as an ecology – as well as the expression of actualised relational movement should not, as I have argued, be underestimated here, as it is these actions that saturate events with a richness of potential and an openness within close relational forces.

¹⁹ As Isabelle Stengers notes, a process-based philosophy ‘has no ambition to provide a unifying point of view...a possible object of knowledge.’ Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, M.A.: Harvard University Press, 2011), 130.

²⁰ As an art event is always multilayered in subtle and complex ways, various disruptions either escape notice or evolve incidentally out of the pursuit of other concerns of the work. The affectual and

In the exegesis the potentially radical role of everyday movements in the enaction of a minor space has been examined through the act of walking. The ways that the body immanently contributes to, and distributes itself into, the environment has been proposed as a method of problematising any notion of the space as a preformed whole. Here, movement makes new, minor relations within and between bodies through the disruption of boundaries. Suspensions in the processes of perception and its potential to disrupt habitual cognition – as a parasitic split between immersion in sensation and its causal comprehension – have been proposed as a tactic capable of slowing down or stretching the contraction of sensation to perception, and enabling a felt decentring of agency. The tactic has suggested a move in the research towards increasingly complex causalities that defer relational comprehension, while heightening sensations of processes of emergence. The concept of micro-perception was then examined through the potential of parasitic sound waves to immerse bodies within larger ecologies. These micro-perceptions have been proposed as a series of vibratory propositions, employed for their ability to interrupt habitual perceptive processes as they course through ecologies, disrupting bodies and forming new assemblages of surfaces. Interfacing was then examined as a performative and disruptive act that preferences flows of forces over object-based notions of information exchange, moving the event towards greater self-production and intensive modulation. This chapter suggested ways in which technical elements of an interactive artwork might become more relationally mobile and open-ended in their emergence through disruption²¹.

The practical works addressed singular iterations of combinations of these various layers, and scales of parasitic disruption, in order to experiment with both the effects on bodies implicated in the events, and the ways in which the events might drive towards greater self-regulation. As such, they did not resolve in any straightforward manner to one final artwork, but composed a series of inter-related experiments that

vibrational potential of colour, or the disruptive power of humour, are two potential further parasitic actions that receive only passing attention in the text, but were evident in some works.

²¹ In Appendix B, this interest in ways in which technical elements of an interactive artwork might become more relationally mobile and open-ended in their emergence through disruption was extended through a consideration of the potential for a parasitic approach to generative software, that is, as a non-linear, intensively-organised system activated through difference or noise. Software was proposed as another potential differential machine within the event, modulating flows of data according to the play of the intensive dynamics of its competing attractors on forces.

continued to question the potentials of the parasite, and to question each other's modes of operation.

If there is a conclusion to be reached from this research, beyond the opening out and questioning of the field and an exploration of some of the potential of these tools, it is that the enabling of parasitic actions on multiple layers or scales can begin to implicate entities in each other's evolution. I have termed this a 'gathering ecology' – with various parasitic disruptions not simply disrupting or creating afresh, but drawing such entities into an emergent collective individuation. I have defined a 'gathering ecology' in relation to Manning's concept of the 'minor gesture' that emerges from a complex ecology's own feeling of potential, as a series of differential events within a field that catalyse a collective tuning towards the field's relational concrescence into a dynamic and enmeshed ecology. I have speculated on how the various parasitic relations work to afford this increased interdependence on the virtual plane. To begin to feel part of such a gathering ecology might be a lure towards beginning to tend – to give attentive care – towards the qualities of how and what emerges, towards a shared responsibility²².

4. Parasitic movements

*'A minor art 'breaks with habitual formations and dominant signifying regimes.'*²³

There is the potential, it has been argued here, to create 'minor' positions: iterations of interactivity out of disruptions caused to its major forms by parasitic actions. The minor here lies not outside the major form – it is not concerned with the establishment of new systems – but is a mobilisation of the component parts of the major that allows a new relational movement or dynamic: a 'becoming-molecular'²⁴. In interactive art,

²² An interest or concern less with being, as Guattari states, but 'on the manner of being, the machination producing the existent'. Félix Guattari, *Chaosmosis: An Ethico-Aesthetic Paradigm* (Bloomington: Indiana University Press, 1995), 109.

²³ Simon O'Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (New York: Palgrave MacMillan, 2006), 69.

²⁴ Giles Deleuze & Félix Guattari, *Kafka: Towards a Minor Literature*, trans. Dana Polan, (Minneapolis: University of Minnesota Press, 1986), 37.

this molecularisation might be the expression of relational events that seek not to appear ‘professionally’ competent as interactivity, but experiments with new and singular expressions²⁵.

Such molecularisation has here been practiced as a parasitic methodology that moves the event towards the minor, enabling an exploration of relation – not only on a major scale, as artwork-viewer, but also on multiple, micro and emergent levels. Vibration and resonance, rhythm and diffraction, surface to surface connections and so on, all configure relation as transsituational – operating both within and across bodies in ways that disrupt established borders. An expanded empiricist approach to relation, I have sought to demonstrate, allows such trans-subjective forces to be accounted for, which for a process-based philosophy might be considered a primary basis of events. This approach sees relation move across lines, problematising clear divisions as a transductive force. It is at this level that the ‘minor gesture’ operates, and that ecologies begin to gather.

Rather than view the major and minor as necessarily dichotomous, they might more usefully (and realistically) be viewed as poles within which interactive artworks operate. Even the most predictable works have some element of novel development, and the most generative have at the very least a set of ‘enabling constraints’ directing the work. Within this context, what has been advocated for, and experimented with, in this research is a drive towards the minor, and both the molecularisation of as many elements of the interactive event as possible, and tending towards their increasingly co-causal enmeshing. The minor here becomes a concept of little use for the promotion of either the ‘anti-’ or naively ‘pro-’ interactivity camps, which, as discussed, tend to draw rigid conclusions and have limited use value. Rather, it is a methodology of molecularisation that allows one to rethink *from the inside* the very basis of what we are prepared to call interactivity, and to trouble its parameters.

²⁵ Felix Guattari & Suely Rolnik, *Molecular Revolution in Brazil*, trans. Karel Clapshaw & Brian Holmes (Los Angeles: Semiotext(e), 2005), 162.

5. Parasitic politics

*'To tend the stretch of expression, to foster and inflect it rather than trying to own it, is to enter the stream, contributing to its probings: this is co-creative, an aesthetic endeavour. It is also an ethical endeavour, since it is to ally oneself with change: for an ethics of emergence.'*²⁶

A minor art is 'political' in that it 'connects up different aspects of life' – new lines of causality and experience²⁷. This is not a politics of criticality, but of invention, an opening up to greater affectual and conceptual connection. A concern for politics is, I have argued, particularly pressing within the paradigm of interactive art, due to the questionable power relations that are so often enabled by the restrictive interactions that subject-object distinctions in the artworks enforce. Politics – power relations – are always at stake in considering relation on both personal levels (how we relate to the world or collectively move forward) and pre-personal levels (how we individuate)²⁸. To become ethical, politics must be 'immanent to the event', constructed through the open investigation into relation²⁹ – or, more specifically, into the forming of relation – that the work seeks to encourage.

A potential politics of interactive art might be an ethics that addresses not the representation of relation, but its immanent construction, enabling an opening to further expression and connectivity: an ability to affect and be affected. This research has attempted to inquire into not only the evolving power relations between subjects and artworks, but also into an ethics that can begin to concern the whole ecology of the event – how immanence or potential emergence can be enhanced within technical components such as software and sensor mechanisms, within and between sense organs through the utilisation of parasitic tactics. I have suggested here that a 'minor practice' of interactivity might be positioned as ethical. As has been indicated

²⁶ Brian Massumi, *A Shock to Thought. Expression After Deleuze and Guattari*, ed. Brian Massumi (New York: Routledge, 2002), xxii.

²⁷ Simon O'Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (New York: Palgrave MacMillan, 2006), 74.

²⁸ Manning, *Always More Than One*, 183-4.

²⁹ Ibid. The political, as Manning states elsewhere, 'acts on behalf of the ecology which gives rise to it.' Manning, "Weather Patterns...", 5.

throughout the discussion of the ethical potential of the artworks, the construction of new interactive machines out of the component parts of the majoritarian interactive machine allows new expressive possibilities of component parts to emerge.

Politics, or even ethics, may seem a heavy burden for such simple relational work. But it is, I would argue, a politics of dissention, of reconfiguration and extension, of etching out further space or potential no matter how slight. I have contended that the programmatic tendencies of interactive artworks contain difference and universalise experience – a politics in itself, albeit an oppressive one. Aesthetic acts that extend and prolong contrasts can be seen instead as ethical politics, as Massumi argues, in that they make felt ‘different capacities for existence [and] different life potentials’ and novel relational connections³⁰.

Nor should such a politics be conceived of as necessarily earnest – rather it may be better situated in play, and the disruptive power of such unproductive action that proposes starting rather than endpoints of relations. Here, again, this research seeks to arrive not at any solution, but rather to build machines (conceptual and sensorial) with which to allow a working through both of the potential of parasitic actions, and a questioning of the limits of interactivity.

This project has intentionally examined works that cover a broad range of relational experiences, and the practical research itself has also attempted to move somewhat away from easy classification as ‘interactive’, while still involving many elements of such systems. Near these edges or limits, the question must always arise: ‘But is this still interactive?’ This, I would suggest, is in itself productive, capable of always provoking some uncertainty as to what does or does not constitute an interactive work. It is an interactivity that by its existence challenges interactivity from within, injects tentativeness into its identity. It is a questioning that is productively disruptive to the very concept of interactivity: a parasite. As such, the research as a whole might perhaps be positioned as both parasitic and a minor practice; a gathering of an

³⁰ Brian Massumi & Joel McKim, "Of Microperception and Micropolitics: An Interview with Brian Massumi," *Inflexions* 3 (2009): 12.

ecology, a rethinking of interactivity that seeds further potential disruptions, always attempting to take it beyond the re-emerging majoritarian forms.

Appendices

This exegesis contains three appendices:

Appendix A contains written descriptions and images of all the artworks made as part of this research. The accompanying DVD contains further photographic, sound and video documentation of the key works.

Appendix B contains a further exploration of the potential role of the parasite in rethinking the design of interactive art events, exploring the potential role of software patches in these systems. This concentrates on a detailed analysis of the software design for the final artwork produced in the research, *Orgasmatron*, and the potential of rethinking software patch design through process philosophy.

Appendix C contains a short journal article co-authored with Erin Manning that discusses a rethinking of interactive art events. This piece covers a number of the areas addressed in the exegesis and indicates some of the thinking behind the research at its time of publication, and is written very much as a conversation between two artists attempting to think of practical ways to address some key issues within interactive art.

Appendix A

This appendix provides more prosaic description of the six individual and two collaborative projects developed within this research project, and the accompanying DVD provides further photographic, video and sound documentation. The projects are placed in chronological order, though in doing this there is no intended implication of a simple progression from one work to the next, as they investigate different aspects of the research and all engage with the various conceptual interests in their own ways. While there are clearly various key aspects and questions carry forward from one investigation to the next – if explored differently in each work – the further investigations not only fine-tune these ideas, but also develop new questions and areas of investigation – new components of the events that are opened to a minor potential and made to behave in a molecular fashion.

The accompanying DVD contains documentation from the key solo artworks. Headphones are recommended for listening to the video and sound documentation. A complete list of all the documentation on the DVD is provided at the end of this appendix (inside the back cover). In addition to documentation from the original gallery installations, three works (*Momo*, *Pnuema* and *Chorus of Idle Feet*) were restaged during a studio residency in early 2014 at the White Space in Castlemaine in order to further develop them, and some documentation from these iterations is included.

A chorus of idle feet

Details:

A chorus of idle feet, (2010), was exhibited in *Metasonic II*, July 1-17, at Allan's Walk ARI, Bendigo, curated by Jacques Sodell as part of the 2010 Liquid Architecture 11 Festival.

Documentation: Still images, video & sound recording.

Dimensions variable.

Movement, proximity & light sensors, cabling, computer, custom electronics, 2.1 channel generative sound, speakers, computer and audio interface.

Technical collaborator: Tony Falla.

A chorus of idle feet was staged in a busy walkway in the centre of Bendigo. A number of movement, proximity and light sensors were placed along a section of the walkway and within the adjoining gallery spaces (see *Figure A.1*). The walkway was chosen both for its proximity to the main gallery space, and because it was a busy corridor between a main road and the Bendigo Mall that would then provide a richly varying flow of data for the sensor systems. These sensors used the movement of both gallery visitors and those using the passageway to go about their daily business to generate changes in a soundscape that was broadcast into the walkway. In this the work sought to harness the energy of all the people walking the space, with the potential for their different speeds, paths and intentions to generate more complex data for use in the system. The soundscape generated by this system consisted of eight layers of five simple notes that pulsed at approximately eighty pulses per minute.

As movement was registered in the walkway new combinations of sounds and rhythms were initiated, and here the soundscape evolved greater complexity through these permutations. In addition the sounds diffracted – as sound waves interfered with each other to create further, combinatory waves (see Chapter Five, section 5.4.1). This meant that the relatively simple initial sounds developed much richer timbre as the notes not only combined to create chords, but also diffracted to produce new layers of sounds, adding to the overall tonal complexity.

Similarly, while the initial rhythms were simple beats, as new sounds were frequently being triggered and layered over each other this created very complex incidental rhythms. The DJ software utilised was reconfigured so that rather than new sounds being forced to conform to existing rhythms (quantization), each sound began to pulse at the exact moment a sensor was triggered. This meant that there were always differences in the starting points of each layer of pulses (sometimes very slight to create a jittering rhythm and at other times larger differences creating a clear syncopation). Thus a dispersed rhythmic structuring was initiated that diffracted the initial simple beats. Externally driven by movement in the space, incidental rhythms arose out of the internally generated tension of rhythmic difference of multiple loops, a contingent structuring rather than a centrally organising rhythm as an architect of sounds - rhythm as an expression of evolving difference.

The sensors were set to register movement in small spots of the passageway rather than across its whole width (for example, one sensor might only trigger directly in front of a shop window, another triggered only if the walker moved along the left hand side of the passage-way, and so on). This meant that rather than creating a set order of triggered sounds as each person passed down the passage, the sequence and combinations of sounds and rhythms varied with each person's chosen path

In addition the triggering of one sound loop also always caused the cessation of another layer of pulses, and caused sounds to switch from one speaker to the other, creating further permutations through disruption (see Chapter Two, sections 2.1.3, 2.2.2 and 2.3). Additional light sensors placed at the two ends of the passageway were linked to the creation of different tonal qualities in the soundscape, with decreasing light causing a darker, more resonant timbre. In these ways the work was configured so that certain parameters in the composition of the soundscape were taken out of the control of the artist – the choice and timing of any particular sound – and instead became linked to movement. This was the beginning of thinking through the idea of allowing complexity to arise out of the interactions within the event from an initial set of simple propositions. The work 'drifted' in the sense that there was no particular endpoint that it worked towards, and that while as artist I set the parameters of the event, control of certain parameters were given over to the participants.

This installation attempted to create a parasitic machine that utilized bodily movement to disrupt or recompose a soundscape. The speed of the permutations of sound became linked to both the speed of a body's movements, and the number of bodies within the passageway at any particular moment, so that a certain quality of busyness or stillness (that is, lack of change) was linked to the quality and degree of movement in the space, beginning to create a collective expression. The complexity of the layered sound meant that a participant could not, however, discern individual changes to the sounds that their movements were causing.

In assessing the work at the time, while I felt that the project had begun to develop some potentially interesting use of disruption of relations to create changes within the computer software – where, for example, a particular trigger might not only turn on a sound loop, but also affect the volume, tonality or sound selection of another loop (see Chapter Two, section 2.3). However the lack of 'felt' relation between the participants and their effects on the soundscape appeared as an issue. Although the concept of avoiding the demonstration of relation between a participant's actions and generative events was one that I revisited in later works, at the time I felt that the work had failed to lure an inquisitive approach within the participants, whereby they might have been encouraged to spend time consciously experimenting with moving in order to affect the sounds. Potentially the spatial configuration contributed to this, with the passageway encouraging movement from one end to the other rather than more diverse or contemplative actions (in a further iteration of the installation in 2014 the space used was a rectangular studio space, with a somewhat different style of movement encouraged – see the second video documentation of the work). In addition, while the work successfully utilised bodily movements to generate soundscape through disruption, it failed to engage with participants on multiple relational levels, making the experience somewhat one-dimensional. This, I felt, also contributed to a lack of attention and explorative investigation by those in the walkway.



Figure A.1 Andrew Goodman, *Chorus of Idle Feet*, Allan Walk, Bendigo, 2010. Digital video still.

Swarm

Details:

Swarm, (2011), was exhibited at West Space West Wing, Melbourne Central, January 18-30, 2011.

Documentation: Still images & sound recording.

Dimensions variable.

Tape, LEDs, LED controller, movement & light sensors, custom electronics, 3.1 channel audio loop, 4 channel generative audio, computer.

Technical collaborator: Tony Falla.

Voice work: Samantha Bews.

PLEASE NOTE: The video documenting this work (included in the DVD) presents a simulation of the way that sounds and light combine through still images and sound recordings. While video documentation of this installation was made in the gallery space with participants, the very low and fluctuating lighting, excessive noise pollution from the shopping centre and the cramped gallery space that did not allow sufficient distance from the work to capture usable video. Therefore this video has not been included in the accompanying DVD.

Swarm was exhibited in a pop-up gallery in a busy central Melbourne shopping centre. It consisted of a large central sculpture installed in a small, darkened room that changed in colour and intensity of light, and an accompanying generative soundtrack that at times emanated from the sculpture and at other times surrounded the participant. The work moved between a relatively quiet and inviting state, and, so much more 'aggressive' or agitated state when stimulated by the presence of bodies in the room (see *Figures A.2-A.4*). In its quiet state the sculpture had a subtle blue internal light, and the sounds (coming only from the central form) beckoned people to enter the space. However once people were lured into the dark, the colours of the work moved from blue through amber and then bright red as the voices became increasingly loud and threatening and began to swirl around the participants as it responded to their movements in the space, enveloping them in the installation. As participants left the room the artwork returned to its more inviting tone, seeking to lure more people. Thematically the work drew on a common Science-Fiction trope of

a ‘collective consciousness’ that lures individuals into being absorbed into a common body, with the work drawing direct inspiration from an iteration of this idea in the television series *Torchwood*¹.

On one level the work attempted to investigate how dramatic shifts in the affectual tonality of a space might shift the emotional state of the participant to create a heightened awareness of their body in a way that might begin to disrupt habitual body boundaries. This concept was taken from Francisco Varela’s writing on the ‘transparency’ or conscious awareness of otherwise habitual bodily actions and posture that sudden shifts in affectual tonality of a space can instigate².

More concretely the participant moved from being outside the work as an observer, so a feeling of being immersed in the work as the sounds expanded from a central form to encompass the whole of the space. The sounds used (words and phrases) were developed and layered to heighten their emotional force, with very heavy use of reverb and other effects to produce a ‘wet’, evocative sound. Light sensors attached to the sculptural form translated the increased brightness of light into further processing effects being added to the sound mix, creating more echoing and layering of voices. Thus in addition to the work responding to participant’s actions, in this work I began to experiment in a small way with systems that were capable of responding to other technical events in the installation – here creating feedback loops between light and sound. In this way an interest began to form in making a work that, although it drew on input from participants’ bodies, might decenter this relationship a little by drawing on other aspects of the evolving event itself to continue to generate change.

On another level I began to experiment with making a relational or interactive work where relations developed might be threatening, disturbing or uncomfortable for the participant rather than necessarily fun or ‘nice’ (as many interactive works seem to concentrate on), and where a participant might not be placed in a position control of

¹ *Torchwood*, Season 3 “Children of the Earth”, directed by Euros Lyn, 2009.

² This concept was taken from Francisco Varela’s writing on the ‘transparency’ or conscious awareness of otherwise habitual bodily actions and posture that sudden shifts in affectual tonality of a space can instigate. Varela, Francisco J. "The Specious Present : A Neurophenomenology of Time Consciousness." In *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and*

the interactions that occurred. Here the work also continued the experimentation with what level of demonstrativeness in the interactive systems was necessary in order to encourage an active participation. In the design some sounds were directly activated in relation to a body entering a particular area in the room³, while other sound and light events were activated as the result of an accumulation of various activities by participants, and at times activated by the changes in the sculpture itself. While this work undoubtedly had a greater affectual 'pull' on the participants than *Chorus of Idle Feet*, again the spatial configuration and perhaps the lack of subtlety or evolving complexity in the shifts in tone failed to engage participants for a long period or to encourage exploration of the whole space.

Cognitive Science, edited by F.J.Varela J.Petitot, J.-M. Roy, B.Pachoud. Stanford: Stanford University Press, 1997, 266-314

³ For example, a sound triggered at the entrance, so that a participant was made aware of the potential for interactive events to occur as soon as they entered the space. This, however, did not follow through the whole space as it might in many interactive installations, as further events were triggered by more complex sets of interactions and at times delayed reactions to movements were built into the events, making simple cause and effect relations hard to perceive.



Figure A.2 Andrew Goodman, *Swarm*, West Space West Wing, 2011. Digital photograph.



Figure A.3 Andrew Goodman, *Swarm*, West Space West Wing, 2011. Digital photograph.



Figure A.4 Andrew Goodman, *Swarm*, West Space West Wing, 2011. Digital photograph.

Pnuema

Pnuema, (2011), was exhibited at Off The Kerb, Collingwood, Melbourne, 27 May - 17 Jun 2011.

Dimensions variable.

Documentation: Still images, video & sound recording.

Fabric, wire, LEDs, LED controllers, custom electronics, movement & light sensors, 4.1 channel sound loops, 6 channel generative sound, computer, speakers, audio interface.

Technical collaborator: Tony Falla.

Drawing imagery and sounds from the Anime film *Nausicaä, of the valley of the Wind*⁴, the *Pnuema* created a windswept environment of alien forms glowing and pulsing in the dark. The work was an interactive installation work that consisted of a number of translucent sculptural forms hung in the centre of a small, darkened gallery space (see *Figures A.5* and *A.6*). A number of the sculptural pieces had internal lights, and speakers were positioned both within the mass of sculptures and around the perimeter of the space. Both the rhythms of light pulses and soundscape were generated by movement in the space, as sensors captured data on the passage of participants around the space and the incidental movements of the lightweight sculptures, and light sensors fed information on the pulses of light back into the generative system triggering further changes. As with *Swarm*, the work had several 'states' through which it could move, from a relatively calm state (in which 'singing' sounds emanated from the sculptures and there was a simple blue pulse in the central pieces), through to increasingly more dramatic states where more complex pulses of blue, amber and/or red lights pulsed and stormy sounds enveloped the space.

Pnuema directly quoted from the film source, both in the shapes that were used in the sculptures and in that many of the sounds were taken from the soundtrack to the movie and then remixed to produce the final samples. In this work I began to experiment with much more complex layers of manipulated sounds embedded into a sample as 'unsounds' (see Chapter Five), in order to attempt to increase the affectual

⁴ *Nausicaä, of the valley of the Wind*, directed by Hayao Miyazaki (Topcraft studio, Japan, 1984).

force of the samples. In these hidden sounds certain very high or low frequencies were emphasised and samples other than the dominant sound were hidden just below audible volume and/or frequency range, in order to experiment with ways in which sound might operate forcefully on bodies beyond aural cognition, in another layer of relational entanglement.

While this work continued an interest in changes to the affective tonality and the effects of this on bodies, there was a shift from the sudden changes in tonality of *Swarm* to a slower and subtler building of intensity and complexity that I continued to develop as a feature of subsequent works. In this the works began to focus more on how the collective actions over time would begin to gather and affect the development of the event, and ways in which the event might then begin to develop its own movement or energy (see the ‘Bridge’ at the end of Chapter Four, for further discussion of this aspect of the work). In this *Pnuema* moved further towards a more complex ecology of relations whereby the interactive capacities of the installation became less demonstrative of their relation to participants’ activities, while still in fact utilising these movements to generate changes (see Chapter Four, section 4.1).

The pulses of light in the sculptures were capable of not only moving from a simple blue pulse in the centre, to several different groups of blue pulses and then amber and red pulses in some pieces, but the pulse rate of each group was able to change speed as the soundscape became more active and dramatic (each group’s pulse rate was independent of the other groups). Rather than individual triggers from the sensors directly causing changes in light or sound, complex combinations of triggers determined what changes were generated, so that the effects of a particular action continued to reverberate through the work. For example, the composition and development of the layers of singing sounds that occurred when the space had no participants present was shaped by the system’s ‘memory’ of bodily actions that had occurred earlier, and any stormy sound sample required particular sequences of triggers within certain time limits in order to be triggered. Thus while the generative aspects of the work did relate to bodily movement, and a general sense of correlation between the style of activity and the quality of the sounds might be felt (in that increase activity and speed of activity led to quicker changes in samples and

spatialization of sounds, more violent sounds and increased volume), the participant was not able to discern a direct link between their position or gesture and what was generated. To some extent this began a rethinking that moved away from a system in which sounds were remixed through bodily activities (the body as interface), and towards constructing installations as sound making machines incorporating bodies as components. The exploration of this idea continued to develop in subsequent works.



Figure A.5 Andrew Goodman, *Pnuema*, Off the Kerb, 2011. Digital video still.



Figure A.6 Andrew Goodman, *Pnuema*, Off the Kerb, 2011. Digital video still.

Momo

Momo, (2011), was exhibited at Paradise Hills Gallery, Richmond, Melbourne, 26 august – 17 September.

Documentation: Still images, video & sound recording.

Dimensions variable.

Fabrics, lights, LED controllers, 6.1-channel generative sound, light & movement sensors, custom electronics, amplifier, speakers, paint, computer, audio interface.

Technical collaborator: Tony Falla.

Voice work: Samantha Bews.

Momo drew from a text by Antonin Artaud of the same name, which formed part of the initial impetus for the work. It consisted of an installation of soft sculpture pieces utilizing metallic and bright pink fabrics (with the walls of the gallery painted the same fluorescent pink), and with internal pulsing lights and a generative soundscape see *Figures A.7* and *A.8*). The sound was made principally of loops of words and phrases from Artaud's text, reconfigured by being cut up and reconstructed through the participants' movement⁵. The central sculpture 'conversed' with people in the space, becoming more active as approached, and other sculptural pieces echoed these words and distributed the sounds through the space. Light sensors were embedded into the main sculpture, which then had bright lights projected onto it, and shadows formed by participants in the space then triggered sound events. Thus in *Momo* bodies were positioned very directly as parasites disrupting established systems of relations (between light in the space and light sensors)⁶.

In using analogue light sensors to gather information, I sought to create a different kind of relationship between bodies, movement and the generation of sound. Here the sensors registered collective interruptions to the light source (overlapping bodies or body parts) rather than the positions of discrete bodies in the space, folding these interruptions into one another (see Chapter Six, sections 6.3.1 and 6.3.2). The system

⁵ Artaud's 'project' in theatre could be summarised as being the disruption of the meaning of the language through the excess of the body, and in a way the installation was a literalisation of this concept.

⁶ As with *Pnuema*, in this installation sound was produced regardless of the presence of bodies, whose actions then worked to reconfigure patterns.

was also sensitive to subtle variations in interruptions to the light, so that as a single moving body might create shadows of shifting and varying intensity over the surface of the sculpture – depending on the distance from a particular sensor and light source and the part of the body involved – potentially providing multiple and dynamic streams of data from the one body that was utilised to generate sounds. Here a more fluid kind of interfacing occurred, concerned with collective movements and subtle, mobile variations than with fixing and representing participant's actions (see Chapter Six, Refrain).

Momo continued several paths of investigation from the previous works. Firstly, The configuration of the sensors and software followed an ecological approach, where sound events were each controlled by multiple forces to create a complex web of relations rather than simple, easily read connections. For example, a particular sound having might have its volume controlled by one sensor, be turned on/off by another, be exchanged for a different sample by a third, and have its EQ parameters altered by a fourth sensor. Although this continued with the idea of developing relations beyond simple gesture-and-effect interactivity, here, in an experimental attempt to lure the participant into more sustained engagement with the work, a correlation between movement and sound generation was made much easier to discern (even though any direct control of what sound was generated was denied).

Secondly, in the words and the qualities of the sounds this continued an interest in the force of threatening, abrasive or disturbing sounds as a more difficult and disruptive type of relational connection to bodies. Sounds were again layered with 'unsounds' that emphasised the abrasive affectual tonalities – such as extremely high or low pitches – and layers of primal bodily sounds from the film *Alien 4*⁷ were also incorporated to heighten the disturbing and visceral qualities of the text, and to provide an evolving complexity to the soundscape through multiple levels of diffraction (see Chapter Five, 'Refrain', for a more detailed discussion of these aspects of the work).

⁷ *Alien 4*, directed by Jean-Pierre Jeunet, (20th Century Fox, USA, 1997).

This work continued to attempt to exploit not only more concrete relations and their disruptions (such as the light-body-shadow-sound connection), but to try to investigate more ephemeral types of relational ties. It became apparent, for example, that the extremely intense pink colour used for both the sculptures and the walls not only gave a feeling of immersion, but was also a powerful affectual factor in the installation. Alongside the qualities of the sounds, the intensity and unsettling and enveloping nature of the colour had a sensual impact that in a sense ‘infected’ the personal and psychological space of the participant, and the visceral nature of the sculptural forms perhaps contributed to this disruption of a clear or discrete space from which to observe the work. Also perhaps present was a tension between the uncomfortable nature of the colour and heightened emotional force of the language, and the potentially comical or absurd quality of the work and the theatrical nature of the words and their expression that disrupted or cut across this intensity.

As with *Chorus of Idle Feet* and *Pnuema*, an issue that arose out of this work was that the developments through disruption proved most interesting and complex when more than one participant was active in the space. The force of multiple intentions and styles of relating decentred the focus on an individual participant’s body, and seemed to contribute to a greater feel of the event having its own agency. The thinking through of the problem of how to increase this sense of the dispersed agency led to efforts in the final two solo works to create systems where a much larger number of components of the event were designed to be interdependent or co-causal, in order to increase the potential for, and heighten the level of, the disruptions.



Figure A.7 Andrew Goodman, *Momo* (detail), Paradise Hills Gallery, 2011. Digital Photograph.



Figure A.8 Andrew Goodman, *Momo* (detail), Paradise Hills Gallery, 2011. Digital Photograph.

Weather Patterns

Weather Patterns, (2011-12). Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman. Exhibited in *Entertaining the Environment*, curated by Kent Wilson and Andrew Goodman, at Deakin University Phoenix Gallery, Melbourne, 6-17 August 2012, Latrobe VAC, Bendigo, 12 September – 21 October 2012, & Bus Gallery, Melbourne 30 October – 17 November 2012.

Documentation: still images.

Dimensions Variable.

Fabric, speakers, amplifier, wire, cord, fans, light, touch & electro-magnetic sensors, custom electronics, Arduino boards, computer, audio interface.

Weather Patterns is an ongoing large-scale relational work instigated by Canadian Artist Erin Manning - the iterations of the work that I contributed to were in Melbourne & Bendigo during 2012. Black fabric components of the work were hung in the space, each piece having multiple connective devices built into it (magnets, buttons and button holes, studs, toggles) allowing manipulation and connection by both the artists and the public to create sculptural shapes. Embedded in the fabric were a number of electro-magnetic sensors that sensed proximity of bodies or other emitters of such signals (for example, phones and computers). A series of small speakers hung through the space played sounds captured from the gallery environment (see *Figures A.9* and *A.10*). The data from the electro-magnetic sensors drove the speed at which sound traveled sequentially through the speakers. The sound consisted of snippets of audio captured from the environment, and layered to create a soundscape of the day's activity in the gallery space that grew in complexity over that timespan. A series of sensors (movement, touch and light), used information from the gallery space and surrounding environment to build complex topological relations that drove the sound capture machine⁸.

In *Weather Patterns*, an attempt was made to utilize environmental factors such as electromagnetic forces that might not be perceptible to humans, and with this to place

⁸ That is, data from the sensors in and around the space was used to determine when recording was triggered and the length of each recording, how the sound samples were looped, and to apply effects to the sounds.

the work within a relational framework while moving away from centering the work on human experience⁹. The work not only formed relations with non-human forces, but also sought to resist explanation or demonstration of these connections for a human audience, seeking instead to encourage an attention outside the usual timespan that an artwork might invite from a viewer to draw out an awareness of ‘how space is crafted, how time itself is artful’¹⁰. Thus the work sought to create multiple, complex and sometimes ephemeral relations to bodies and the environment while resisting any human centered focus or easy reading of cause and effect, as sounds layered in a manner that made them incomprehensible, sensors noted both the electromagnetic presence of participants, animals, and devices such as phones and computers, and recordings were triggered by passing clouds or the movements of trees in the wind.

Weather Patterns sought to create a system that might be seen as ‘ecological’: producing and responding to a range of forces that shaped the particular environment within the gallery. The work was designed with the intention of making it responsive to complex variations and multiple subtle events so that linear causality was replaced with an ongoing sensitivity to variation within the field (see Chapter Four, ‘Bridge’). In this it sought, in Manning’s words, ‘to focus directed toward the environment’s own capacity to make felt the complex ecologies at work’¹¹, seeking to enable an environmental agency.

⁹ Erin Manning, in Andrew Goodman and Erin Manning, "Entertaining the Environment: A Conversation," *Fibreculture* 21, (2012), 24.

¹⁰ Ibid.

¹¹ Erin Manning, "Weather Patterns, or How Minor Gestures Entertain the Environment." In *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, eds. Jay David Bolter Ulrick Ekman, Lily Diaz, Morten Sondergaard, Maria Engberg, (New York: Routledge, forthcoming, 2014), 6.



Figure A.9 Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman.
Weather Patterns (detail), 2011-12. Deakin University Phoenix Gallery.
Digital photograph.



Figure A.10 Erin Manning, Nathaniel Stern, Bryan Cera & Andrew Goodman,
Weather Patterns (installation view), 2011-12. La Trobe VAC. Digital photograph.

Participation in this project was productive for my research in encouraging both a more ecological approach to the interactive systems, utilising technologies of interactivity in less human focused ways, and in pushing the deferral of the comprehension of relational causality in order to perhaps heighten immediate sensual immersion in an event (see Chapter Four, section 4.1). However, while part of the aim was to then encourage a new attentiveness and feeling in the viewer towards the forces in this emergent relational field, this iteration of the artwork was not particularly successful in achieving this.

The work clearly pushed away from the representation of relation between participants and the technological components of the event, and from the imposition of normative subject-object relations. However I would now question whether this was replaced with any viable alternative that actually encouraged a different kind of engagement. Perversely, it became something of a demonstration or representation of the theories, demonstrating these underlying ideas rather than turning participation into an event of discovery on any deeper bodily level. That is, while it did prove a useful exercise for the artists involved to experiment beyond the usual configuration of interactive systems, it failed to replace this with another viable form of engagement for participants, and thus they often felt distanced from the work. While the work itself was sensitive to subtle environmental fluctuations, it perhaps pushed too hard into a refusal of human comprehension in the systems at work, leading again to a feeling of watching a technological event from the outside rather than a sense of implication and immersion in events. In this it failed to activate sustained relational or ‘minor’ potential – to enable conditions for novel relations to continue to arise rather than simply imposing new conditions – and to encourage within participants attention and care for the potential of the event that might have lead to more sustained participation. Again this demonstrated some of the difficulty in applying the theory of a relational event to the practicalities of constructing participation outside of the normative paradigm of interactivity (See Chapter One for more general discussion of these issues, and Chapter Two, sections 2.1.1 and 2.1.2).

Into the Midst: Immersion Immersive

Into the Midst: Immersion Immersive (2012), Senselab collaborative project, Society for Art and Technology (SAT), Montreal, Canada.

Documentation: still images.

Into the Midst was a five-day collaborative research-creation workshop in the *SATosphere*, the Society for Art and Technology's interactive immersive projection environment. The workshop featured hands-on experimentation toward exploring the potential for the SAT building to host the emergence of new forms of experience. The experimentation was preceded by online philosophical explorations over the previous year aimed at fashioning a shared vocabulary and understanding of the concepts. Key issues the workshop attempted to address were: how interactive movement within the space could modulate the experience of the projected space (and vice versa) in ways that altered habitual modes of perception; how the relationship between inside and outside spaces might be modulated, using the SAT building and its immediate urban surroundings as raw material; how frustrations of expectations regarding the responsiveness of interactive systems might lead, positively, to new qualities of aesthetic experience. The results were presented performatively to the public in the *SATosphere* – a space constructed as a large, high ceilinged dome designed for 360-degree interactive video and still image projection, with thirty two-channel surround audio built into the walls of the room – over a two-hour period at the end of the workshop (see *Figures A.11* and *A.12*)¹².

¹² This description is adapted from the blurb on the project on the Senselab site, available at: <http://senselab.ca/wp2/events/into-the-midst/>



Figure A.11 Senselab collaborative project, *Into the Midst: Immersion Immersive* (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.



Figure A.12 Senselab collaborative project, *Into the Midst: Immersion Immersive* (performance documentation), Society for Art and Technology, Montreal, 2012. Digital photograph. Photo: Hannah Buck.

Although the event did include a number of activities intent on making relationships between the SAT and its immediate environment¹³, a particular aim of the workshop that I was involved with was to try to address the architectural and technical conditions of the *SATosphere's* environment itself. Generally the space has been used for interactive experiences and audio-visual spectacles, in which the viewer is placed in a relatively passive role lying down gazing up at the ceiling, and in which the viewers' attention is focused centrally and therefore a somewhat homogenized experience is provided for all viewers. For those of us within this workshop particularly concerned with finding a 'minor' potential within this set-up, we concentrated on trying to promote more active and individual experiences within the space through the reuse of this technology, rather than through simply diffusing its hold on the viewer by introducing other activities into the space (although sound and images from outside activities were utilised).

These attempts to reactivate the technological and spatial configuration of the dome involved such things as creating a soundscape that played words whispered softly through individual speakers in a random pattern (these consisted of movement prompts in a number of languages). These quiet sounds could only be understood by walking around the perimeter of the space (and even then only when in a suitable language), and were designed to demand a closer attention, a different spatial activation and singular experiences within the space, while also potentially linking into movements that might be performed. Alongside this we played with the projection of images that disrupted the smoothness of immersion of the viewer into the projected illusion. These were coupled with movement exercises involving long threads instigated by members of the workshop, and attempts to involve audience members in movement activities within the space.

However we found that as soon as any images were shown this always had the effect of luring audience and participants alike into a centralized focus on the ceiling

¹³ The SAT sits uncomfortably in central Montreal in a poor and run-down area known as the red light district, and as a site of both technological innovation and demonstration and middle-class entertainment has been criticized for its lack of invitation to the residents of the area and inability to address their needs and interests. Chapter Three of this exegesis discusses an iteration of Nathaniel Stern's *Compressionism* performative work that was experimented with in the immediate environment surrounding the SAT as part of this project.

projections. Likewise any use of surround sound (for example, we constructed a surround soundscape of the activities of the streets surrounding the SAT), immediately seemed to encourage spectatorship, creating a clear divide between an active technologically based work (projected onto the surface of the dome) and a relatively passive viewer. The SAT had been so rigidly designed to facilitate the type of interactive experience between subject and technological object of which this research has been critical as to make any other type of engagement extremely difficult to initiate. Not only was the technological and spatial design resistant to other uses, but it also seemed capable of quickly absorbing and nullifying the effects of any such agitation of its structure (see Chapter One, 'Bridge' for further discussion of this project).

The configuration of the Dome here clearly demonstrated a link to some of the key areas of interactivity that a relational thinking has criticised, enforcing a productive relationship between the events in the space and their consumption by viewers in a mode that does not easily allow any other type of relationship to arise (see Chapter One). The space was clearly 'stratified', in de Certeau's terms, as an open, homogenised space that preferenced the visual over other modes of engagement (see Chapter Three, section 3.2). The lack of differentiation in the layout and clear divide between projection space and viewing space perhaps all contributed towards this rigid structuring. Furthermore, the fact that one could clearly view the projections from any position in the dome (and that projections appeared the same from any position) increased the difficulty in providing individually tailored experiences. Whilst the artists involved attempted to address this issue, perhaps – considering the scale of the space – the (intentionally) ephemeral nature of the interventions failed to sufficiently disrupt or 'molecularise' the elements to allow new configurations to arise that might disturb the stratification. Beyond the physical structuring of a clear divide between the technical machinations and the viewers, perhaps the history of the use of the space for spectacle had naturalised a certain type of expectation in viewers of particular type of relationship that denied for many of them the possibility of thinking beyond these modes of interacting, preemptively modeling and limiting the potential of the event.

Perhaps also the events failed to sufficiently engage audience members in a sufficiently complex and multilayered experience to draw their attention away from the comfortable position of viewers of a video display. Inviting them to engage in movement, or to crochet with the artists still kept a fairly rigid divide between those in control of the events and those asked to participate without being involved in the generation or thinking through of the logic of these activities. In this way a more active involvement of the public was still limited to set parameters, rather than a more flexible and molecular event that might seek to destabilise the parameters themselves.

The artists involved in the project were aware of these issues in theory, and certainly attempted to think beyond these co-optable dynamics of relation that so easily lend themselves to dominant power structures, and develop more complex ecologies of relation that might resist productivity and spectacle. As with *Weather Patterns*, one might in reflection question whether the group had failed to concentrate on enabling conditions for the continued activation of the space and participants' relations, and instead ended up to some degree trying to demonstrate methods or ideas to an audience, and in this way failing allow sufficient space and time for novel relations to arise, instead simply imposing new conditions. The idea of a 'minor' use of the space here could be thought to have fallen into the trap of seeing reactivation of the space as a form that could be obtained, rather than a continued event of disruption of a system (see Chapter two, sections 2.1.1 and 2.1.2). From the perspective of this PhD research, this could be seen as a mistaken focus on the establishment of new relation rather than the kind of continual splitting, disruption and disjunction to relation that the tactic of the parasite might enable: a focus on an end point rather than process.

This is not to criticize the intent of the participants, but it perhaps again demonstrates the often-present gap between theoretical understanding of rethinking interactivity and the more problematic practical application of the principle when designing such events that this research has sought to address. Whether such a rigidly designed and controlled space can be successfully utilised for the kind of experiments in relation that this project intended remains questionable. Perhaps the more interesting elements of the project were those that escaped the SAT space altogether and instead engaged

with the space and social life outside the building, such as the *Compressionism* performances discussed in Chapter Three.

Psychopomp

Psychopomp, (2012), was exhibited at Kings ARI, Melbourne, 16 November – 8 December.

Documentation: still images & video.

Dimensions variable.

Digital video loop 18'53", 4.1 surround sound, speakers, amplifier, DVD player, sound suits (fabric, cotton, wire, LEDs, and light, sound, tilt, proximity, touch & bend sensors, custom electronics).

Technical collaborator: Tony Falla.

Performance collaborator: Susan Dasya.

Performance filming: Jim Coade.

Psychopomp consisted of a nearly nineteen minute performance piece in which two performers moved collaboratively in a darkened space wearing 'sound suits' that generated and responded to sound and light (see *Figures A.13* and *A.14*). It was envisaged as a 'voodoo ritual' for an imagined future – a performance situated in a liminal space between spirit world and a dystopian Science-Fiction otherworld. The soundscape utilised samples and effects reminiscent of 1950s and 1960s Science fiction films¹⁴. The exhibition of this work consisted of digital video documentation of the performance, with surround sound and the two sound suits hung in the space, where they pulsed with light in response to the soundscape. The suits themselves contained a variety of sensors (tilt, bend, light, touch and proximity) that then generated analogue data in response to movements, alongside light sensors responding to the embedded LED systems in the costumes. In addition, sound sensors – placed in front of each of the four speakers that were positioned around the perimeter of the performance space – generated data in response to the changes in volume emitted by each particular speaker.

¹⁴ The sound design of many Science fiction films from this era utilised early analogue synthesisers and sound generators such as Theremins, and featured heavy use of effects such as reverb, distortion and chorus, concentrating on what might be thought of as the affectual qualities of sounds – the atmosphere they created – rather than melody or orchestration. They were often layered in simple repetitive loops to create jarring and unsettling soundscapes. In *Psychopomp* the sounds were generated through digital versions of these analogue synthesisers, with data from the sensors controlling the effects processing these sounds as well as the ways in which they were looped and rerecorded.



Figure A.13 Andrew Goodman, *Psychopomp*, digital video still, 2012.



Figure A.14 Andrew Goodman, *Psychopomp*, (documentation of sound suits), 2012.

The data from all the sensors was used to generate sound events – both the playing and interruption of sound samples, changes in volume, tonal qualities (resonance, echo, EQ) and the spatialization of each sample. Some samples were looped, so that they played until an action caused them to be replaced by another sample, while others played once when triggered through a complex chain of relations. At certain triggers, sounds from the performance were also recorded by the computer system and then looped into increasingly complex layers and replayed into the space. Again, the system was configured to emphasise the potential for disturbance to any sound event, both through the potential for the causal chain of events to be disrupted, and through the distortions to any actualised sound in the form of effects and volume shifts. The LEDs embedded in the suits were divided into five sets, each operating independently, with the sets turning on in response to volumes through the various speakers.

In *Psychopomp* the two performers were placed in a situation where their vision was greatly reduced by the costumes and they became reliant on other sense information to navigate the space. In this way the event worked to heighten other senses, particularly sound – as the spatialised sounds gave some indication of direction – and touch. But the costumes and shifts in sound spatialisation made these unreliable, giving a sense of quite settling into comprehension of the space. In this the work disrupted habitual forms of relating, particularly the dominance of vision, but also worked to interrupt any new habits that formed during the event, as the continued shifts in sense information made all connections clearly temporary and unreliable (see Chapter Three, ‘Bridge’ for further discussion of these aspects of the work).

Psychopomp attempted to extend the research much further in two specific areas that had both been factors in the design of the previous works. Firstly, this involved removing for a performer all possible comprehension of the effects of their actions on the generative events. That is, while their movements were instrumental factors in all the sound and light events (both those actualised and those that existed as a virtual remainder or further potential of the event), the complexity of the causal chains meant that performers could neither control nor comprehend a direct causal link. This was accentuated by the fact that any actualization or disruption to an actualization had multiple potential causal chains (including the fact that one performer’s actions could

directly interfere with the causal chains put in place by the their collaborator's movements), and that while performers were always partly responsible for actualized events, it was a complex system within which they contributed some input to a larger web of relations (see Chapter Four for further discussion of these ideas).

By exponentially increasing the relational inter-connections between the various aspects of the performance (sound, light and movement), the generative possibilities and complexity of events was greatly increased. Each light event, for example, potentially drew from movement, data from other light events and data from any of the simultaneously occurring or recent sound events (again, these relations were often more concerned with disruption than simple connectivity, see Chapter Two). This more clearly drew the relations towards an ecological model, making each causal chain both more mobile and flexible and recursive, as systems fed back into each other. In this the work began to move much more clearly towards a collective or 'machinic' model, whereby individual differentiation any component had effects on other components and collective expression, and the whole produced effects outside of the capacities of the components.

Here, rather than a participant-artwork relation, with generative events occurring through a conversation between the two components, the work moved much closer to a 'concrete' formation whereby a certain interdependence was achieved. That is, while as artist I had set some original parameters of the types of relational connections, the complexity of the potential connections, and the ability of any one event (a gesture, LED lighting up or sound, for example), to affect a large number of other events (either individually or through combining with other gestures, sounds or lights) meant that exactly which event affected the development of another event was complex and fairly open. In addition each event might be the result of multiple other occurrences, and go on to play a part in many other events. Thus as it developed chains of intensive causality, the relations between sound, light and movement events became more complexly interdependent or enfolded, both moving away from linear causality and towards a self regulation – evident both on this actualised level, and in terms of the intertwined potential for further relational folding of the components (see Chapter Six, section 6.3.3 for a discussion of concretisation).

While these elements were designed intentionally, perhaps in execution the work went further than expected in thrusting the performers throughout the performance into a highly mobile and uncertain field from which point they struggled for any sense of stability. The lack of stable relation (to sound, light, spatial position and relation to the fellow performer's whereabouts), forced a tentative and exploratory style of movement, as the performers found themselves 'swimming' in a sea of mobile and unreliable sensory information. These complex feedback systems between bodies and technical objects and between technical objects themselves then had a strong influence on the design of the relational systems of the final work *Orgasmatron*.

Orgasmatron.

Orgasmatron was exhibited at Blindsight, Melbourne, 16th October-2nd November 2013.

Documentation: still images & sound recording.

Dimensions: approx. 3.2m x 1.2m x 1.6m.

Inflatable, speakers, amplifiers, generative 15-channel sound, video projector, digital video loops, custom electronics, light, pressure, tilt and vibration sensors, audio interface.

Technical collaborator: Tony Falla.

Voice work: Samantha Bews.

Inflatable construction: Inflatable Image Technologies.

Orgasmatron consisted of an inflatable ‘pod’ that one or two participants could lie down and move around in (see Figures A.15 and A.16). The work drew on iterations of the orgasmatron from the films *Sleeper*¹⁵ and *Barbarella*¹⁶, and incorporating some sounds from the latter alongside recorded voices and mechanical sounds from *The Fly*¹⁷, aesthetically quoting the soft machines and inflatables of the design of *Barbarella*¹⁸. Projected coloured light pulsed within the interior, changing colour and speed as the Orgasmatron became more excited; speakers surrounding the bodies whispered and spoke; and tiny speakers and a subsonic speaker sent ripples of vibrations through the base on which participants were lying. Sensors embedded in the base captured data from the weight and movement of bodies¹⁹, light sensors captured shifts in brightness caused by both the projections and shadows from bodies, and vibration sensors captured the vibrations at various points in the base of both sounds and bodies. The work had a ‘passive’ state, in which it pulsed slowly and emitted the occasional sound enticing participants to enter. When a body entered the interior space this activated the pod, which then began to slowly move through several stages of excitement (with corresponding increases in volume, layering, disruption

¹⁵ *Sleeper*, directed by Woody Allen, (Rollins-Joffe Productions, 1973).

¹⁶ *Barbarella*, directed by Roger Vadim, (Paramount Pictures, 1968).

¹⁷ *The Fly*, directed by Kurt Neumann, (20th Century Fox, 1958).

¹⁸ Production design was by Mario Garbuglia.

¹⁹ As the base was made of dense foam it retained a memory of pressure for a number of minutes after a participant had exited the artwork, so that this trace continued to influence the generative factors for

and shifts in spatialization of sounds, brighter and quicker pulses of light and increased vibrations sent through the base).

In these developing stages, with their accompanying shifts in sound, light and vibration, the artwork drew on the actions and particularities of bodies – their weight, size, shape and position affecting sensors as well as their actions – and on the multiple feedback systems between light, vibration and sound events, with participants' bodies acting as disruptive elements within these systems. In this way the generative events built on themselves, gathering until a final level of excitement was reached, at which point the system stayed until the participant/s exited the space. While the generative events had three general 'stages' through which they moved, the exact composition of multiple sound layers (and the ways these sounds were spread throughout the fifteen channel spatialization), the order and speed of light pulses, and the vibrational intensities and directions were always recomposing and adjusting. This meant that within each stage of excitement the combination of events and their collective expressions were relatively open. The subtle actions of the participants – a turn of the head, a shift in weight or the raising of a leg, for example – influenced the speed at which this excitement gathered and contributed to the creation of the sound, light and vibrational events. But, as with Psychopomp, participants were never solely responsible for any one event, nor were they able to consciously control or comprehend these causal chains. For *example, vibrations from sounds could alter the colours projected, light variation then might affect sound qualities and triggers and so on*. However, in that the style of response of the participants – that is, the degree to which they lay still or were active within the space – correlated with the speed of change and development, they were perhaps able to feel some level of correlation between their response to the Orgasmatron and its response to them.

The work evolved rhythms – overlapping pulses of light, vibrations at different frequencies that vibrated bodies, speakers and the pod itself, and the rhythms of the subtle movements of bodies moving inside the pod. These rhythms proposed a relational connection through 'infection' (that is, sympathetic resonance), with

some time. Fabric tubes inside the pod had small strips of photo-sensitive plastic embedded in them that absorbed light from the video and carried a trace of these light events.

surfaces of different viscosities (skin, speakers, plastic, air) vibrating together or against one another (see Chapter Five, section 5.4.1). Bodies were also enmeshed through disruption, adding to or interfering with signals being transmitted – slowing vibrations, creating new light variation through shadows, cutting sounds and dispersing them through a series of speakers, and so on.

Again, in this system of multiple chains of intensive feedback, the work moved further towards becoming a machinic system of complexly interrelated components implicated in each other's development – that is, towards an ecological configuration of relations. As discussed in detail in Appendix B, in this work the software operations were to some extent open to select (in an automated sense) from open-ended potential ways of connecting. The aim was to shift the software operations – which had in previous works already moved towards systems generating change through disruption and disconnection (see Chapter Two) – towards a system designed to be responsive to its own evolving parameters and develop, evolve or drift into a more complex and concrete network in and of itself, rather than just relying on input from other components of the work to generate change.

Orgasmatron addressed bodies through multiple senses, and while bodies were still an integral component in generating events, they were decentered within the work as the system itself had multiple sensory capacities from which to draw stimulation. That is, the bodies were not the work's complete focus, and change was primed to occur not only in the interfacing between biological and technical, but also between varieties of components. Here the work paid attention to the development or changes occurring in many facets of the event, becoming capable of a self-generative capacity in which the body was immersed, and to which it added further potential creative disruptions (see the 'Coda' preceding the conclusion).



Figure A.15 Andrew Goodman, *Orgasmatron* (detail), *Blindside*, 2013. Digital video still.

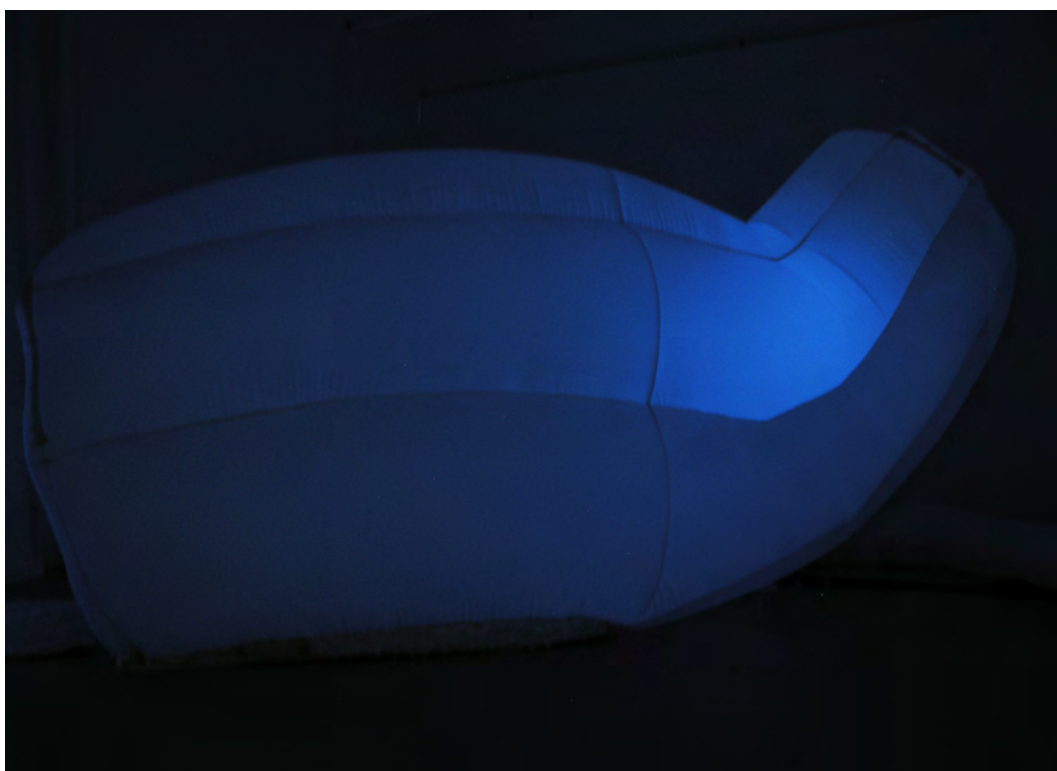


Figure A.16 Andrew Goodman, *Orgasmatron*, *Blindside*, 2013. Digital photograph.

DVD List of Media

All images, video and sound recording by Andrew Goodman unless noted otherwise.

A Chorus of Idle Feet:

Still Images:

1. *A Chorus of Idle Feet* (installation view), (2010). Dimensions variable. Movement, proximity & light sensors, cabling, computer, custom electronics, 2.1 channel generative sound, speakers, computer and audio interface. Digital video still.
2. *A Chorus of Idle Feet* (installation view), (2010). Details as above. Digital video still.

Sound Documentation:

1. *A Chorus of Idle Feet*, (2010), 4.1-channel audio remixed to stereo digital audio. Duration 4' 30".

Video Documentation:

1. *A Chorus of Idle Feet*, (2010). Digital video of gallery installation. Duration 1'35".
2. *A Chorus of Idle Feet*, (2014), Digital video of studio installation. Duration 2'49".

Swarm:

Still Images:

1. *Swarm*, (2011). Dimensions variable. Tape, LEDs, LED controller, movement & light sensors, custom electronics, 3.1 channel audio loop, 4 channel generative audio, computer. Digital photograph.
2. *Swarm* (detail view), (2011). Details as above. Digital photograph.
3. *Swarm* (detail view), (2011). Details as above. Digital photograph.
4. *Swarm* (detail view), (2011). Details as above. Digital photograph.
5. *Swarm* (detail view), (2011). Details as above. Digital photograph.
6. *Swarm* (detail view), (2011). Details as above. Digital photograph.
7. *Swarm* (detail view), (detail), (2011). Details as above. Digital video still.
8. *Swarm* (detail view), (detail), (2011). Details as above. Digital video still.

Video Documentation:

1. *Swarm*, (simulation of installation) (2011). 7.1-channel audio remixed to stereo digital audio. Duration 2'19".

Pnuema:

Still Images:

1. *Pnuema* (2011). Dimensions variable. Fabric, wire, LEDs, LED controllers, custom electronics, movement & light sensors, 4.1 channel sound loops, 6 channel generative sound, computer, speakers, audio interface. Digital video still.
2. *Pnuema* (installation view), (2014). Details as above. Digital video still.
3. *Pnuema* (installation view), (2011). Details as above. Digital video still.
4. *Pnuema* (installation view), (2014). Details as above. Digital video still.
5. *Pnuema* (installation view), (2014). Details as above. Digital video still.
6. *Pnuema* (installation view), (2014). Details as above. Digital video still.
7. *Pnuema* (installation view), (2014). Details as above. Digital video still.
8. *Pnuema* (installation view), (2011). Details as above. Digital video still.

Video Documentation:

1. *Pnuema* (2011). Digital video of gallery installation. Duration 3'00".
2. *Pnuema* (2014). Digital video of studio installation. Duration 6'46".

Camerawork: Jim Coade.

Momo:

Still Images:

1. *Momo* (detail), (2011). Dimensions variable. Fabrics, lights, LED controllers, 6.1-channel generative sound, light & movement sensors, custom electronics, amplifier, speakers, paint, computer, audio interface. Digital Photograph.
2. *Momo* (installation view), (2011). Details as above. Digital Photograph.
3. *Momo* (installation view), (2011). Details as above. Digital Photograph.
4. *Momo* (installation view), (2011). Details as above. Digital Photograph.
5. *Momo* (installation view), (2011). Details as above. Digital Photograph.
6. *Momo* (installation view), (2011). Details as above. Digital Photograph.
7. *Momo* (detail), (2011). Details as above. Digital Photograph.
8. *Momo* (detail), (2011). Details as above. Digital Photograph.

9. *Momo* (detail), (2014). Details as above. Digital Photograph.
10. *Momo* (details), (2011). Details as above. Digital Photograph.
11. *Momo* (detail), (2014). Details as above. Digital Photograph.

Video Documentation:

1. *Momo* (2011). Digital video of gallery installation. Duration 3'22".
2. *Momo* (2014). Digital video of studio installation. Duration 3'41".

Camerawork: Jim Coade & Andrew Goodman.

Psychopomp:

Still Images:

1. *Psychopomp Soundsuits* (2012). Each approx. 2.1 m x .8m x .6m. (fabric, cotton, wire, LEDs, and light, sound, tilt, proximity, touch & bend sensors, custom electronics). Digital photograph.
2. *Psychopomp* (2012). Details as above. Digital video still.
3. *Psychopomp* (2012). Details as above. Digital video still.
4. *Psychopomp* (2012). Details as above. Digital video still.
5. *Psychopomp* (2012). Details as above. Digital video still.
6. *Psychopomp* (2012). Details as above. Digital video still.
7. *Psychopomp* (2012). Details as above. Digital video still.
8. *Psychopomp* (2012). Details as above. Digital video still.

Video Documentation:

1. *Psychopomp* (abridged version) (2012). Digital video documentation of performance. Duration 7'48". Camerawork: Jim Coade.
2. *Psychopomp* (2012). Digital video documentation of performance. Duration 18'51". Camerawork: Jim Coade.

Orgasmatron:

Still Images:

1. *Orgasmatron* (installation view), (2013). Dimensions: approx. 3.2m x 1.2m x 1.6m. Inflatable, speakers, amplifiers, generative 15-channel sound, video projector, digital video loops, custom electronics, light, pressure, tilt and vibration sensors, audio interface. Digital photograph.
2. *Orgasmatron* (installation view), (2013). Details as above. Digital photograph.
3. *Orgasmatron* (installation view), (2013). Details as above. Digital photograph.

4. *Orgasmatron* (detail view), (2013). Details as above. Digital photograph.
5. *Orgasmatron* (detail view), (2013). Details as above. Digital photograph.
6. *Orgasmatron* (detail view), (2013). Details as above. Digital photograph.
7. *Orgasmatron* (detail view), (2013). Details as above. Digital photograph.

Video Documentation:

1. *Orgasmatron* (2013). Digital video of gallery installation. Duration 7'17".
Camerawork: Jim Coade.

Appendix B

Sacrificial RAM: locating feeling and the virtual in software

*'One of the questions ahead of us now is this: what are the conditions of digitization and binarization? Can we produce technologies of other kinds? Is technology inherently a simplification and reduction of the real...What might a technology of process, of intuition rather than things and practices look like?'*¹

*'How is it possible to think through from a normative freeze-frame of representational to a more machinic or rhizomic approach to technology?'*²

B.1 Introduction: towards a technical ontogenesis

In 1996, Rafael Lozano-Hemmer published a short article entitled *Perverting Technological Correctness* in which he suggests a number of potential 'misuses' of technology to trouble the aura of 'technological correctness' surrounding the promotion of digital technologies within art practice³. While the suggestions themselves are lighthearted (they include wearing a hollowed-out computer on one's head), they reveal a commonly held suspicion about the mechanical role of the computer in art, and the dangers of 'perfect replication' through the use of the digital⁴. How to make a computer program in itself behave in anything remotely approaching a

¹ Elizabeth Grosz, *Architecture from the Outside: Essays on Virtual and Real Space* (Georgia: MIT Press, 2001), 183.

² Andrew Murphie, "Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought." *Convergence* 2, no. 2 (1996): 82. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

³ Rafael Lozano-Hemmer, "Perverting Technological Correctness." *Leonardo* 29, no. 1 (1996): 5. <<http://www.jstor.org/stable/1576269>> [Accessed 02/03/2010].

Ibid., 5.

⁴ Ibid., 6.

‘relational’ mode – that is, in a speculative and non-totalising manner that liberates it from representation and productive ‘purposefulness’ – rather than simply working around such issues is important, I would argue, in order to pursue the further molecularisation of an interactive artwork⁵. Within an expanded empiricist framework, all relations demand to be seen as real forces that must be accounted for within an ecology. Yet the actual nature of algorithmic events, as Luciana Parisi argues⁶, is often denied adequate explanation within the schema of relations. In order to remain true to a process philosophy view of the world, a way of thinking the primacy of technical process or techno-genesis within computers over ontology must be explored, alongside the becoming potential of the other components of an interactive artwork.

Following Alfred North Whitehead’s aims to develop a consistent process philosophy⁷, rethinking software interactions demands the finding of a becoming-minoritarian potential of computational processes – an ability to disrupt structuring and destabilise any ‘whole’ that is based on the transcendent replicability of software process. Again, as Parisi advocates, it is necessary to question the whole philosophical basis of thinking about code in order to find a new and specific way of tackling the problem at hand⁸. That is, contrary to notions of code as a mechanical processes incapable of further potentiality, or as immaterial representations that are transcendent of empirical dynamics⁹, an algorithm must be shown to be ‘machinic’¹⁰, and therefore capable of shaping its becoming as a real event, in and of itself. If we want to truly concern ourselves with the ‘ethics of relation’, that is, an attention to the event in its

⁵ Such a liberation of computers from purpose is, Dery argues, an ‘inherently political activity’. Mark Dery, *Escape Velocity: Cyberculture at the End of the Century* (New York: Grove Press, 1996), 14.

⁶ Luciana Parisi, *Contagious Architecture: Computation, Aesthetics and Space* (Cambridge, M.A.: MIT Press, 2013), 10-11.

⁷ Whitehead, as Stenner states, aims in his philosophy ‘to invent notions that are applicable to any kind of actual occasion’. Paul Stenner, “A. N. Whitehead and Subjectivity”, *Subjectivity* 22 (2008): 99. Such occasions are ‘activit[ies] of realization’ rather than inert materials. Ibid. To act as a consistent theory, as Whitehead aims, I would argue that this must be shown to be as applicable to the workings of a set of code as to any other occasion.

⁸ This, as Parisi notes, is a meta-modeling approach. Parisi, *Contagious Architecture*, 3-5.

⁹ No entity, Whitehead states, ‘can have an abstract status in a real unity’. The neglect of this, he argues, is ‘a prevalent error in metaphysical reasoning.’ Alfred North Whitehead, *Process and Reality* (New York: The Free Press, 1978), 225.

¹⁰ That is, an assemblage primed to produce something new, rather than a mechanical assemblage that produces a repeatable result.

emergence that does not deny the potency of any of the composing forces¹¹, then we need to consider seriously how to afford the performativity of algorithms – how the potential written into code can become temporal events of actualisation – and to address their ongoing potential for engagement with both actualised entities and ‘eternal objects’ – the infinite potential variety within these entities¹².

In this appendix, I will attempt to think the machinic potential of an algorithm (a ‘step by step procedure for calculations’¹³) and a software patch (a set of sequences of algorithmic processes created within a program). This discussion, unlike the exegesis’ main chapters that have other artists’ work as their primary discussion points, moves directly to focus on a software patch developed for *Orgasmatron* – one of the works created within this research¹⁴. After a brief description of the relevant aspects of the work, I will discuss the software patch in relation to some common aspects of generative software design in order to discuss both these concepts’ relevance to the artwork, and how the software design attempts to move beyond these paradigms.

In thinking beyond these concepts, I will then discuss the work in relation to the more promising potential of algorithmic prehension in order to argue for an algorithm’s acceptance as an entity in its own right, and then discuss how the design utilises

¹¹ Erin Manning, *Always More Than One: Individuation's Dance* (Durham: Duke University Press), 213, 171.

¹² Parisi, *Contagious Architecture*, 63.

¹³ Parisi, *Contagious Architecture*, 259. In other words, an algorithm is a set of instructions for a computer program to perform specific mathematical operations. Some algorithms can be split into smaller sets of instructions that perform parts of the larger algorithm, as they might also be combined to perform larger such procedures. Algorithms differ essentially from an algebraic formula – which might be a component part of an algorithmic sequence – in that they are non-reversible. See Shintaro Miyazaki, "Algorhythmics: Understanding Micro-Temporality in Computational Cultures," *Computational Culture* 2 (2012): 3. <<http://computationalculture.net/article/algorhythmics-understanding-micro-temporality-in-computational-cultures>> [Accessed 14/12/2013].

¹⁴ This is not to imply at all that other artists have not attempted such design, as clearly there has been considerable work developed in this area¹⁴. Rather, in line with the stated aims of this project to move beyond the generalities of relational modeling and towards more explicitly practical tactics, I utilise my own software patch here both because many of the ideas have arisen directly out of the making of the patch, and because open access to the patches then affords the opportunity to examine in detail some of the actual workings of algorithmic sets in order to debate the specifics of how they operate relationally or programmatically.

Both Parisi and Stamatia Portanova discuss, in the texts that inform this argument, a number of artworks that attempt to develop open-ended usages of software. These discussions, however, centre on the philosophical and examine only the general structure of the algorithmic processes and do not provide detailed examination of software patches. See also the writing and artwork of artists such as Jon McCormack and Andrew R. Brown on their own software developments, and as two Australian examples of experimentation in this area.

systems of parametrically linked multiple attractors to modulate data in non-linear ways. As per this project's central focus, the potential role of parasitic action is emphasised in this approach.

B.2 *Orgasmatron*

In *Orgasmatron*¹⁵, data from pairs of sensors¹⁶ embedded in the structure of the work was fed into the computer to be utilised by the software patch, created in the *Isadora* program¹⁷ that, through a series of algorithmic processes, drove ongoing variations in light, sound, sound spatialisation and vibration. The processes by which incoming data was modulated are briefly described here, with further relevant description as the chapter progresses (See *Figure B.1*)¹⁸:

1. 'Differential' actors: Firstly, the data from a pair of sensors was processed in an algorithm utilising a differential equation to calculate their difference over time (the rate of difference differing). For example, two pressure sensors embedded in opposite sides of the floor of the work measured the shifts in pressure as a body moved across

¹⁵ *Orgasmatron* was exhibited in October-November 2013 at Blindside, Melbourne. This discussion will concentrate on the technical details of the software patching. See Appendix A for further description of the work as a whole.

¹⁶ Pairs of vibration, pressure, light, and tilt sensors gather data on variations in force and direction of pressure, movement, volume and light from the *Orgasmatron* environment.

¹⁷ *Isadora* is a program for interactive media designed by Mark Coniglio (see <<http://troikatronix.com/isadora/about/>>). It is similar to the *Max* programs, in that it contains a number of prewritten 'objects' (Max) or 'actors' (Isadora) that perform certain functions or processes on incoming data (for example, mathematical equations), with various programmable parameters. Both programs also allow new objects to be constructed out of combinations of existing objects, and allow for the flexible connection between objects.

In total, the *Orgasmatron* computations operated across three patches in three different programs: a *Miditron* patch (which converted data from the sensors to midi signals to be utilised by the other two patches); the *Isadora* patch (which controlled and modulated data and video output); and an *Ableton Live* patch (which played, rerecorded and modulated sound samples and sent these to the system of fifteen speakers). It was, however, principally within the *Isadora* patch that the parasitic potential of algorithmic prehensions and competing attractors was explored, and thus it is the only patch described in detail here.

¹⁸ Each of three types of algorithmic objects or actors described is given a simplistic title for ease of discussion, although these titles do not express the total range of activities. Beyond the more open-ended algorithmic processes discussed here, the patch itself contained more programmatic and mundane algorithms that controlled, for example, the starting up of the system as a participant entered the environment, and the processes by which it returned to its original and relatively passive state after the participant exited.

the surface. The algorithm then compared these rates of changes in pressure on the two sides, expressed as a number between 0 and 100¹⁹.

2. ‘Watching’ actors: Secondly, a set of algorithmic actors watched the numbers outputted from these equations, looking for a particular range of numbers with which they interacted, and then counted the incidence of such numbers within the constraining parameters²⁰. In this sense, these algorithms acted as a ‘gate’, allowing the flow-on of certain data through to the rest of the system, while ignoring or halting other data (that is, the watching actor had the capacity to be positively affected by, or interact with, certain data and had a relation of non-relation²¹ with other data). As will become important to the argument that develops below, each evolving set of differentials was ‘watched’ by (or was capable of interacting with) more than one of these ‘watching’ actors, each with gates of different parameters, so that the affectual potential of the flow of data was split in ways that might also overlap.

3. ‘Triggering’ actors: Thirdly, once the watching actor had counted to a set number of positive interactions, this triggered the sending of data to the next series of algorithmic actors for further modulation. This next set of actors also watched for numbers within certain parameters with which they could interact, while similarly rejecting other data. These actors counted a certain number of interactions, then sent the data flow to further algorithms that triggered a range of video projections and sound events²².

4. Fourthly, within both the watching and triggering algorithmic actors, the ranges of data looked for, and the numbers of such incidents counted, were designed with variable parameters. While each of these parameters had a set range or initial number,

¹⁹ Thus as an equation this can be expressed by $(x_i - x)/(y_i - y)$, where ‘x’ and ‘y’ are the two pressure sensor readings, and ‘x_i’ and ‘y_i’ are the pressure sensor readings taken 0.1 of a second later. This provided a series of numbers that reflect the rate of change of pressure on one side of the structure relative to the rate of change of pressure on the other side. The result of this equation was then constrained within a range of 0–100.

²⁰ For example, one such algorithm might look for numbers between 0.001 and 1.0, or between 10 and 20, and so on.

²¹ That is, it actively ignored data outside certain ranges, dividing data into two groups, creating a ‘positive’ relation with data accepted, and a ‘negative’ relation to rejected data.

²² In the discussion of the potentialising of software, it should be noted that the triggering of video and sound events by these processes was in itself not a simple linear process, but also engaged with parasitic tactics. As with the example discussed in Chapter Two, these triggers interfered with and disrupted each other, replacing, for example, one sound event with another, or altering its tone, volume, and so on. As with the examples discussed in Chapter Five, within the actualised sound and light events, there were further potential processes of parasitic disruption, such as the ‘unsounds’ embedded in the sound samples that altered perceived sound events through diffraction, and the moments of transition between video projections where colours and rhythms diffractively combine.

they were linked to both its own and each other's outputs, so they changed over time. That is, the range of numbers being accepted at each 'gate' increased or decreased in response to the amount of stimuli received by the set of actors, while the threshold number of such events being counted before triggering the flow-on of data also changed in response to the activities of the system. In this way, the ability of an algorithm to be affected developed complexly in relation to its neighboring algorithms²³.

5. Fifthly, amongst the triggering set of actors described above were actors whose outcomes triggered the activation of additional watching and triggering actors, thus potentially utilising and splitting the data flow-on in further directions. This will be discussed later in the chapter in terms of a 'bifurcation' of the system that created a new set of relations inclusive of previous relational factors within the system.

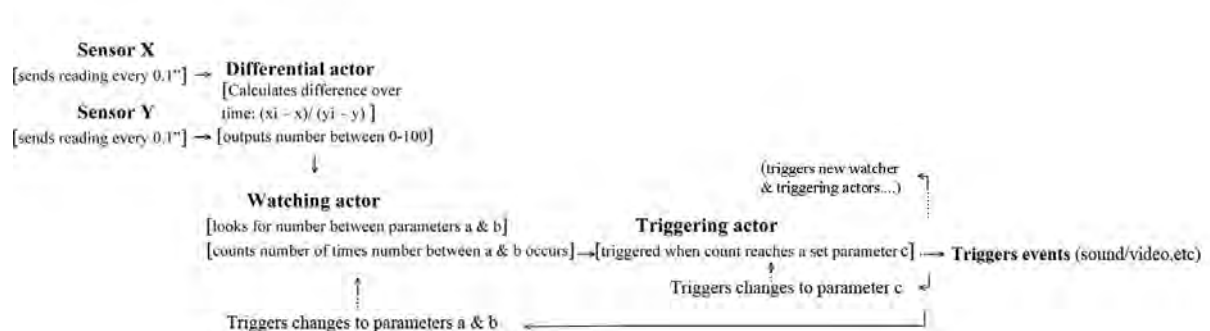


Figure B.1 Graphic representation of Actors in Orgasmatron patch.

B.3 Generative software design

Any discussion of the programmatic nature of computer operations and codes, within any artwork that is attempting a generative or open-ended approach, must acknowledge some of the strategies that have been previously employed and their (at least) partial success in creating larger systems that have open-ended characteristics. In most cases, however, these strategies do not adequately address the non-linear

²³ This capacity to develop parameters was restricted to furthering the excitation of the system (that is, an increased capacity to be affected), in line with the concept of stages of increased excitement and responsiveness during sex. However, the design had the capacity to both increase and decrease these

potential of algorithmic process itself. While it is not within the scope of this research to provide a detailed account of the various approaches that have been taken, I want to here very briefly discuss three areas that retain relevance the larger system utilised in the *Orgasmatron* project. These (related) approaches, at their simplest, concern: firstly, attempts to ‘diffuse’ the linear nature of computer processes through their integration into larger and principally analogue based systems; secondly, the use of complex feedback systems interacting with software processes to create biologically imitative autopoietic systems (second order cybernetics); and thirdly, attempts to make code itself behave in a generative or evolutionary manner²⁴.

Many software generative artworks – such as the works created in this project – are assemblages of software, sensors, participants’ bodies, and other aesthetic elements such as larger environments of sound, light or sculpture. The supposedly prescriptive

affective capacities, and so could be utilised in a system that potentially becomes less responsive or one that oscillates in both directions.

²⁴ A further tactic commonly utilised in generative software-based works (though rejected here), involves injections of chaos and the use of ‘fitness’ criteria to generate controlled novelty. The latter involves the use of algorithms to produce new outcomes, and then subjecting these outcomes to a set of prescribed criteria that determine which of these novel iterations (usually a series of small modulations on existing patterns) will survive and which will perish. Whether or not the initial generation of novelty in such systems is relational (caused by some processing of existing intensive factors) or random (through injections of unrelated data), such a process is clearly not open-ended. Rather, as Jon McCormack and Philip Galanter both argue, it is a top-down or teleological approach that drives the system towards a set outcome, even if it allows some movement within the processes that lead to this. In this, it clearly denies a relational modeling by subordinating exploration to a single dominant form. Such systems might therefore be thought of as adaptive systems that are goal orientated, seeking new patterns or behaviors that ‘benefit’ the system (that is, lead to greater efficiency or growth within a set of defined parameters), whereas a truly generative system, as Oliver Bown argues, disregards the benefits or costs to the system of its creativity. See Jon McCormack, "Evolving Sonic Ecosystems," *Kybernetics* 32, no. 1/2 (2003): 193 <<http://www.emeraldinsight.com/0368-492X.htm>> [Accessed 2/3/2013]; and "Art, Aesthetics, Evolution," *EvoMUSART 2013*, eds. J. McDermott, A. Carballa & P. Machado (Vienna: Heidelberg, 2013): 1-12; Philip Galanter, "The Problem with Evolutionary Art Is..." *EvoApplications Part II, LNCS 602*, ed. C. DiChio (Berlin: Springer-Verlag, 2010), 329; and Oliver Bown, "Generative and Adaptive Creativity: A Unified Approach to Creativity in Nature, Humans and Machines," *Computers and Creativity*, eds. Jon McCormack & Mark d'Inverno (Dordrecht: Springer, 2012), 364.

McCormack argues that fitness-driven evolutionary art is a contradictory term, being anything but evolutionary in nature. It does, however, fit neatly into goal-orientated, neo-Darwinist theories of transcendence – a working or evolving towards an ideal form, as mentioned in Chapter Two in the discussion on drift. McCormack, "Art, Aesthetics, Evolution," 5.

The secondary tactic – employed both within fitness-based systems and on its own – has been to use injections of chaos or external randomness to generate change. Such systems, whereby an unrelated set of parameters are used as raw data converted to some artistic output through computational processes (such as weather data converted to shifts in colours on a screen, for example), are, as McCormack and others argue, a poor ‘proxy’ for intensive complexity. Jon McCormack, Oliver Bown, Jonathan McCabe, Alan Dorin, Gordon Monro & Mitchell Whitelaw, "Ten Questions Concerning Generative Computer Art," *Leonardo*, (Forthcoming): 8. While fitness-based systems concentrate on positive, directed connectivity at the expense of exploratory room to move, random data creates systems concerned with the superficial appearance of complexity rather than its actualisation.

digital data is ‘diffused’ within an analogue field, as qualitative flows of data stimulate movement in the software through the transduction of analogue signals into the digital, acting parasitically on each other²⁵. As such, it is easy to argue that in the larger context of its place, within assemblages that include other elements, an algorithm or code begins to become extensively indeterminate²⁶ – a tactic in which the injections of data might be said to be relational rather than purely chaotic. While this tactic may have clear creative potential in opening systems to novelty, in isolation²⁷ it still relies on working around algorithmic prescriptiveness and ignores Parisi’s more radical proposition that an algorithm itself might be thought of as intensively indeterminate²⁸.

²⁵ The analogue qualitative flow is disrupted by its digitisation and translation into binary code, while the digital is disrupted by the excess of the analogue that it cannot contain.

²⁶ As Anna Munster states: ‘the technical element is always in a relation with elements outside itself, its form is therefore indeterminate and virtual.’ Anna Munster, *Materializing New Media: Embodiment in Information Aesthetics* (London: University of New England Press, 2006), 14. Munster notes that bodies are ‘the chaos and interruption with which the machine cannot dispense’. Ibid. 185. See also Andrew Murphie & John Potts, *Culture and Technology* (New York: Palgrave Macmillan, 2003), 31–2. It could be argued that simply through the processes of flows of data translating from software platform to software platform within a computer this data undergoes a transduction, shifting from one coded flow to another, with accompanied and somewhat unpredictable losses through the noise of translation. See James Newman, “Parts and Patches: Digital Games as Unstable Objects,” *Convergence* 18 (2012): 135–37. For example, in transduction of data through the series of patches utilised in the *Orgasmatron* system, numerical data is transduced from voltage flows (positive numbers between 0 and 5 volts), to midi in the first patch (positive whole numbers between 0 and 127), then in the second patch to numbers between -100 and +100, then back to midi in the third patch.

²⁷ When they are proposed as the only generative tactic rather than perhaps operating as one element on a particular scale in conjunction with other generative propositions.

²⁸ Potentially implied in this approach is the problematic acceptance of an always-clear analogue/digital divide. As Anthony Wilden argues, distinctions can be made between the continuous qualities of analogue variation, and the discontinuous scales of digital differentiation that then operate through different kinds of differentiation. Anthony Wilden, *Systems and Structures: Essays in Communication and Exchange* (New York: Tavistock Publications, 1980), 158. However, he also argues that discrete definitions of the two are problematic, and more concerned with the ways in which entities relate than any innate qualities, as many processes in the world involve both analogue and digital on differing scales within the one event of communication. Ibid., 188–9. See Wilden’s discussion of the paradoxical operations of brain messages, which appear both as analogue and digital depending on the scale of the examination. Ibid., 175–7. In addition, when viewed as events of relation, the digital is always saturated with the rhythms of the analogue in the form of gaps, interruptions, processing time, and signalitic noises. Ibid., 158. Thus, as Wilden acknowledges, although the translation from analogue to digital can result in loss of ambiguity and meaning (Ibid., 163), which might imply that the digital is just a poor replica of the ‘real’ analogue experience, I would argue that within an expanded empiricism the digital can also be thought of as a different but potentially creative mode in its own right. For example, the fact that the digital can encompass both zero and negative numbers while the analogue contains only positive numbers shows that it has its own particular mode of operating, and, in this one respect at least, its own and potentially wider parameters. Ibid., 167.

On the loss of excess in the digital, see also Simon Penny’s statement that digital technologies ‘thin out’ experience, in Simon Penny “Trying to Be Calm: Ubiquity, Cognitivism, and Embodiment.” In *Throughout: Art and Culture Emerging with Ubiquitous Computing*, edited by Ulrik Ekman, 263–278: MIT Press, 2013 269–270; Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation*, Post-Contemporary Interventions (Durham, N.C.: Duke University Press, 2002), 133–43; and Elizabeth

In the *Orgasmatron* system, this enmeshing of data from the larger artwork assemblage creates relations between the workings of the computer and the other component parts through systems of feedback. This is, in Jon McCormack's terms, an 'ecological' approach that involves assemblages of co-causal feedback chains between components in order to develop complex autopoietic or second-order cybernetic systems²⁹ of relation from the 'bottom up'. Such systems, as Francisco Varela examines in his discussion of drift, create connections of 'viable coupling' with no regard for an end point³⁰. Here, feedback emphasises the processual – the ways in which elements are drawn into relation and the fact that all these components play an active role in this emergent organisation³¹. In the *Orgasmatron* workings, feedback loops were established across the various inputs and outputs, for example, as shifts in pressure triggered sound events, causing vibrations to be sensed, which then triggered light events, causing light variations to be sensed, that then cause vibrations to be sent, and so on³². In addition, the bodies of participants' became implicated in these systems, adding their own vibratory rhythms and disruptions to the speakers' vibrations, varying the pressure applied on parts of the floor, and creating variations in light through shadows cast (as the system also works to disrupt the bodies' rhythms). Bodies were drawn into relation with other components of the larger assemblage through connection and disruption, and the system was primed to afford the gradual development of such relational complexity, as various components became further implicated in each other's expressions. Without particular concern for

Grosz, *Architecture from the Outside: Essays on Virtual and Real Space* (Georgia: MIT Press, 2001), 183.

On signaletic creativity, see Christopher Brunner, "Immediation as Process and Practice of Signaletic Mattering," *Journal of Aesthetics and Culture* 4, (2012): 7; and Bodil-Maree Thomsen, "The Haptic Interface: On Signal Transmissions and Events," *Interface Criticism: Aesthetics Beyond Buttons*, eds. Christian Ulrik Andersen & Søren Brø Pold (Aarhus: Aarhus University Press, 2011), 43–62.

²⁹ Second-order cybernetics is based on notions of a 'positive feedback relation between the individual and the environment'. Parisi, *Contagious Architecture*, 261.

³⁰ Francisco J. Varela, Evan Thompson & Eleanor Rosch, *The Embodied Mind* (Cambridge M.A.: MIT Press, 1992), 205. See also Chapter Two of this exegesis. Roy Ascott has argued that the use of feedback as an organising tactic 'furnishes [a system with] its own controlling energy', allowing an intensively 'rich interplay'. Roy Ascott, *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness* (Berkeley: University of California Press, 2003), 128. See also Gregory Bateson, *Steps to an Ecology of Mind*, (Chicago: University of Chicago, 2000), 379–80.

³¹ Murphie & Potts, *Culture and Technology*, 192.

³² This is only a partial example of the feedback loops established. In reality, data sensed from any one set of sensors affects all the other systems – pressure variation affecting sound events, spatial configurations, and light events, for example.

any endpoint of either expression or relational complexity, the system was always in a state of reconfiguring its feedback loops. This transduction of forces within feedback systems emphasised movement or circulation over established relations and, in this, might certainly be seen to be heading towards becoming-molecular configurations.

Parisi, however, critiques such self-organising, second-order cybernetic models as relying on the actions of biological elements directly animating algorithmic objects to build a responsive environment³³. Again, these models might tend to ‘discard the possibility that change could concern the formal logic of computation’³⁴, treating computation as a passive, non-aesthetic component³⁵. Thus feedback systems, Parisi argues, contain computational potential by demanding that its primary relation is to an external environment that it responds to³⁶. If such systems also allows only positive and enduring connections between the components then this limitation in the rules governing their relations may well, as Parisi argues, prime them towards the organization of a stability of connection³⁷ rather than a continued emergence and ongoing potential for relational movement to be expressed.

Such systems, however, might be extended by a ‘parametric’ approach within the software patch itself. Where generative software seeks to create complex forms through sets of simple rules and variations of forms, a parametric approach, as argued by Portanova, shifts the emphasis towards the programming of relations between these rules or algorithmic processes, affording another scale on which feedback operates and co-implication develops³⁸. These systems, as McCormack argues, draw

³³ Parisi, *Contagious Architecture*, 33. However, the model of feedback systems I have described in the *Orgasmatron* would seem to suggest that it is, at least, also possible to create feedback between the various technical entities.

³⁴ Ibid., 11, 13. Parisi argues that autopoietic approaches imply that the environment exists only outside of algorithms, rather than seeing these objects themselves as being composed of environments of relations. Ibid., 36.

³⁵ Such systems, Parisi argues, might potentially infer that aesthetics can only be found within sensation and not within algorithmic processes. Ibid., xv.

³⁶ Ibid., 155

³⁷ Ibid., 35. Positive feedback systems tend towards a stabilisation that preferences the establishment and survival of this dynamic over all other relational aspects. This is perhaps again a tendency towards adaptive over generative capacities that promotes a molar thinking. I am not entirely convinced by this aspect of Parisi’s critique of autopoiesis and its reliance on feedback to maintain a whole, which I read as a narrow definition of the possible range of potential becoming-autopoietic systems, and possible qualifications are discussed later in the chapter.

³⁸ Stamatia Portanova, *Moving without a Body: Digital Philosophy and Choreographic Thoughts* (Cambridge, M.A.: MIT Press, 2013), 87. I read this concept of ‘parametricism’ as being in line with the ‘ecological’ approach that Jon McCormack, amongst others, has advocated – the creation of a field

components into interdependent relations through feedback on a component-to-component level, are self-organising and dynamic in their modulations³⁹, and develop system-level relationality as a by-product of these interactions⁴⁰. As described above, the *Orgasmatron* software patch linked some of the parameters of the operations of its ‘watching’ and ‘triggering’ algorithms to each other, so that they changed over time in relation to the amount of stimulation various parts of the system received. This in itself was a parasitic disruption to established relations, as it replaced stable capacities to be affected with the vagueness and fuzzy logic of contingent and evolving parameters of potential relation. As it gathered parameters into co-implication in each other’s modulation, it also created a rolling or gathering of excitation of the system – where stimulation lead to increased potential to be stimulated – leading the system towards a ‘far-from-equilibrium’ state, rather than a stasis of connectivity that cancelled further potential movement⁴¹.

Here, parametric systems might begin to escape the purely positive feedback of second-order cybernetics in utilising feedback within algorithmic relations, and begin to draw together and further complexify the *computational* conditions in which such relational play might occur – encouraging an intensive movement in the shifting of

of what McCormack terms ‘conditions and resources’ (that might be better termed as a series of environmental propositions) where heterogeneously distributed ‘mortal organisms’ draw both from the field (in some cases including the presence of viewer’s bodies) and their relations to each other, and have some ability to develop their interactive parameters. Jon McCormack, *Computers and Creativity*, 51. McCormack has written and experimented extensively in this area. See, for example, his “Creative Ecosystems,” eds. Jon McCormack & Mark d’Inverno, *Computers and Creativity* (Dordrecht: Springer, 2012), 39–60. See also his artwork, *Eden* (2000–10) at

<<http://jonmccormack.info/~jonmc/sa/artworks/eden/>> [Accessed 2/10/2014].

Gordon Pask’s early ‘conversational’ model might be seen to fit loosely within this parametric and ecological paradigm. Pask’s early experiments with electro-chemical systems, capable of creating their own sensors out of a field of solutions of chemical components and electrical charges, is perhaps one of the most interesting experiments in ecological ‘programming’, concerned with how a field of potential is able to organise its own gathering into an assemblage capable of expressing relation. This is the type of evolutionary art that Galanter advocates, one capable of creating new sensing machines (and therefore evolving its own parameters) as well as operating machinically. Galanter, “The Problem with Evolutionary Art Is...,” 6. As Usman Haque says, Pask’s project showed a capability to ‘dynamically determine [its] own perceptual categories’. Usman Haque, “The Architectural Relevance of Gordon Pask,” *Architectural Design* 77, no. 4 (2007): 58, and Andrew Pickering, “Beyond Design: Cybernetics, Biological Computers and Hylozoism,” *Synthese*, vol. 168, no. 3 (Jun 2009): 469–91.

³⁹ McCormack, *Computers and Creativity*, 45.

⁴⁰ *Ibid.*, 48.

⁴¹ Manuel DeLanda states that far-from-equilibrium systems maintain intensive differences. A system ‘meshes difference’ rather than cancelling it, and the potential for change remains active within the system. Manuel DeLanda, *Intensive Science and Virtual Philosophy* (London: Continuum, 2005), 74–5. Accentuating this non-equilibrium state, he argues, puts systems in a condition of heightened potential, what he terms a ‘zone of intensity’ of operation that moves away from linearity. *Ibid.*, 76.

relations between the component algorithms⁴². In *Orgasmatron*, local algorithmic excitations infected the parameters of neighboring algorithms, creating a molecular movement, and it is only through these complex and speculative chains that effects on the system as a whole emerged. In emphasising models of interference and parts over wholes, parametricism (as an extension of feedback systems) can, as Parisi argues, begin to escape pre-emptive control, and the smoothing or flattening of novelty that is problematic in topological systems⁴³.

Potentially still implicit in this approach, is the idea that the digital can only be made to behave more open-endedly by making it operate in a pseudo-biological manner⁴⁴. Technical machines, as Pickering argues, have their own singular ways of relating – their own styles and characteristics⁴⁵ – and their processes must not be conflated with

⁴² This, Parisi argues, is a system modifying through qualitative and local intensities. Parisi, *Contagious Architecture*, 112.

⁴³ Ibid., 92-3. Parametricism, Parisi states, interferes with the smooth 'capitalisation of change, futurity and potentiality.' Ibid., 93. Such problematic smoothness is evident, she argues, in topological models of self-organising systems, which she considers as a form of 'post-cybernetic control'. Ibid., xvii. She argues that topology conflates points and singularities within the various inputs of a system into a continuous flow of infinitesimals, connectively subsuming atomic differences into a whole that, in this case, is also a modulating surface, turning 'the potential effects of the future into operative procedures within the present'. Ibid. Topological calculation, as Parisi states, now also allows economic factors to be calculated as parameters within architectural design, directly linking potential profit to aesthetic considerations, a tending towards creating a topology of networked capitalist control. Ibid., 103-5. In contrast a 'mereotopological' system, she suggests, consists of this consideration of the whole as divisible space, and a concern with its interior parts and the relations between the two. Ibid., 123-34. See also Portanova on mereotopology, which emphasises 'not only wholes and parts, but the boundaries and interiors of wholes [and] the relations of contact and connectedness between wholes and parts'. Portanova, *Moving Without a Body*, 79, 76-80.

Autopoietic systems are often referred to as topological, though they are not necessarily so. Technically speaking, topological systems, as DeLanda states, operate specifically through a system of a single attractor, which explains both their erasure of negative relation and the simplicity of their operations. Multiple attractor systems, as will be explored later in this chapter, are capable of operating through intensive difference that creates both compossible and impossible relational pulls. DeLanda, *Intensive Science*, 24.

⁴⁴ This refusal to acknowledge the potential indeterminacy at the very heart of coding processes themselves reflects, Parisi and Goodman write, the 'anthropocentrism of interactivity, which pervades recent conceptions of digital architecture. We ask instead, what if the user is any actual entity whatever among the other components of an ecology, and therefore that novelty does not necessarily involve the activity of a human participant. Specifically, we wonder about the perpetual neglect to deal with the weirdness of mathematics, the potential of nameable, yet undefinable, infinitesimal, numbers to generate prehensive novelty.' Steve Goodman & Luciana Parisi, "Extensive Continuum Towards a Rhythmic Anarchitecture," *Inflexions 2* (2009): 1. Gilbert Simondon's call for a philosophy of technology, as Paul Dumouchel describes it, also calls for a move beyond approaches that describe technologies' inputs and outputs while ignoring their internal working structures. Paul Dumouchel, "Simondon's Plea for a Philosophy of Technology," 410.

⁴⁵ Andrew Pickering, *The Mangle of Practice: Time, Agency and Science* (Chicago: University of Chicago Press, 1995), 186-7. In other words, as Parisi argues, algorithmic processes can be viewed as singular events in their own right, with their own specific modes of thought. Parisi, *Contagious Architecture*, 186. Not only can second-order cybernetics assume that systems depend on the

representations of the biological world (as happens in cogitative approaches). In taking their models of self-generation and organisation from the biological, bottom-up learning systems and autopoietic feedback loops risk presenting digital architectures as merely representational of a ‘real’ world from which they are supposedly separate⁴⁶. Instead of constructing algorithms as ‘tools for thinking’ in order to enhance abilities to plan and control – a ‘mechanics of possibilities’⁴⁷ – Parisi advocates for a ‘soft(ware) thought...producing computational space-time’⁴⁸. This can be clearly linked to the need to rethink interactivity and its use of computer technology, moving it away from systems of control and manipulation that curtail potential, and towards more open-ended and collectively creative expressions.

The *Orgasmatron* assemblage clearly utilises combinations of analogue and digital processes and feedback systems – including parametric feedback – to varying degrees in order to create multiple systems of relation, and as such it is open to the criticisms of such approaches mentioned above. However, as I will attempt to show in the following discussions, employing these tactics does not necessarily occur at the expense of ignoring the creative potential within algorithmic processes, but as a supplement to it – allowing a range of complementary tactics within various component parts of the overall system and across relations between these parts.

In the following section, I explore (after Luciana Parisi) how the application to algorithms of Whitehead’s schema of actualised and eternal entities, and his concept of prehensive feeling, it becomes possible to move beyond these limited conceptions of the operations of code. In the third section of the appendix I then use this concept of algorithmic prehension and its implication of the existence of an algorithmic potential to lay the groundwork for the exploration of generative systems that utilize

generative capacities of the biological environment to instigate change, as Parisi argues, (ibid., 11), but, as Portanova writes, many configurations of generative software project biological modeling onto their design, viewing cognitive processes as the only model for algorithmic process. Portanova, *Moving Without a Body*, 87.

⁴⁶ For example, simulations of neural activity that conceive of computational activity as abstractions of brain activities. See Parisi on this ‘neuropsychology’ in Parisi, *Contagious Architecture*, 169–85. At the other extreme, there have of course been attempts to reduce the biological world’s operations to algorithms, the ‘metadigital fallacy’ as Parisi terms it. Parisi, *Contagious Architecture*, 36–47. See also Mark Dery, *Escape Velocity: Cyberculture at the End of the Century* (New York: Grove Press, 1996), 232, for a critique of this approach.

⁴⁷ Parisi, *Contagious Architecture*, 169.

parasitic disruptions to drive creativity. This is explored through the concepts of attractors and bifurcations – emphasising the parasitic potential within generative computer processes that might move towards a machine ecology.

B.4 Algorithmic feelings: a digital mode of thought

‘The contagious architecture of...quantitative infinities turns the computational grid into a Swiss cheese of irregular holes, rough edges, and blind spots.’⁴⁹

‘Prehensions allow complexity to enter into existing sets of data.’⁵⁰

In order to establish that algorithms are more than ‘simulators of material dynamics’⁵¹, it is necessary to demonstrate how they are actualised entities in their own right, with accompanying obligations and powers within a schema of the play of forces. To do this, Parisi draws on Whitehead’s system of prehensions, as it is, she argues, an entity’s prehensive capabilities that define ‘what an entity is and how it relates to others’⁵². A system of prehensive feeling describes ‘how any actuality...grasps, includes and excludes, and transforms data’⁵³. In prehending, Whitehead argues⁵⁴, an entity creates a system of relation or ‘extensive connection’ – including both conjunctive and disjunctive connection – that connects it to all other actual entities. At the same time, this is reciprocated, as any entity acts as an ‘object’ to be prehended by all other entities⁵⁵. Whitehead is adamant, however, that each new

⁴⁸ Ibid. Parisi describes ‘software thought’ as the architecture of a new, specifically digital, mode of thought. Ibid.

⁴⁹ Ibid., 256.

⁵⁰ Ibid., 70.

⁵¹ Ibid., 1.

⁵² Ibid., xii

⁵³ Ibid. Whitehead states that an entity’s relational matrix is composed of its abilities to interact with forces and to forcefully impact on other entities. Whitehead, *Process and Reality*, 220.

⁵⁴ Ibid., 41.

⁵⁵ ‘Any entity, thus intervening in processes transcending itself, is said to be functioning as an “object”’. Ibid., 220. Thus, an actualised entity must influence the individuation of entities it forms relationships with, as they must influence it, ‘however trivial or faint’ this influence is. An entity, Whitehead states, ‘retains the impression of what it might have been, but is not’. Ibid., 226–7. It should be noted that there is no essential distinction in this system between conceptual and material entities, living and non-living, or between what constitutes a subject (that prehends) and an object (that is prehended). Steven Shavero, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (Cambridge: MIT Press, 2009), 23.

entity has its own subjective feeling that is different to the previous entity's feeling on which it draws, re-expresses or translates, rather than simply duplicating the original force⁵⁶. It is also always a singular point of complex negotiations between all the entities whose forces influence it⁵⁷. In this sense, no entity can be said to be purely predetermined, but selects the manner and degree to which it is influenced by other events – it gathers singular and particular relations to the world that define its existence⁵⁸.

Algorithms, Parisi argues, are necessarily engaged in prehension, or selection of numbers with which to interact from a larger field or potential that contains incomputable numbers – the actual and discrete passages between and combinations of the 0s and 1s that make up binary code⁵⁹. These infinite, real infinitesimals and sequences cannot be compressed into any one algorithmic operation, Parisi says, rather they are a multiplicity or 'eternal object' – both 'patternless and random, objective and undetermined' that cannot be contained into any smaller set of rules⁶⁰. As the 'indeterminate conditions within which algorithmic objects are able to exist', they are unsynthesisable quantities that disrupt and open algorithms to a greater potential⁶¹. Here there is a 'strain' between limitless (both virtual and incalculable)

⁵⁶ Whitehead, *Process and Reality*, 236. As Whitehead states, it utilises the forces of other entities, but is 'freed from those entities' histories' and instead integrates them into a new system. Ibid., 238. In this, there is a creative but atomic advance that builds on what exists, but which is also always capable of movement and further complexity. See also Shaviro, who states that 'there is always a glitch in the course of the "vector transmission" of energy and affect from past to present'. Shaviro, *Without Criteria*, 86.

⁵⁷ As Shaviro says, 'multiple prehensions are combined or coordinated by their adoption to a particular subjective aim – even though this aim does not preexist, but itself only emerges in the course of this adaption.' Shaviro, *Without Criteria*, 74. In this system, Parisi says, Whitehead manages to conceive an understanding of relations as being 'both more than effects and less than the projections of a perceiving subject' (Luciana Parisi, *Contagious Architecture*, 59), where prehensions form the 'indissolvable atomic architecture of any occasion' that is therefore both actual while never complete or static. Ibid., 60.

⁵⁸ That is, it autonomously acquires determination from indeterminate conditions. Parisi, *Contagious Architecture*, 59. Actual entities are therefore always individual, actualized realizations of potentialities, but never fully stable or 'whole'. Ibid., 61. Process is here conceived of not as a self-modulating whole, but as a system of parts that are nevertheless all related and capable of affecting each other. Ibid., 61. Process is therefore self-organizing but molecular, as each component has its own subjective power to relate and ingress into other entities without regard to any overall design or configuration.

⁵⁹ Ibid., 64-5. These incomputable objects are classified as 'Omega' by Gregory Chaitlin. Ibid., 17-18. Omega, Portanova states, is composed of 'an infinity of '1's and '0's' that can be endlessly arranged and extended. Portanova, *Moving without a Body*, 127.

⁶⁰ Parisi, *Contagious Architecture*, 65. This, is an 'incomputable virtuality', as Portanova says, an 'intensive randomness'. Portanova, *Moving without a Body*, 126. The virtual is patternless in the sense that it contains the undifferentiated potential for all patterns.

⁶¹ Parisi, *Contagious Architecture*, 204.

and limited (the ‘finitude of specific algorithms’⁶²), as an algorithm speculatively contracts potential and determines positive and negative relations with numbers it both can and cannot contain – ‘demarcating an immanent, actual space of disjunctions and conjunctions’⁶³.

In the *Orgasmatron* software patch, not only were these incomputable and disruptive transitions inherently present within each algorithmic process, each ‘watching’ algorithm selected, evaluated and produced data for use by other such entities, thus becoming a ‘performing extensive actuality’⁶⁴. The ‘watching’ actor made a selection of some data to interact with – a positive prehension – while rejecting interaction with data outside set parameters. This selection established a positive prehensive relation with some real numbers, and a negative prehensive relation to both other real numbers and incomputable numbers: it drew positively on some of the potential, but never all of it⁶⁵. In exercising its capacities toprehend and utilise data – in order to realise potential and resolve its satisfaction as that particular temporal and spatial algorithmic process – the ‘watching’ actor established itself as a singular vector of actualised relations.

Given that the parameters of numbers the ‘watching’ actor prehends were themselves modulating, in this it performed a certain *choice* or capacity to connect or feel that was not purely prescribed or linear (that is, a simple positive connectivity), albeit that this was, as Parisi terms it, ‘automated prehension’⁶⁶. Moreover, in that each ‘differential’ algorithm in the system was watched by multiple algorithms with differing parameters, at any particular moment in the process, a number calculated could be ‘felt’ and prehensively utilised to drive the various ‘watching’ algorithms’ processes in multiple different ways. This established extensive, but speculative, immanent connections between not only a ‘differential’ algorithm and each watcher, but between the watchers themselves, in that a number positively or negatively

⁶² Portanova, *Moving without a Body*, 57.

⁶³ These uncontainable ‘infinite quantities of data...define the space of transition between algorithmic sequences’. Parisi, *Contagious Architecture*, 240.

⁶⁴ *Ibid.*, ix.

⁶⁵ An act of selecting that is an unseen but nevertheless real moment of transition and therefore indeterminacy between actualized determined occasions.

⁶⁶ Parisi, *Contagious Architecture*, xii. It is its own particular algorithmic type of prehension, rather than a simulation of other entities’ ways of feeling.

prehended by one was also either positively or negatively prehended by all the others⁶⁷.

Intensive rhythmic differences began to arise in the *Orgasmatron* patch as multiple 'watcher' algorithms waited for, and then actualised, the processing of data selected from a 'differential' algorithm. That is, each began at its own starting time – the moment it prehends a usable number range – and then took its own specific time to process. Thus what was a single flow of data was split (parasitically) into multiple nested cyclical timespans⁶⁸; with potential syncopations creating new rhythmic patterns of operation that were evolving algorithmic refrains⁶⁹. As a system utilising

⁶⁷ In this algorithmic prehensions 'allow complexity to enter into existing sets of relations'. Ibid., 70. These causal chains were 'ordinally' specific – they had a specific order in which their operations were linked – but left open other dimensions such as time and actual processes. Ordinal numbers ('firstness', 'secondness', and so on) specify an order but not an actual number. That is, they specify one rule governing a set of numbers, but leave all other parameters open to change, as numbers can be any quantity as long as they follow in order. Ordinal distances, DeLanda states, connect entities, creating a relation between, whereas metric distances separate events. DeLanda, *Intensive Science*, 126. Ordinal numbers are 'anexact yet rigorous', having a single determined spatial quality that allows them to function – 'this' is next to or after 'that' – while never strictly metric in leaving other spatio-temporal parameters open, able to leave as many factors as possible open to further individuation, retaining enough practical specificity to allow their structuring into a software patch. Ibid., 68, 81–2. The 'gate' function of the watcher algorithms was ordinal, specifying a position (bigger than', 'smaller than' or 'between' numbers), while leaving the specification of these numbers open to change. Furthermore, the ordinal links ran not only from differential-to parallel watching-to-triggering algorithms, but also in multiple lines across from watching-to-watching-to-watching as they sequentially influenced each other's parameters. This constructed chains of causation that no longer prescribed to simple linear chains of events.

A set of algorithm processes can be argued to have operated here within Whitehead's system of prehensive connection: each actively determining its own actualisation by selectively drawing on data from multiple algorithms acting as objects for it, and being an object of feeling that affects the ways other algorithms actualise. This, one might suggest, demonstrated a logic of infection that governed algorithmic operations with an open potentiality, rather than a fixed law that remained transcendent of the play of temporal forces – a process of temporal selection that makes immanent extensive connections. Whitehead, *Process and Reality*, 294. See also Portanova, *Moving Without a Body*, 10–11. When we consider an algorithm as an actualised machinic process, and not simply an abstract set of instructions, it is possible to argue that it is a temporal processing of data, no matter how infinitesimal that timespan is. Shintaro Miyazaki, "Algorhythmics: Understanding Micro-Temporality in Computational Cultures," 1. As Miyazaki argues, algorithms and assemblages of algorithms must all have their own singular passages or rhythms of operation that are analogue noises *within* the digital process, delineating a rhythmic actuality from a field of potential. Ibid., 10. See also Wilden, *Systems and Structures*, 158. When this temporal quality of processing is taken into account, numbers produced by algorithmic process are always singular spatiotemporal actualities, infected with a parasitic analogue: with the micro-rhythms of transition that express a temporal ordering of processing, gathering a new relationship between the actions. Rhythm, as Manning states, is 'a passage from one milieu to another'. Erin Manning, "Creative Propositions for Thought in Motion," *Inflexions* 1 (2008): 5.

⁶⁸ There were multiple cycles that occurred, establishing a series of potentialities of temporal scales rather than a uniform temporality, and overlapping potentialities or temporal multiplicities. See DeLanda, *Intensive Science*, 107–8.

⁶⁹ A refrain is 'any kind of rhythmic pattern that stakes out a territory', a 'point of stability, a property and an openness to the outside.' Ronald Bogue, "Rhizomusicology," *Leonardo* 20, no. 1 (1991):

parallel processing, and given that the ‘watchers’ could also affect changes in each other’s operation, these relative processing times were critical to how the system developed as a whole, as well as to how its parts processed data flows⁷⁰. The syncopation in relations between algorithmic cycles could open new potential and actual configurations of relation to invent new modulations of data.

Potential rhythms of operation are one multiplicity of qualities and quantities on which an actualised algorithmic process draws upon, along with potential ordinal sequences, potential parameters, and potential sets of numbers. In line with Whitehead’s system of eternal objects, it is possible to argue that an algorithm draws on the potential of various numbers as concepts, expressing some – whilst never exhausting all – of their potential. Here an algorithm ‘nests’ ‘infinite parts of infinities’ (concepts of numbers⁷¹) within itself⁷², but these eternal objects (as ‘the pure potentials of the universe’⁷³), are never fully able to be contained or compressed within any one algorithm: incomputable quantities as a non-linear ‘second order’ of relation⁷⁴.

88. <<http://www.jstor.org/stable/3685181>> [Accessed 02/03/2010]. On algorithmic refrains, see Miyazaki, "Algorhythms", passim; and Parisi, *Contagious Architecture*, 83–4.

⁷⁰ While considered independently, the mathematical operations of an algorithm are rate-independent ($1+1 = 2$, no matter how slowly it is calculated). Within systems of interconnected parallel processes, where the results of one calculation have potential influence over other processes, the temporal progression of all operations is crucial to the whole system’s actualisation, and these parallel temporal process allow novelty to arise in otherwise ordinally set and rate-independent procedures. See DeLanda, *Intensive Science*, 116–18; and Parisi, *Contagious Architecture*, 108, on overlapping temporal multiplicities.

⁷¹ A number as a concept has no causal efficacy, no definite relations that cut a determination from its pure potential, however, once it enters into the actuality of an equation, it becomes a definite (limited) event with specific relations or causal efficacy, such as the number five, which has no definite meaning as a pure idea, but in its incorporation into an event – five apples, or ‘5’ in the number ‘50’ – comes to have specific connections delineating it from its other potential meanings – for instance, three apples, or five oranges, or the ‘5’ in ‘500’. See Portanova, *Moving without a Body*, 107; and Alfred North Whitehead, "Mathematics in the History of Thought," 1.

<http://www.groups.dcs.stand.ac.uk/~history/Extras/Whitehead_maths_thought.html> [Accessed 27/12/13]. Similarly, a mathematical function such as ‘+’ is a pure idea that is then defined in its actual use – in conjunction with real numbers and/or other mathematical functions. See Alfred North Whitehead, *An Introduction to Mathematics*, Project Gutenberg, 2012, 54–66.

<<http://www.gutenberg.org/files/41568/41568-pdf.pdf>> [Accessed 27/12/13].

⁷² Parisi, *Contagious Architecture*, 63.

⁷³ Whitehead, *Process and Reality*, 149. Eternal entities are ‘becomings without being’ DeLanda, *Intensive Science*, 127.

⁷⁴ An entity expresses a relation to various (but not all) potentialities, but unlike other actualised entities to which it necessarily forms a relationship, it has only a relation to some eternal objects from which it selects its potential.

In *Orgasmatron*, each actualisation of a differential algorithm produced a specific and temporal mathematical process⁷⁵, so that actual ordinal sequences arose out of cuts in larger potentials (*this* watcher algorithm next accepted the data, rather than *that* watcher), potential ranges of numbers were expressed and prehended, and so on. The excess of ongoing relational potential to the virtual was never exhausted by any particular actualisation. An algorithm then had a ‘dipolar’ relationship, drawing prehensively on both relations to the actual, determined world, and conceptually prehending ‘the indeterminateness of the eternal world’⁷⁶ (the ‘eternal character of ideas’ that are the same for all entities, though ‘differently and infinitely actualized by them’⁷⁷). This potential was irreducible data – inexpressible in its entirety – that again moved algorithms beyond being merely ‘systemisation[s] of the possible’⁷⁸, and demonstrated that they were always infected with an indeterminacy of the incomputable⁷⁹. Each enaction of code was a singular and limited nexus of both physical prehensions and prehensions expressing a particular relation to larger potentials, and a material and conceptual realisation of some of its potential to interact with other material and conceptual actualities – the electrical and mechanical components of the computer and data flows, and the mathematical concepts.

This was then a speculative logic of algorithmic process, acknowledging a vagueness in its operations⁸⁰, that therefore positions the processing of data as an open expression of the concrescence of algorithmic entities, not because the code itself necessarily altered, but because there was a level of indeterminacy in the potentials and processes that governed its operations⁸¹, and which could never be fully

⁷⁵ That is, the undifferentiated potentiality of ‘x’s and ‘y’s to express an infinity of equations was replaced by actual numbers that create a defined and limited relation to the larger potential. Each algorithm then might be said to have drawn prehensively on its own past and future potential iterations, other potential actions on a flow of data, either accommodating some of their potential (but in its own way, making it a new process), or differing from it.

⁷⁶ Whitehead, *Process and Reality*, 45.

⁷⁷ Portanova, *Moving Without a Body*, 46. The number five, for example, is an eternal object that is actualised in many ways (groups of objects, beats, age, temperature, and so on). It has a relationship to all these entities, while never being exhausted by its various ingressions into actualities. Each entity has an actual or definite relationship to ‘fiveness’ as a concept and so represents a definite cut in its virtual, indeterminate status – it moves from the non-precise differential of the idea to the precision of a cut (Ibid., 46) drawing a concept into spatiotemporal association. Ibid, 38. Eternal objects are therefore ‘immanent to, and part and parcel of any actual entities’. Parisi, *Contagious Architecture*, 63.

⁷⁸ Massumi, *Parables for the Virtual*, 137.

⁷⁹ Ibid, 62.

⁸⁰ On excess and vagueness see: Whitehead, *Process and Reality*, 111–12.

⁸¹ Parisi, *Contagious Architecture*, 144.

positively accounted for in any one iteration of the algorithm. Exploitation of prehensive potential in algorithmic processing of data enabled not a smooth modulation, subsuming all to a continuous whole⁸² (of design function), but a series of cuts that interrupted, contradicted and problematised, molecularising relations by creating further differentiation within the data-algorithm machine. In the materiality of actualisation, with its disruptions and rhythms, and in its continued non-linear relations to the further potentials, algorithms exercised particular capacities (ways of prehending), and became charged with indeterminacy. Here, algorithmic prehension was a parasitic action within the computer's operations, in that it broke with clear and absolute transference of data between algorithms, inserting difference into these relations.

B.5 Systems modulating through disruption

In order to further articulate the intensive noise within algorithmic processes, in this next section I discuss the concept of multiple attractor systems. I want to explore how accentuated intensive disruption can drive an open-ended futurity through systems of attractors. In this, I want to move further into the concept of speculative transitions between software processing events to continue to think through the software patch developed for the *Orgasmatron* project.

7.5.1 Attractors

*'Remembering forwards is feeling of the attractor.'*⁸³

To begin this thinking through of attractors, I want to consider software patches as 'state spaces'— that is, consisting of a system of 'attractors' that act on and organise the potential flow of force within the system⁸⁴. States are 'meta-stable', in that they

⁸² Ibid., 167.

⁸³ Brian Massumi & Joel McKim, "Of Microperception and Micropolitics: An Interview with Brian Massumi," *Inflexions* 3 (2009): 9

⁸⁴ This is based on DeLanda's work, most specifically *Intensive Science*, which draws direct links between state systems in physics and process philosophy, itself drawing on Deleuze's thinking, most

are capable of self-organisation through their interaction with forces to accommodate change. They also have a ‘tipping point’, at which they ‘bifurcate’ and move to a new, related state with a new set of organising parameters or potentialities⁸⁵. States organise through intensive differentiation, and the ‘attractors’ condition or influence the system and its modulations by influencing the long-term tendencies of differential trajectories⁸⁶. States then are the outcomes of differential processes, with attractors implicated in the genesis of the system⁸⁷, in that they condition or lure the potential of forces as potential becomings⁸⁸ or pulls towards change⁸⁹. An attractor is a tendency towards a terminus of a trajectory, and, while real, is never reached or fully actualised⁹⁰.

The lure of attractors explains, through process, why different inputs can have a tendency to result in similar trajectories, without resorting to concepts of essences. Attractors propose a particular way of thinking through the dynamics of the modulation or differential negotiations of forces in a system in a non-prescriptive manner, in that they suggest, rather than prescribe, outcomes and relations. They are also impersonal or non-subjective tendencies that belong to the field and therefore are directly implicated in how events begin to gather within ecologies. Systems with multiple attractors ‘break the link between necessity and determinism, giving a system

directly evident perhaps in *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994) and in *The Fold: Leibniz and the Baroque* (Minneapolis: University of Minnesota Press, 1993).

⁸⁵ DeLanda calls this ‘asymtomatic stability’, whereby shocks to the system – new forces or modulations to forces for example – can dislodge the system’s trajectory. It may also return to its defined stable state if the shock is not too great. DeLanda, *Intensive Science*, 29. A simple example of these self-organising capacities can be found in the way water moves through a series of stable states as it is heated, reorganising the molecules in a different way at each distinct stage. That is, the water will move from a frozen crystalline organisation, to conduction, then to convection, turbulence, and finally steam or a gaseous state – each state with its own particular organising parameters. The states shift at specific critical temperatures, as the system breaks a limit that defines a particular organising dynamic. Ibid., 19.

⁸⁶ The trajectories chart how difference differs over time, as can be expressed in a differential equation. Ibid., 14. Trajectories are a direct consequence of the attractors that shape the dynamics of the field, though this can be far from a linear dynamic. Ibid., 33.

⁸⁷ Ibid., 15

⁸⁸ In this sense, an attractor might be seen as a ‘will to power’: an ‘internal will’ that is ‘the differential and genetic element of a force’. Giles Deleuze, *Nietzsche and Philosophy* (New York: Continuum, 2002), 51.

⁸⁹ Massumi & McKim, “Of Microperception and Micropolitics,” 9.

⁹⁰ DeLanda, *Intensive Science*, 29. In other words, it remains an ongoing potential or virtual dimension to the trajectory.

a “choice” between different destinies⁹¹. That is, since multiple attractors might lure towards different becomings, the actualised differences or modulations in the system have complex causes that remain relational, but cannot be reduced to linear causality or replication⁹². Multiple attractors here create open, problematic systems composed of contradictory potentials⁹³ and, as such, are of use within thinking through of open-ended algorithmic processes.

Each state might then be seen as a machine, modulating flows according to the play of the intensive dynamics of its competing attractors on forces, but also potentially capable of moving from one particular self-organising solution into another related state that is therefore not fixed. DeLanda warns, however, that in order to actively engage with the virtual – and therefore exhibit non-linear behavior – a system of attractors also needs to maintain a far-from-equilibrium state; that is, one in which intensive difference, as a continuous flow of energy, or data ‘traverses the system...acting as a constraint maintaining intensive differences alive’⁹⁴. Such non-equilibrium causing flow ‘reveals the potentialities hidden in the non-linearities, potentialities that remain dormant at or near equilibrium’⁹⁵. A dynamic system, as DeLanda suggests, also needs high degrees of connectivity, which, as with parametric systems, allows the potential for various component parts to mutually influence each other’s relationship to attractors⁹⁶.

⁹¹ Ibid., 35. Systems with a single attractor are relatively stable, in that they have a tendency to move towards a single potential end point. Such linear systems, however, are the exception rather than the rule, DeLanda argues, as materialist or essential approaches to science might have one believe. Ibid., chapter 4.

⁹² Attractor systems are further complicated in that an attractor itself might be viewed as a becoming-state, with its own set of attractors that condition its genesis, and also that while some attractors are steady (that is, a constant lure), others can be cyclical or chaotic. Thus, states can move periodically between relatively stable and far-from-equilibrium conditions, and an attractor itself might develop or modulate the way it pulls within an event.

⁹³ As it can never reach its multiple potential and contradictory attractors, the individuation of a difference is always a ‘partial and relative resolution manifested in a system that contains latent potential and harbours incompatibility with itself.’ Gilbert Simondon, “The Genesis of the Individual,” *Incorporations*, eds. Jonathan Crary & Sanford Kwinter (New York: Zone Books, 1992), 300.

⁹⁴ DeLanda, *Intensive Science*, 75. DeLanda acknowledges that he takes this idea from the work of Ilya Prigogine and Gregoire Nicolis.

⁹⁵ Ibid. In other words, such systems depend not only on the pull of multiple attractors to move beyond the predictable, but on the high degree of intensity that makes the system sensitive to switching between the various lures of the attractors. Ibid., 76. For some discussion of the role of attractors in creating differential potential or intensity, see Brian Massumi, *A User's Guide to Capitalism and Schizophrenia: Deviations from Deleuze and Guattari*. A Swerve Edition (Cambridge, M.A.: MIT Press, 1992), 58–61.

When the *Orgasmatron* system was ‘activated’ by the incoming differentials provided by a participant’s body⁹⁷, it moved from a state of high stability to one in which the increased flows of data from sensors became intensified (more differentialised), shifting rapidly between ranges of numbers. This data was processed by a differential algorithm, and was then subject to the ‘pull’ of multiple watcher algorithms. That is, the data had a potential to become through interaction with a watcher that drew it towards that watcher’s particular modulation of the flow⁹⁸. Inherent always was the tension of the potential for the data to be drawn instead towards relationship with one of the other watcher algorithms, or to be split and interact with two or more simultaneously. These watchers were constant attractors for a flow, and the data could oscillate between the potential pulls of them because it was a set of unstable or changing numbers⁹⁹. As with the prehensive capacity of the algorithms, the lure of attractors was here automated¹⁰⁰, but it retained its dynamic potential through the unresolvable tensions of multiple attractors.

While these watcher actors were constant or stable attractors operating throughout the *Orgasmatron*’s processes, the ‘triggering’ algorithms could be considered to be cyclical attractors. That is, they counted interactions before triggering a further event; luring interactions with data flows until a limit point was reached, when the cycle of attraction effectively reset and began again, creating multiple and overlapping rhythms of operation within the system.

Alongside this, the cross-links between the parameters of watching attractors’ inputs and other watchers’ outputs, meant that a gate parameter of an algorithm, acting as an attractor for a flow of data, was itself attracted towards realising a potential in its

⁹⁶ DeLanda, *Intensive Science*, 65.

⁹⁷ As noted before, excitement had a ‘roll-on’ effect on the *Orgasmatron*, stimulating more excitement throughout the system. As such, the participant, though stimulating the initial rise in differential data flow, was only one factor among many that continued to stimulate the system.

⁹⁸ The watcher algorithms were the collective potential futures of the data, multiplicities towards which it could engage and actualise its transduction.

⁹⁹ Whereas when in its passive or unexcited state, the numbers were relatively constant, and thus remained attracted to the same watcher.

¹⁰⁰ It should be emphasised that the attempt here was not to make a digital system that mirrored or represented ‘real world’ chemical relations between molecules and forces acting on them, but – in sympathy with Parisi’s attempt to delineate a digital mode of prehension and a digital relation to the virtual – to think further into a specifically digital mode of attractor and bifurcatory operations.

continued development¹⁰¹. A more complex system of ‘nested’ attractors arose here that moved towards concretisation, as potential was intertwined and co-produced¹⁰². This was a parasitic mode of operation, with each attractor held together by the dynamic and potentially disruptive pull of the forces of other attractors on it, and the relation between an attractor and the system or field within which it nested was ‘charged’¹⁰³.

Here, multiple attractor systems were self-organising, but not exactly autopoietic, since any stability evolved only as a result of negotiations, forces and potentials of forces, which in their virtuality remained larger than this ‘whole’. In situating such a system at a far-from-equilibrium state, where it was primed to switch between attractors with variations in data flows, the *Orgasmatron* software patch exhibited an open connectivity that was more like an ‘open whole’ that selected and accessed multiple potentialities than an autopoietic system that ‘subordinate[d] all changes to the maintenance of [its] own organization’¹⁰⁴.

B.5.2 Limits & Bifurcations

State systems can move further away from self-preservation by incorporating the ability to undergo phase transitions or bifurcations. Phase transitions ‘are events which take place at a critical value of some parameter...switching a physical system from one state to another’¹⁰⁵. That is, these bifurcations shift a system from one particular set of attractors to another set¹⁰⁶, and as such are another potentiality with which a system might engage. They are instigators of, and meaningful to, the emergence of new relations within systems, rather than necessarily changes to

¹⁰¹ As explained earlier, the parameters of any watcher’s gate (the numbers it looked for in a data flow) were capable of being adjusted by triggers from other watchers.

¹⁰² That is, it was a system of causality that was irresolvable into a linear chain, as attractors effectively nest inside each other by co-producing each other’s parameters: ‘A’ nested in ‘B’ while ‘B’ was also nested within ‘A’ simultaneously.

¹⁰³ That is, attractor and field became implicit in each other’s production.

¹⁰⁴ Humberto R. Maturana & Francesco J. Varela. *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht: Kluwer Academic Publisher’s Group, 1980), 80.

¹⁰⁵ DeLanda, *Intensive Science*, 18.

¹⁰⁶ This may include the attractors of the previous system plus new attractors.

individual component parts¹⁰⁷. Besides occurring within a system as a whole, a bifurcation might occur within an attractor, causing an evolution to its affectual capacities¹⁰⁸ – thus systems might potentially bifurcate in multiple directions at once, without dissolving the assemblage.

In the *Orgasmatron* software patch, some of the triggering algorithms had the potential to trigger the activation of new sets of attractors that operated in addition to those already active. These algorithms were triggered into action when a certain limit of intensity of a particular activity was reached¹⁰⁹, and, as there were multiple triggering algorithms counting and multiple new attractors waiting to be activated, this had multiple potential outcomes that could arise. These limits were relative thresholds of the system, ‘above which [it] cease[ed] to be itself but [got] a new lease on life in a different mode’¹¹⁰. Thus, the bifurcatory potential created limits that became creative factors, drawing new potential from the field¹¹¹.

These transitions of both the whole state and parts that made up a state – as an attractor’s parameters are shifted – were always a partial expression of its many potentials, both of the system as a whole, and the parts that exceeded this actualised state. Once again, increased excitement of the system primed it for change, through a system of potential shifts and disruptions to chains of causality as new relational factors arose in the system¹¹². This was not a smooth modulation of the system, but an ongoing potential of sudden shifts, interruptions to established tendencies, and renegotiation of relational pulls. As algorithmic prehension demonstrates a way that such process engaged selectively and creatively with that which preceded it, concepts

¹⁰⁷ Ilya Prigogine & Isabelle Stengers, *The End of Certainty: Time. Chaos and the New Laws of Nature* (New York: The Free Press, 1996), 45.

¹⁰⁸ Such as a shift from operating as a stable to a periodic or chaotic mode. See DeLanda, *Intensive Science*, 19.

¹⁰⁹ These algorithms looked for the amount of a certain activity within a specific timeframe (such as the number of triggers sent by a particular algorithm or set of algorithms), and were triggered if a specified threshold number of such activities were noted.

¹¹⁰ Massumi, *A User's Guide to Capitalism and Schizophrenia*, 36.

¹¹¹ On the creative role of the limit, see Erin Manning and Brian Massumi, "Propositions for an Expanded Gallery: Generating the Impossible," *Generating the Impossible* (2011), SenseLab, 2011, 32–3.

¹¹² This might be thought of as a ‘weak’ causality in the system, operating ‘by way of little frictions’ that ‘pull’ on existing causal chains. See Michel Serres, *Genesis* (Michigan: University of Michigan Press, 1995), 71–3.

of attractors and bifurcations here indicated a creative and open engagement with a futurity.

B.6 Towards an ecology of patching

*'Non-linear models and their multiple attractors, as well as non-linear causes and their complex capacities to affect and be affected, define a world capable of surprising us through the emergence of unexpected novelty.'*¹¹³

*'The conception of "interaction" has been expanded beyond user-machine, to larger ideas of behavior between machines and machine systems...this leads to a kind of machine ecology.'*¹¹⁴

Within her concept of the 'minor gesture', Manning poses the question of how technology might be able to 'activate a field event without making the field about the technology itself'¹¹⁵. The challenges implied in a process-driven approach to software design might be seen here as twofold. Firstly, this might involve taking Whitehead's expanded empiricism seriously, and seeking to explicate how all components of a work, including any computer operations, can be viewed as entities or events emergent within a relational system, capable of exercising some of their potential to affect and be affected. Secondly, as Manning suggests, there is always a need to consider the ethics of not only what emerges, but also how it emerges. In the computer processes, this must then be concerned with not only how the computer's operations affect the gathering of the larger artwork-ecology – its minor potential to move beyond predictive control and representation – but with how it is able to move towards an intensively minor state; a concretisation that preserves potential as it draws algorithmic processes into collective individuation.

¹¹³ DeLanda, *Intensive Science*, 187

¹¹⁴ Simon Penny, "Towards a Performative Aesthetics of Interactivity," *Fibreculture* 19 (2011): 100.

¹¹⁵ Erin Manning, "Weather Patterns, or How Minor Gestures Entertain the Environment," in *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, eds. Jay David Bolter Ulrick Ekman, et al (New York: Routledge, 2014), 18.

The tactics explored here begin to suggest ways in which a software patch might remain intensively problematic: always irresolvable as a whole, while also immanently offering partial solutions. The role of intensity – or the differential – is crucial here in keeping the system open to the disruptive pull of multiple eternal entities that it can then draw from. The *Orgasmatron* system attempted to provide this intensity through the multiple tipping points that were always cycling: through the constant unresolvable pull of the stable attractors; through the entanglement of parameters with algorithmic actualisations; and through the strain of the cut of negative and positive prehensions. In this, it was an assemblage of ‘non-linear combinatorics’ – various self-organising structural operations negotiating to produce novel structures¹¹⁶, producing algorithmic processes through a differential or parasitic approach, or ‘new ways of folding the world into itself’¹¹⁷.

Clearly, an ethics of computer process needs to do more than just consider ways to make complex relational webs that move beyond linear causality, and allow new software modes of thinking to arise. It also needs to avoid the trap of creating topological or autopoietic systems that, in their ability to anticipate and influence future modulations, enhance rather than curtail the predictive and controlling potential of the digital¹¹⁸. Here, again, the intensively parasitic has a role to play. The proposed tactics are a gathering, but also a splitting of data or force – a continuity of becoming, rather than a smooth modulation that can be predicted and controlled. They involve a concretisation of the assemblage of the various algorithmic and analogue data, but not necessarily a preservation of the assemblage over other relational potential. Instead, such systems have component parts and processes that remain larger than any actualised whole. Through their relation to eternal objects, and through the dynamics of bifurcation, these systems are always on the verge of exceeding their limits, and

¹¹⁶ Manuel DeLanda, *A Thousand Years of Non-Linear History* (New York: Zone Books, 2011), 16, 277 n5.

¹¹⁷ Simon O'Sullivan, *Art Encounters with Deleuze and Guattari: Thought Beyond Representation* (Hampshire and New York: Palgrave Macmillan, 2006), 143.

¹¹⁸ As Andrew Murphie notes, ‘vigilance’ is required to ensure artistic practices concerned with technologies enable lines of flight rather than ‘align with...social axiomatics (particularly of control)’. Andrew Murphie, “Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought,” *Convergence* 2, no. 2 (1996): 101. <<http://con.sagepub.com/content/2/2/80>> [Accessed 13/1/2013].

become the gathering, generative collective force that catalyses new ecologies of relation.

Once again, these tactics are, to a certain extent, about enabling drift: a giving up of control of outcomes, and a concentration on the setting of conditions for events to emerge from. If it is an automated emergence, then this is because it is an algorithmic mode of thought that needs to be given its own space, style and rhythms. Algorithms are events in themselves, co-emergent with and co-causal ecologies of relation that begin to gather. Their actualisations are digital becomings that begin to draw the collective expression beyond not only the biological, but also outside of the analogue. Perhaps here, a software patch can approach a diagrammatic meta-modeling, ‘strategically return[ing] its process to the quasi-chaotic field of its own emergence, in order to regenerate itself as it generates new figures, forms and contrasts, for itself and others’¹¹⁹.

¹¹⁹ Brian Massumi, *Semblance and Event* (Cambridge, M.A.: MIT Press, 2011), 103

Appendix C

Entertaining the environment: a conversation.

Andrew Goodman.
Monash University, Melbourne.

Erin Manning.
Concordia University, Montréal.

Andrew: Erin, before we discuss the implications of ‘Entertaining the environment’ [1] with an artwork or event, I thought we could perhaps start with a brief outline of how you arrived at the concept?

Erin: I think the concept has been lurking in the sidelines of my practice for some time. It began to take form around questions of interactivity, particularly around technologically innovative art projects that themselves question how art tackles notions of participation. Two issues seemed most salient for me in this turn toward the technological: 1. How do we not become too entranced by the technology itself, bending to its needs—how, as artists, do we not fall prey to feeling as though it is technology that provides the experience. Or, put differently, how do we not fall prey to the idea that it is technology that supplies the wonder, while at the same time not dismissing the complexity of technology and the many roles it can play within our practices? 2. How do we retain a sensitivity to the art-event (not just the technology-event), keeping in mind the difference between interactivity and relation, between the setting up of a cause-effect scenario and the creation of an event.

These questions led me to take the process of investing in digital technologies very

carefully, wanting to be certain that I could back out at any moment. My sense is that once the investment in a technological process becomes too dominant, we can lose sight of the field effect we are looking for—an effect that may be available with much more limited use of technology. This is not to speak against the use of technology, but to ask how technology itself becomes artful. How to create a patient investment in “what the art can do” and not just “what the technology can do.”

“Entertaining the environment” comes out of this thinking. It is a reminder not to place ourselves too quickly at the center of each experience. It suggests that what is perceptible may not be immediately available to us, or may be obfuscated by our expectation that relation always includes us. And it perhaps pushes us to reconsider how experience unfolds, leading toward more nuanced interpretations of what participation can mean.

“Entertaining the Environment” also places us immediately in a relational framework rather than investing in the hierarchy of subject and object (human and nonhuman). When the human is considered the centre of the experience, the sense is that the entertainment also has to fit into human-scales of time. In an art experience, this usually means that the access to the artwork has to be quite quick—the attention of the spectator must be secured within seconds. But when it’s the environment that is being entertained, suddenly there is a different sense of duration. It is not solely about us, but about how the various assemblages—concrete and abstract, human and nonhuman—are realigned through the artistic process. Concretely, this means that we begin to design, or better to create platforms of relation, for more ephemeral participants—air currents, movement, breath. And in doing so, we are perhaps more aware of how space is crafted, how time itself is artful.

Andrew: This is going in several interesting directions already ... Perhaps to bring it back to your first statements about technology, there does seem to be a general difficulty in finding a balance where technologies are utilized in art works. So many works seem invested in a demonstration of the technology’s capabilities (and/or the artist’s technological skills). Likewise

in ‘interactive’ work (a problematic term at best), there is a tendency to demonstrate the interactions/ connections on a very overt level—a doubly deathly combination when interactivity and technology are combined. Somehow both artists and, I think, viewers need to get beyond the entrancement with what the technology is doing and, as you say, back to “what the art can do”. If we think of painting, for example, I don’t think anyone would accept that the major conversation between a painting and a viewer would be about the pigment or type of medium used, even if the painter or a painter/viewer might be invested in thinking this through. And in fact when we watch TV or go to a movie, for the most part the huge technological complexities that allow such events to happen are hidden from sight—even CGI imagery needs to do more than demonstrate power nowadays to hold an audience—we want a different kind of engagement. It seems naive for an artist to think that they could supply much wonder through technological demonstration, considering the capabilities of Xboxes/iPads and so on.

‘Given all that, your approach of investing cautiously in technology seems a wise tactic. I try to remember the relational works of Lygia Clark as a benchmark of what might be achieved through very simple means. Perhaps we should all plaster our studios with images of her work, along with Dan Graham, Robert Irwin and Steina and Woody Vasulka to remind us of the imaginative possibilities at the fringes of technology. At the same time, electricity, for example, seems to have interesting possibilities in terms of thinking forces outside of any human agency. I’m thinking of the earliest experiments/art events with electricity—running a current through a line of 300 monks holding hands, for example (it’s the image of monks holding hands that brings in the poetry). [2] While clearly this has a ‘demonstrative’ element, it seems to me also involved in a shift in positioning the human in the environment—an understanding of and entrancement with environmental forces capable of transversing and reorganising the human. In this way perhaps technology does open possibilities for thinking art events outside of human-centric fields.

Erin: Andrew, I love this image of the monks—particularly when we think of it less as a human circle than as an electric circle activated through a collective body. Lygia Clark is certainly an example I hold on to,

particularly as a reminder that the art object is not ultimately what art is about. The artfulness of art is about the lure it activates, the provocation. A painting is a lure for feeling-seeing texture- become-image or shadow- become-sound (to think of the use of calligraphy in early Chinese painting). Lygia Clark's relational objects were not "valuable" or "artistic" abstracted from what they could do— they were "just" bags, rocks, air. But taken in concert with the relational field they were capable of activating, they became-art, became artful in the sense that they were capable of affecting the environment they were co-creating.

Technologies, as you point out, are ever-present. We cannot conceive of a world without them, nor should we. The point is to activate them at the level of their integration into a lure that stimulates the event, not to make them the event in their own right. It's not that I don't think technology-in-itself can't be an event. It's just that I don't think that is the best use of an artist's talents. Microsoft, NASA, Nike can make technology an event—they have the means to do so, and their teams are poised to produce the newest-new. Art, it seems to me, is best at doing something different: at making apparent the interstices between capitalisms and their outdoings, at making apparent the interstices between the present and the folds of time that run through it. I think of art as proposing an event-time that is not allied to linear time, that is not about novelty per se, but about creating alternate conditions for a tweaking of experience.

Andrew: I like the fact that we're including painting in this conversation. It seems to me that too often its relational possibilities are overlooked in favour, once again, of mediums more overtly able to demonstrate relation, whereas really any mode of art has potential to include interesting events of relation, as it can also fall into representational traps.

What we are talking about here could be defined as the making of 'propositional' artworks— Whitehead's definition of a proposition being of a 'lure towards feeling'. This most obviously links in Western art history to conceptual art, but also whenever events of relation are thought of as the primary artistic 'product', whether between objects (Duchamp's Three standard stoppages [1913-1914]), objects and bodies (Clark's *Caminhando* [1963]), or purely the conceptual (Yoko Ono's *Grapefruit* [1964]). I mean that it doesn't exclude the making of objects, but that they are employed tactically

rather than representationally, valued for their ability to condition, to seed the actualisation of interesting events. It does seem to me though, that there is perhaps an interesting shift from much of 60s/70s conceptual art to contemporary propositional works such as yours—a shift away from the index and towards a concern with the much more slippery areas of affect and sensation. It relates to conceptual art in that it is concerned with an open-ended ‘thinking-through’ of concepts through action and is not about representation, but the events produced are less concerned with activating conceptual processes in the viewer/participant, and more with activating Deleuze’s ‘blocs of sensation’ (my favourite definition of art).

Paul Klee defines art’s purpose as making things visible, making us see or experience in a new way, which I think fits in with your statement above about art not being about novelty but rather allowing a ‘tweaking of experience’—reconfiguring old or accessing new, and potentially decentered, relations within the world. Perhaps this brings us back to the question of what reconfigurations of relation/experience “Entertaining the environment” might specifically offer? One of the first things that comes to mind for me, suggested by the title of your work in the exhibition—Weather patterns—is an interest in reconnecting with or embracing the forces of multiplicities within nature [3]. Michel Serres refers to multiplicities as ‘nebulous set(s)...whose exact definition escapes us, and whose local movements are beyond observation’ (1995: 103), and he lists heat, flame, clouds, wind, and climate as instances of multiplicities with transformative powers that ‘nature makes us live in’. Are connections with these kinds of ‘unknowable’ fields of relation of interest to you in your work?

Erin: Absolutely! I am thinking of weather as that which surprises and disrupts, and also that which is absolutely everyday, backgrounded from experience. Whitehead talks of negative prehension, referring to aspects of experience which actively make up experience without being prehended as such. I think that for the most part this describes weather. Though, in countries like Canada (and perhaps, with climate change, more and more countries are going to move in a similar direction), weather is also that which explicitly molds experience. It is not simply that which is expected, it is that which is overcome (be it the -30 of winter or the +30 of summer). This would also be the case in places that high rates of floods or tornados, or for farmers who depend on weather for the crops. In such cases, weather itself becomes propositional, an activity that not only frames but also creates modes of engagement.)

Weather Patterns as a piece plays on all of this, but with a focus more on the side of negative prehension. I think of it as a weather system in its own right—a sound-and-wind-maker that responds not only to your direct interaction with it, but to the multitudinous electromagnetic variations in its wireless field. The idea of backgrounding human interaction (or at least not foregrounding it) was based to some degree on weather itself, which is very much out of our hands!

The last iteration of the work (May 2012, Milwaukee USA), with Nathaniel Stern and Bryan Cera, complexified the field of interaction by building in a system of digital-analog speakers that move the sound through the fabric-field (a line of 45 speakers was created with sound bouncing from one to another). We also created a fan-line that is similarly activated by the movements in the field. The data stream itself is activated by sensors sewn into some of the fabric pieces (which also have conductive fabric sewn into them). But the focus for me is not so much on the technical aspects as on the ways in which this system can make felt some of the complexity of weather all the while emphasizing its non-human-centred focus.

With your collaboration for the next iteration (August–November 2012, Melbourne Australia), I see us complexifying the soundscape, which at the moment is very basic. Sound is something you have worked with a lot, perhaps you have ideas about how sound can best work in a work that seeks to make felt field effects? I know your own work has played with these kinds of ideas as well. One of the ideas you mentioned was the possibility of making a (sound) effect that is itself negatively prehended—a sound, perhaps, that unfolds in a time that is not of the human. What would a sound be like that took three months to unfold? (I am thinking of the three-month span of our exhibition/collaboration project).

Andrew: So a negatively prehended sound would perhaps have to be conceived as one that one (as a human) could somehow become aware of, in its existence, but unable perhaps to perceive it—one to grasps it conceptually only. If you take the pitch of a sound outside of a perceivable human range—higher or lower—I think there can still be an affectual relation to the body: low sounds experienced as some kind of almost rhythm or pulse in your bones, and high sounds that are almost felt as a sensation on the hairs on your skin—that's at least my approximation, since they escape any direct conceptualisation—you know them only sideways, through their effects. Of course with the high-

pitched sounds you ‘know’ them through the effects seen in the environment—most specifically all the dogs start to howl in my neighbourhood when I’m mixing.

To me this could lead into the idea of ‘micro-perceptions’, things noticeable through affect and sensation rather than perception, that as a multiplicity perhaps can become a perceived sound. It’s something I’ve been experimenting with, layering eight or more sounds ‘behind’ the dominant sound so that while you cannot ever name them as separate things, they add qualitatively to the overall effect. That is, when you take them out it sounds different somehow, but the change is nothing quantifiable, almost, I want to say, an affectual tonality, that works through the body in ways other than the ears. Perhaps this relates to synesthesia—we have to start thinking outside ‘normative’ perception and about what a sound feels like on the skin, what it tastes like, what it looks like, as much as what it sounds like.

But more generally, as you suggest, thinking imaginatively through specifically non human time spans and/or fields of environmental forces that other ‘beings’ can connect with is an interesting angle, inherently decentering the human. If we accept from Whitehead that all entities are capable of prehension then we will want to specifically think inanimate as well as animate and sentient beings—which is where imagination comes in. What forces in nature is a rock attuned to—heat, wind, acidity? Where do a tree’s sympathies lie—with rain, daylight patterns, symbiotic conversations with bacteria? On some level we can I guess imagine these things conceptually if not bodily—we can also know mechanically but never empathically understand what the changes in sap flow as the days lengthen feels like and how this connects a tree to the tilt of the earth.

But what about ways of experiencing that we can’t even really begin to imagine or name? In *The embodied mind* Francisco Varela talks about different mechanisms for seeing—humans have, apparently, developed three differential categories (hue, saturation and tone), while some animals have only two, and others have perhaps four or more. These added qualities are not simply extensions of our ways of seeing (being able to see infra red, for example), but completely new categories. For example, he postulates that there might also be, for some creatures, a rhythmic pulse to objects that gives a whole new dimension to ‘seeing’ (Varela, Thompson and Rosch, 1992: 147-180). Even as we know and can already experience that the senses are synesthetic and already

irretrievably intertwined, this seems to go beyond that to truly unknowable forces.

The big question for me is whether we can manage to make something felt that is so outside of human timespan or perception so that it can only be understood negatively. Can this be more than a conceptual understanding? That is, can we move beyond a level of pitching a tone that humans can't hear, while telling them it exists so that they can conceptualise their lack of perception, to a true prehension, related to/in a bodily, affectual or sensual manner? I'm not sure if this will be a productive line of inquiry, whether it could prove enlightening or too negative towards, not only human subjectivities, but also more-than-human bodies rather than establishing new and interesting relations with them ...

Erin: The challenge, as you say, is not presuming to know how a more-than-human ecology makes itself felt not only beyond the human, but also for the human. It would be a relatively straightforward move to create a theoretical problem that translated to one that we call negatively prehended (that is, work with sounds that are outside of human hearing but heard by animals). But this might simply keep us in a standstill as regards experimenting with the idea of entertaining the environment—it might presume we know what that means and can orchestrate it. It seems to me that the call must remain experimental, that entertainment is something that we need to be reinventing all the while. Brian Massumi and I recently went back to Whitehead's two perceptual categories "causal efficacy" and "presentational immediacy" and rethought them in terms of entrainment and entertainment. We did this to try to activate the sense in "causal efficacy" of there being a force that exceeds any straightforward notion of causality. As we understand it, the first phase of perception - what Whitehead calls causal efficacy - involves an immanently relational intertwining of perception with action. It is causal in the sense that it directly activates a field of relation. It entrains. And out of this entrainment follows the possibility of the activation (the self-activation, at the level of the field itself) of a notion of entertainment, or what Whitehead calls "presentational immediacy." Entertainment here is not about the human being entertained by the environment, but about the direct perception of the fielding of experience such that it brings its qualitative resonances to the fore. I think this is what we are talking about in terms of "entertaining the environment." We are not wanting to explore the idea of an instrumental, human-centred approach that involves "entertaining" the environment. That would just take us back to square one.

Instead, we are asking what it might look like, feel like, be like, for entertainment to be given back to us as a field of relation.

Notes

[1] Entertaining the Environment was an exhibition in Melbourne in during 2012. See < <http://www.andrewgoodman.com.au/388/>>. For more on the concept of entertaining the environment, see Manning, 2011. Weather Patterns is a work by Erin Manning, Nathaniel Stern, Bryan Cera, Andrew Goodman, exhibited in one iteration as part of Entertaining the Environment.

[2] See Elsenaar and Scha, 2002: 19.

[3] For more on Weather Patterns, see http://www.erinmovement.com/erin_manning_weatherpatterns_exhibit.swf.

References

- Elsenaar, Arthur and Scha, Remko. 'Electric Body Manipulation as Performance Art: A Historical Perspective', Leonardo Music Journal 12, 'Pleasure' (2002): 17-28.
- Manning, Erin. 'Fiery, Luminous, Scary', Substance 40.3 (2011): 41-48.
- Serres, Michel. Genesis (Michigan: University of Michigan Press, 1995).
- Varela, Francisco J., Thompson, Evan, Rosch, Eleanor. The embodied mind (Cambridge Massachusetts: MIT Press, 1992).

Bibliography

Aaron, Jacob. "Play It Again, but This Time with Feeling." *New Scientist* 2011, no. 16th April (2011): 24-25.

Abrahm, David. *The Spell of the Sensuous: Perception and Language in the More-Than-Human-World*. Toronto and New York: Vintage Books, 1997.

Anker, Katherine. "Exploring the Intelligent Art Installation as a Space for Expansion of the Conscious Mind." *Technoetics Arts* 6, no. 3 (2009): 251-258.

Arakawa and Madeline Gins. *Reversible Destiny*. New York: Guggenheim Museum, 1997.

———. *Architectural Body*. Alabama: University of Alabama Press, 2002.

———. *Making Dying Illegal*. Berkley, CA: Roof Books, 2006.

———. "Biotopological Programming: A New Procedure/Method for Staying Alive Indefinitely." In *Generating the impossible*, 1–22. Montreal: unpublished, 2011.

Arsic, Branka. "Thinking Leaving." In *Deleuze and Space*, edited by I Buchanan and G Lambert. Edinborough: Edinborough University Press, 2005.

Artaud, Antonin and Susan Sontag. *Selected Writings*. Translated by H Weaver. Los Angeles: University of California Press, 1988.

Ascott, Roy. "Editorial: Connectivity: Art and Interactive Telecommunications." *Leonardo* 24, no. 2 (1991): 115-117. Accessed 10/5/2011.
<http://www.jstor.org/stable/1575277>.

- . *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness*. Berkley: University of California Press, 2003.
- Assad, Maria L. "From Order to Chaos: Michel Serres's Field Models." *SubStance* 20, no. 2, issue 65 (1991): 33-43. Accessed 2/8/2011.
<http://www.jstor.org/stable/3684967>.
- Attali, Jacques. *Noise: The Political Economy of Music*. Translated by Brian Massumi. Minneapolis: University of Minnesota Press, 1985.
- Barad, Karen. "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter." *Signs: Journal of Women in Culture and Society* 28, no. 3 (2003): 801-831. 30/04/2013.
<http://www.jstor.org/stable/10.1086/345321>.
- . *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham and London: Duke University Press, 2007.
- Barber, Stephen. *Artaud: The Screaming Body*. S.I.: Creation Books, 1999.
- Barker, Timothy. "Process and (Mixed) Reality: A Process Philosophy for Interaction in Mixed Reality Environments " In *2009 IEEE International Symposium on Mixed and Augmented Reality - Arts, Media and Humanities*,, edited by Raphaël Grasset, Carl Disalvo, Jarrell Pair and Jay Bolter, 17-23. Orlando, Florida, USA: the Institute of Electrical and Electronics Engineers, 2009.
- Barrios, Jose luis and Rebecca MacSween. "A Conversation between José Luis Barrios and Rafael Lozano-Hemmer." In *Sala de Arte Público Siquieros (SAPS)*, edited by Jose luis Barrios and Itala Schmelz. Mexico City, 2005.
- Barthes, Roland. *Empire of Signs*. London: Jonathan Cape, 1982.

- Bataille, Georges, Fred Botting and Scott Wilson. *The Bataille Reader*. Oxford: Blackwell Publishers, 1997.
- Bataille, Georges and Allan Stoekl. *Georges Bataille: Visions of Excess, Selected Writings 1927-1939*. Translated by A Stoekl, C Lovitt and D Lesli. Minneapolis: University of Minnesota Press, 1985.
- Bateson, Gregory. *Steps to an Ecology of Mind*. Chicago: University of Chicago, 2000.
- Bearn, Gordon C. "Effecting Affect: The Corporeal Ethos of Gins and Arakawa." *Journal of aesthetics education* 44, no. 2, Summer (2010): 40-49.
- Bender, Gretchen & Timothy Druckery, eds. *Culture on the Brink: Ideologies of Technology*. Seattle: Bay Press, 1994.
- Bennett, Jane. *Vibrant Matter: A Political Ecology of Things*. Durham N.C. : Duke University Press, 2010.
- Benthien, Claudia. *Skin: On the Cultural Border between Self and the World*. New York: Columbia University Press, 2002.
- Bergson, Henri. *Matter and Memory*. New York: Dover Publications, 2004.
- Bertelsen, Lone. "Affect and Care in 'Intimate Transactions'." *Fibreculture* 21, (2012): 31-71.
- '*Binary Lives: Steina & Woody Vasulka*'. Directed by Peter Kirby. VHS. Co-produced by Media Art Services and Grand Canal, Paris, 1996.
- Birringer, Johannes. "Interactivity: 'User Testing' for Participatory Art Works." *International journal of performance arts and digital media* 1, no. 2 (2005): 147-173.

- Bishop, Claire. "Antagonism and Relational Aesthetics." *October* 110, no. Fall (2004): 51-79.
- . "The Social Turn: Collaboration and Its Discontents." In *Rediscovering Aesthetics: Transdisciplinary Voices from Art History, Philosophy and Art Practice*, edited by Julia Jansen Francis Halsall, Tony O'Connor. Stanford, CA: Stanford University Press, 2009.
- Boccioni, Umberto. "Technical Manifesto of Futurist Sculpture. Preface to the First Exhibition of Futurist Sculpture." In *Modern Artists on Art*, edited by Robert L. Herbert, 40-51. New York: Dover Publications, 2000.
- Bogue, Ronald. "Rhizomusicology." *Leonardo* 20, no. 1 (1991): 85-101. Accessed 02/03/2010. <http://www.jstor.org/stable/3685181>.
- . *Deleuze on Music, Painting and the Arts*. New York and London: Routledge, 2003.
- Bois, Yves-Alain and Lygia Clark. "Nostalgia of the Body." *October* 69, no. Summer (1994): 85-109.
- Bown, Oliver. "Generative and Adaptive Creativity: A Unified Approach to Creativity in Nature, Humans and Machines." In *Computers and Creativity*, edited by Jon and Mark d'Inverno McCormack, 361-381. Heidelberg, New York, London, Dordrecht: Springer, 2012.
- Joseph Bracken, "Whitehead and the critique of logocentrism," *Process and Difference: Between Cosmological and Poststructuralist Postmodernisms*, eds. Catherine Keller & Anne Daniell (Albany: State University of New York Press, 2002), 91-110.

- Braidotti, Rosi. "Towards a New Nomadism: Feminist Deleuzian Tracks." In *Gilles Deleuze and the Theater of Philosophy*, edited by Constantin V. Boundas and Dorothea Olkowski. New York: Routledge, 1994.
- . *Metamorphoses: Towards a Materialist Theory of Becoming*. Cornwall: MPG Books, 2002.
- Brennan, Teresa. *The Transmission of Affect*. Ithaca & London: Cornell University Press, 2004.
- Brown, Neil C M, Timothy S Barker and Dennis Del Farero. "The Framework for a Theory of the Formation of Interactive Narratives." *Leonardo* 44, no. 3 (2011): 212-219.
- Brown, Steven D. "Michel Serres: Science, Translation and the Logic of the Parasite." *Theory, culture and society* 19, no. 3 (2002): 1-27. Accessed 0/4/2011. www.tcs.sagepub.com/content/19/3/1.
- Brunner, Christopher. "Immediation as Process and Practice of Signalethic Mattering." *Journal of aesthetics and culture* 4, (2012).
- Buchanan, Ian. *Deleuzism: A Metacommentary*. Durham: Duke University Press, 2000.
- de Certeau, Gilles. *The Practice of Everyday Life*. Berkeley: University of California Press, 1988.
- Code, Murray. *Order and Organism: Steps Towards a Whiteheadian Philosophy of Mathematics and the Natural Sciences*. Albany: State University of New York Press, 1985.
- Colebrook, Claire. *Understanding Deleuze*. Cultural Studies, edited by R Fensham and T Threadgold. Crows Nest: Allen and Unwin, 2002.

- . *Deleuze: A Guide for the Perplexed*. New York: Continuum, 2006.
- Combes, Muriel. *Gilbert Simondon and the Philosophy of the Transindividual*.
Translated by Thomas LaMarre. Cambridge & London: MIT Press, 2013.
- Conner, Steven. "Michel Serres' Five Senses." In *Michel Serres conference*,
Unpaginated. Birbeck College, London, 1999.
- Couze, Venn. "Individuating, Relationality, Affect: Rethinking the Human in Relation
to the Living." *Body and Society* 16, no. 1 (2010): 129-161. Accessed
3/4/2012. <http://bod.sagepub.com/content/16/1/129>.
- Cytowic, Richard E., MD. *Synesthesia: A Union of the Senses*. Cambridge and
London: The MIT Press, 2002.
- Davies, Char. "Changing Space: VR as a Arena of Embodied Being." In *The Virtual
Dimension: Architecture, Representation and Crash Culture*, edited by John
Beckmann, 144-155. New York: Princeton Architectural Press, 1998.
- Debais, Didier. "What Is Relational Thinking." *Inflexions* 5, (2012): 1-11.
- DeLanda, Manuel. "Nonorganic Life." In *Incorporations*, edited by Jonathan Crary &
Sanford Kwinter, 129-167. New York: Zone Books, 1992.
- . "Virtual Environments and the Concept of Synergy." *Leonardo* 28, no. 5
(1995): 357-360. Accessed 13/1/13. <http://www.jstore.org/stable/1576218>.
- . "Immanence and Transcendence in the Genesis of Form." *The South
Atlantic Quarterly* 96, no. 3 (1997): 499-514. Accessed 13/1/2013.
<http://search.proquest.com/docview/197281030?accountid=112528>.

- . "Meshworks, Hierarchies and Interfaces." In *The Virtual Dimension: Architecture, Representation and Crash Culture*, edited by John Beckmann, 275-285. New York: Princeton Architectural Press, 1998.
- . *Intensive Science and Virtual Philosophy*. New York and London: Continuum, 2005.
- . *A Thousand Years of Non-Linear History*. New York: Zone Books, 2011.
- Deleuze, Gilles. *Foucault*. Translated by Seán Hand. Minneapolis: University of Minnesota Press 1988.
- . *The Fold: Leibniz and the Baroque*. Translated by Tom Conley. Minneapolis: University of Minnesota Press, 1993.
- . *Difference and Repetition*. Translated by Paul Patton. New York: Columbia University Press, 1994.
- . *Negotiations*. New York: Columbia University Press, 1995.
- . *Francis Bacon: The Logic of Sensation*. Translated by Daniel W. Smith. Cornwall: MPG Books, 2002.
- . *Nietzsche and Philosophy*. Translated by Hugh Tomlinson. London and New York: Continuum, 2002.
- . *Desert Islands and Other Texts*. Translated by Michael Taormina. New York: semiotext(e), 2004.
- . *Cinema 2*. Translated by Hugh Tomlinson & Robert Galeta, 3rd ed. Chippenham, Wiltshire: Continuum, 2005.

- Deleuze, Gilles and Felix Guattari. *Kafka: Towards a Minor Literature*. Translated by Dana Polan. Minneapolis & London: University of Minnesota Press, 1986.
- . *A Thousand Plateaus: Capitalism and Schizophrenia*. Edited and translated by Brian Massumi. Minneapolis: University of Minnesota Press, 1987.
- . *What Is Philosophy?* Translated by Hugh Tomlinson and Graham Burchell. New York: Columbia University Press, 1994.
- Deleuze, Gilles, Félix Guattari and Michel Foucault. *Anti-Oedipus: Capitalism and Schizophrenia*. Translated by R Hurley, M Seem and H Lane. New York: Penguin Group, 2009.
- Deleuze, Gilles and Claire Parnet. *Dialogues II*. Translated by Hugh Tomlinson, Barbara Habberjam and Elliot Ross Albert. London and New York: Continuum, 1987.
- Derrida, Jacques. "The Time of the King." In *Given Time: I Counterfeit Money*, 71-107. Translated by Peggy Kamuf. Chicago & London: University of Chicago Press, 1992.
- Derrida, Jacques. "A Certain Impossibility of Saying the Event." *Critical Inquiry* 33, no. 2 (2007): 441-461.
- Dery, Mark. *Escape Velocity: Cyberculture at the End of the Century*. New York: Grove Press, 1996.
- Didier, Anzieu. *The Skin Ego*. New Haven: Yale University Press, 1989.
- Driscoll, Catherine. "The Moving Ground: Locating Everyday Life." *South Atlantic Quarterly* 100, no. 2, Spring (2001): 381-398.

- Dubberly, Hugh, Paul Pangaro, Usman Haque "On Modeling: What Is Interaction? Are There Different Types?" *Interactions*, no. January-February (2009): 69-75. Accessed 1/12/2013.
<http://interactions.acm.org/archive/view/january-february-2009/on-modelingwhat-is-interaction1>.
- Dumouchel, Paul. "Simondon's Plea for a Philosophy of Technology." *Inquiry: an interdisciplinary journal of philosophy* 35, no. 3-4 (1992): 407-421. Accessed 3/4/2012. <http://dx.doi.org/10.1080/00201749208602302>.
- Ednie-Brown, Pia. "All-over, over-All: Biothing and Emergent Composition." *Archit Design*, 76 no.4 (2006): 72–81.
- Ednie-Brown, Pia. "Plastic Super Models: Aesthetics, Architecture and the Model of Emergence." *The Fibreculture Journal*, no. 12 (2008).
- . "The Ethics of the Imperative." *Architectural design* 221, no. January/february (2013): 18-23. Accessed 28/10/2013.
http://issuu.com/wiley_publishing/docs/the_innovation_imperative_-_sample.
- Elsenaar, Arthur and Remko Scha. "Electric Body Manipulation as Performance Art: A Historical Perspective." *Leonardo* 12, no. Pleasure (2002): 17-28. Accessed 18/03/2010. <http://www.jstor.org/stable/1513344>.
- Faber, Roland, Henry Krips and Daniel (Eds.) Pettus. *Event and Decision: Ontology and Politics in Badiou, Deleuze and Whitehead*. Newcastle on Tyne: Cambridge Schoars Publishing, 2010.
- Fernandez, Maria. "The Body Is More Than Flesh." *Art Journal* 65, no. 3 (2006). Accessed 13/4/2010.
<http://wilson.txt.hwwilson.com.ezproxy.lib.monash.edu.au/pdf/04400/wuwmn/ufy.pdf>.

- Flores, Tatiana. "Rafael Lozano-Hemmer: The Historical (Self-) Concious." *Art Nexus* 7, no. 71 (2008): 66-71. Accessed 3/3/2010.
www.wilson.txt.hwwilson.com.ezproxy.lib.monash.edu.au/pdfhtml/04394/mvy77/xfg.htm.
- Foucault, Michel. *The Foucault Reader*. Edited by Paul Rabinow. New York: Random House, 2010.
- Frichot, Helene. "Daddy, Why Do Things Have Outlines? Constructing the Architectural Body." *Inflexions* 6, (2013): 112-124
- Frieling, Rudolf. *The Art of Participation: 1950 to Now*. San Francisco; London: San Francisco Museum of Modern Art, 2008.
- Fristch, Johan. "Understanding Affective Engagement as a Resource in Interactive Design." In *Nordic design conference*. Oslo: Nordes, 2009.
- Fritsch, Jonas and Thomas Markussen. "Editorial: Exploring Affect in Interactive Design, Interaction Based Art and Digital Art." *Fibreculture* 21, (2012): 1-9.
- Fuery, Kelli. *New Media: Culture and Image*. Hampshire and New York: Palgrave Macmillan, 2009.
- Galanter, Philip. "The Problem with Evolutionary Art Is..." In *Evo applications Part II, LNCS 602*, edited by C. DiChio, 321–330. Berlin, Heidelberg: Springer-Verlag, 2010.
- Gibson, James J. *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin Company, 1979.
- Gil, Jose. *Metamorphoses of the Body*. Translated by Stephen Mueke. Minneapolis and London: University of Minnesota Press, 1998.

- Giles, Jim. "Inside the Race to Launch Microsoft's Kinect." *New Scientist* 2010, no. 4th December (2010): 22-23.
- Golding, Johnny. "Fractal Philosophy (and the Small Matter of Learning How to Listen): Attunement as the Task of Art." *CTheory*, (2010). Accessed 20/11/2010. www.ctheory.net/articles.aspx?id=634.
- Goodman, Andrew and Erin Manning. "Entertaining the Environment: A Conversation." *Fibreculture* 21, (2012): 24-35.
- Goodman, Steve. *Sonic Warfare: Sound, Affect and the Ecology of Fear*. Cambridge and London: MIT Press, 2010.
- Goodman, Steve and Luciana Parisi. "Extensive Continuum Towards a Rhythmic Anarchitecture." *Inflexions* 2, (2009).
- Gorschluter, Peter. *The Fifth Floor - Ideas Taking Space*. Liverpool: Liverpool University Press, 2009.
- Grau, Oliver. *Virtual Art: From Illusion to Immersion*. Cambridge and London: MIT Press, 2003.
- . *Mediaarthistories*. Cambridge: MIT Press, 2007.
- Gregg, Melissa & Gregory J. (Eds.) Seigworth. *The Affect Theory Reader*. Durham & London: Duke University Press, 2010.
- Grosz, Elizabeth. "A Thousand Tiny Sexes; Feminism and Rhizomatics." In *Giles Deleuze and the Theatre of Philosophy*, edited by Constantin V. Boundas and Dorothea Olkowski. New York: Routledge, 1994.
- . *Space, Time and Perversion: The Politics of Bodies*. St Leonards: Allen and Unwin, 1995.

- . *Architecture from the Outside: Essays on Virtual and Real Space*. Georgia: MIT Press, 2001.
- . *Chaos, Territory and Art: Deleuze and the Framing of the Earth*. New York: Columbia University Press, 2008.
- Guattari, Félix. "Machinic Heterogenesis." In *Rethinking Technologies*, edited by Verena Conley, 13-27. Minneapolis: University of Minnesota Press, 1993.
- . *Chaosmosis: An Ethico-Aesthetic Paradigm*. Translated by Paul Bains & Julian Pefanis. Bloomington: Indiana University Press, 1995.
- . "On Machines." *Complexity* 6, (1995): 8-12. Accessed 28/1/2013.
http://www.ntua.gr/archtech/forum/post2006interaction/on_machines.htm.
- . *Chaosophy: Soft Subversions*. New York: Semiotext(e), 1996.
- . *The Machinic Unconscious: Essays in Schizoanalysis*. Los Angeles: Semiotext(e), 2007.
- . *The Three Ecologies*. Translated by Ian Pinder and Paul Sutton. London and New York: Continuum, 2008.
- Guattari, Félix and Gary Genosho (Ed). *The Guattari Reader*. Oxford: Blackwell Publishers, 1996.
- Guattari, Felix and Suely Rolnik. *Molecular Revolution in Brazil*. Translated by Karel Clapshaw & Brian Holmes. Los Angeles: Semiotext(e), 2005.
- Haenaff, Marcel and Anne-Marie Feenberg. "Of Stones, Angels and Humans: Michel Serres and the Global City." *SubStance* 26, no. 2, issue 83 (1997): 59-80.
 Accessed 2/8/2011. <http://www.jstor.org/stable/3684696>.

- Hansen, Lone Koefoed. "The Interface at the Skin." In *Interface Criticism: Aesthetics Beyond Buttons*, edited by Christian Ulrik & Pold Andersen, Søren Bro, 63-90. Aarhus Aarhus University Press, 2011.
- Haque, Usman. "Architecture, Interaction, Systems." *AU: Arquitetura & Urbanismo* 149, no. August (2006): 1-5. Accessed 1/12/2013.
<http://www.haque.co.uk/papers/ArchInterSys.pdf>.
- . "The Architectural Relevance of Gordon Pask." *Architectural design* 77, no. 4 (2007): 54-61.
- Haraway, Donna.
Modest_Witness@Second_Millenniu.Femaleman^c_Meets_Oncomousetm.
 London: Routledge, 1997.
- Harris, Paul A. "The Itinerant Theorist: Nature and Knowledge/Ecology and Topology in Michel Serres." *SubStance* 26, no. 2, issue 83 (1997): 37-58.
 Accessed 2/8/2011. <http://www.jstor.org/stable/3684695>.
- Hauser, Jens, Ed. *Sk-Interfaces*. Liverpool: Liverpool University Press, 2008.
- Henry, Granville C. *Forms of Concrescence: Alfred North Whitehead's Philosophy and Computer Programming Structures*. Canbury, NJ & London: Associated University Presses, 1993.
- Highmore, Ben. *Everyday Life and Cultural Theory*. London: Routledge, 2002.
- Hill, David and Rafael Lozano-Hemmer. *Under Scan*. Italy: Graphic Thought Facility, 2007.
- Hurowitz, Michael and Timothy Leary, Eds. *Chaos and Cyberculture*. California: Ronin Publishing, 1994.

Idhe, Don. *Listening and Voice: A Phenomonology of Sound*. Athens: Ohio University Press, 1976.

Ingold, Tim. *Being Alive: Essays on Movement, Knowledge and Description*. London and New York: Routledge, 2011.

Irwin, Robert. *Notes Towards a Conditional Art*. Los Angeles: J. Paul Getty Museum, 2011.

James, William. *Essays in Radical Empiricism*. Memphis, TN: Longmans, Green and Co., 2010.

Jones, Amelia. *SelfImage: Technologies, Representation and the Contemporary Subject*. New York: Routledge, 2006.

Kahn, Douglas. *Noise, Water, Meat: A History of Sound in the Arts*. Cambridge and London: MIT Press, 1999.

Keller, Catherine and Anne Daniell, Eds. *Process and Difference: Between Cosmological and Poststructuralist Postmodernisms*. Albany: State University of New York Press, 2002.

Kirby, Peter. *Binary Lives: Steina and Woody Vasulka*. Grand Canal and Media Art Services, 1996.

Kosofsky Sedgwick, Eve. *Touching Feeling: Affect, Pedagogy, Performativity*. Durham & London: Duke University Press, 2003.

Lamant, Michelle. "Untitled." *The American journal of sociology* 93, no. 3 (1987): 720-721.

Lamarre, Thomas. "Humans and Machines." *Inflexions* 5, (2012): 29-67.

- Langer, Beryl. "Untitled." *Contemporary Sociology* 17, no. 1 (1988): 12-124.
- Latour, Bruno. "On Interobjectivity." *Mind, culture and activity* 3, no. 4 (1996): 228-245. Accessed 10/10/2012. <http://dx.doi.org/10.1207/s15327884mca03042>.
- Levine, Joshua. "Experimental Visual Experience Devices." *Leonardo* 33, no. 1 (2000): 27-33. Accessed 18/03/2010. <http://www.jstor.org/stable/1576758>.
- Levy, Pierre. *Collective Intelligence: Mankind's Emerging World in Cyberspace*. Cambridge: Helix Books, 1997.
- . *Cyberculture Electronic Mediations*. Minneapolis: University of Minnesota Press, 2001.
- Lingis, Alphonso. *Excesses*. Albany: State University of New York Press, 1983.
- . "The Society of Dismembered Body Parts." In *Giles Deleuze and the Theatre of Philosophy*, edited by Constantin V. Boundas and Dorothea Olkowski. New York: Routledge, 1994.
- . *Sensation: Intelligability in Sensibility*. New York: Humanity Books, 1996.
- . *The Imperative*. Bloomington: Indiana University Press, 1998.
- . *Body Transformations: Evolutions and Atavisms in Culture*. New York: Routledge, 2005.
- Lorraine, Tamsin. "The Nomadic Subject in Smooth Space." In *Deleuze and Space*, edited by I. Buchanan and G. Lambert. Edinburgh: Edinburgh University Press, 2005.

- Loveless, Natalie S. "Practice in the Flesh of Theory: Art, Research, and the Fine Arts Phd." *Canadian Journal of Communication*, 37, no. 1 (2012): 93-108. Accessed 2/2/2014.
https://www.academia.edu/1476730/Practice_in_the_Flesh_of_Theory_Art_Research_and_the_Fine_Arts_PhD_2012_.
- Lowry, Sean. "Philip Brophy: Dissonant Juxtaposition and Poetic Estrangement." *Broadsheet* 36, no. 1 (2007): 48-51.
- Lozano-Hemmer, Rafael. "Perverting Technological Correctness." *Leonardo* 29, no. 1 (1996): 5-15. Accessed 02/03/2010. <http://www.jstor.org/stable/1576269>.
- . "'Interview by Jose Luis Barrios'." edited by Gallery Guy Bärtschi. Genève, Switzerland: Gallery Guy Bärtschi, 2005. Accessed 11/4/2013.
<http://www.lozano-hemmer.com/publications.php?subtype=Interviews>.
- . "Some Things Happen More Often Than All the Time." edited by Venice Biennale Mexico Pavillion. Spain: Turner, 2007.
- . *Rafael Lozano-Hemmer*. Radio program. Broadcast Friday 18 June 2010 10:49AM. Melbourne: Radio National, 2010.
- Lozano-Hemmer, Rafael, Marie-Pier Boucher and Patrick Harrop. "Alien Media: An Interview with Rafael Lozano-Hemmer." *Inflexions* 5, (2012): 149–160.
- Lozano-Hemmer, Rafael, Ed. "Vectorial Elevation: Relational Architecture No. 4." edited by National council for culture and the arts. Son Torge: Mexico National council for culture and the arts, 2000.
- Lucaciu, Mihai. "This Scream I've Thrown Ot Is a Dream: Corporeal Transformation through Sound, an Artaudian Experiement." *Studies in musical theatre* 4, no. 1 (2010): 67-74.

Lynn, Greg. *Folds, Bodies and Blobs*: Depot Legal: Bibliotheque Royale, 1998.

Manning, Erin. *Politics of Touch: Sense, Movement, Sovereignty*. Minneapolis: University of Minnesota Press, 2007.

———. "Creative Propositions for Thought in Motion." *Inflexions* 1, (2008).

———. *Relationscapes*. Cambridge: MIT Press, 2009.

———. "Always More Than One: The Collectivity of 'a Life'." *Body and Society* 16, no. 1 (2010): 117-127. Accessed 3/4/2012.
<http://bod.sagepub.com/content/16/1/17>.

———. *Always More Than One: Individuation's Dance*. Durham: Duke University Press, 2013.

———. "The Dance of Attention." *Inflexions* 6, (2013).

———. "Weather Patterns, or How Minor Gestures Entertain the Environment." In *Complex Ubiquity Effects: Individuating, Situating, Eventualizing*, edited by Jay David Bolter Ulrick Ekman, Lily Diaz, Morten Sondergaard, Maria Engberg. New York: Routledge, forthcoming, 2014.

Manning, Erin and Brian Massumi. "Propositions for an Expanded Gallery: Generating the Impossible." Edited by participants in the generating the impossible 2011 convergence, 1-43, 2010.

Manovich, Lev, "On Totalitarian Interactivity" (Notes from the Enemy of the People). Accessed 20/10/2010. <http://manovich.net/index.php/projects/on-totalitarian-interactivity>.

———. *The Language of New Media*. Cambridge: MIT Press, 2001.

- . "Don't Call It Art: Ars Electronica 2003." In *Ars Electronica 2003*, 2003. Accessed 20/10/2010. <http://manovich.net/articles/>.
- . "New Media from Borges to Html." In *The New Media Reader*, edited by Noah Wardrip-Fruin and Nick Montfort: MIT Press, 2003.
- Martin, S, A Ruiz and S Rolnik. "The Experimental Exercise of Freedom." edited by Los Angeles Museum of Contemporary Art. Los Angeles Los Angeles Museum of Contemporary Art, 2000.
- Massumi, Brian. *A User's Guide to Capitalism and Schizophrenia : Deviations from Deleuze and Guattari*. A Swerve ed. Cambridge, MA: MIT Press, 1992.
- . "Interface and Active Space: Human Machine Design." In *6th international symposium on electronic art*. Montreal, Canada, 1995. Accessed 12/8/2011. <http://www.brianmassumi.com/essays>.
- . "Sensing the Virtual, Building the Insensible." *Hypersurface architecture* 68, no. 5/6 (1998): 16-24. Accessed 13/4/2010. <http://www.brianmassumi.com/textes/Sensing%20the%20Virtual.pdf>.
- . "The Interface and I." *Artbyte: The Magazine of Digital Arts* 1, no. 6 (1999): 30-37.
- . "Too-Blue: Color Patch for an Expanded Empiricism." *Cultural studies* 14, no. 2 (2000): 177-226.
- . *Navigating Movements*. c2001. Accessed 13/4/2010. <http://www.brianmassumi.com/interviews/NAVIGATINGMOVEMENTS.pdf>
- . *Parables for the Virtual : Movement, Affect, Sensation* Post-Contemporary Interventions. Durham, N.C.: Duke University Press, 2002.

- . "Flash in Japan: Brian Massumi on Rafael Lozano-Hemmer's Amodal Suspension." *Artforum International* 42, no. 3 (2003): 37-39.
- . "Urban Appointment: A Possible Rendez-Vous with the City." In *Making Art of Databases*, edited by J. & Mulder Broumer, A., 28-55. Rotterdam: V2 Organisative, 2003.
- . "The Thinking-Feeling of What Happens." *Inflexions* 1, (2008).
- . *Semblance and Event*. Cambridge: MIT press, 2011.
- Massumi, Brian (Ed.). *A Shock to Thought: Expression after Deleuze and Guattari*. London: Routledge, 2002.
- Massumi, Brian, Arne De Boever, Alex Murray and Jon Rolfe. "Technical Mentality Revisited: Brian Massumi." *Parrhesia* 7, (2009): 36-45.
- Massumi, Brian and Joel McKim. "Of Microperception and Micropolitics: An Interview with Brian Massumi." *Inflexions* 3, (2009).
- Maturana, Humberto R. and Francesco J. Varela. *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht: kluner Academic Publisher's group, 1980.
- McCormack, Jon, Oliver Bown, Jonathan McCabe Alan Dorin and Gordon Monro and Mitchell Whitelaw. "Ten Questions Concerning Generative Computer Art." *Leonardo*, 47, no. 2, (April 2014): 135-141.
- McCormack, Jon. "Evolving Sonic Ecosystems." *Kybernetics* 32, no. 1/2 (2003): 184-202. Accessed 2/3/2013. <http://www.emeraldinsight.com/0368-492X.htm>.
- . "Art, Aesthetics, Evolution." In *EvoMUSART 2013*, edited by J. McDermott & A. Carballa P. Machado, 1-12. Vienna, Austria: Heidelberg, 2013.

- McCormack, Jon and Mark Eds. d'Inverno. *Computers and Creativity*. Heidelberg, New York, London, Dordrecht: Springer, 2012.
- McQuire, Scott. "Mobility, Cosmopolitanism and Public Space in the Media City." In *Urban Screen Reader*, edited by Meredith Martin and Sabine Niederer Scott McQuire, 45-64. Amsterdam: Institute of Network Cultures, 2009.
- de Mèredieu, Florence. *Digital and Video Art*. Edinborough: Chambers Harrop Publishers Ltd, 2003.
- Michael, Mike. "These Boots Are Made for Walking..Mundane Technology, the Body and Human-Environment Relations." *Body and Society* 6, (2000): 107-126. Accessed 3/3/2013. <http://bod.sagepub.com/content/6/3-4/107>.
- Mitchell, Robert. "Simondon, Bio-Art and the Milieu of Biotechnology." *Inflexions* 5, (2012): 68-110.
- Miyazaki, Shintaro. "Algorhythmics: Understanding Micro-Temporality in Computational Cultures." *Computational Culture* 2, (2012): 1-16. Accessed 14/12/2013. <http://computationalculture.net/article/algorhythmics-understanding-micro-temporality-in-computational-cultures>.
- Mock, Roberta. *Walking, Writing, Performance*. Bristol: Intellect Books, 2009.
- Montague, Ashley. *Touching: The Human Significance of the Skin*. New York: Columbia University Press, 1971.
- Morris, Brian. "What We Talk About When We Talk About 'Walking the City'." *Cultural studies* 18, no. 5 (2004): 675-697.

- Morris, Meaghan. "Banality in Cultural Studies." In *Logics of Television*, edited by Patricia Mellencamp, 14-43. Bloomington: Indiana University press, 1990.
- Moulard-Leonard, Valentine. *Bergson-Deleuze Encounters: Transcendental Experience and the Thought of the Virtual*. Albany: University of New York Press, 2008.
- Munster, Anna. *Materializing New Media: Embodiment in Information Aesthetics*. Hanover & London: University of New England Press, 2006.
- Murphie, Andrew. "Computers Are Not Theatre: The Machine in the Ghost in Giles Deleuze and Felix Guattari's Thought." *Convergence* 2, no. 2 (1996): 80-110. Accessed 13/1/2013. <http://con.sagepub.com/content/2/2/80>.
- . "Becoming Interactive - Interactive Becomings: A Deleuze-Guattarian Approach to an Ethics of Interaction." PhD diss., Macquarie University, 1997.
- . "Differential Life, Perception and the Nervous Elements: Whitehead, Bergson and Virno on the Technics of Living." *Culture Machine* 7, (2005): Unpaginated. Accessed 23/1/2013. <http://www.culturemachine.net/index.php.cm/rt/prINTERfriendly/32/39>
- . "Vibrations in the Air: Performance and Interactive Technics." *Performance paradigm* 1, (2005): 31-46. Accessed 18/12/2012. [http://www.performanceparadigm.net/journal/issue-1/articles/vibrations-in-the-air-performance-and-interactive-technics/.Issue 1](http://www.performanceparadigm.net/journal/issue-1/articles/vibrations-in-the-air-performance-and-interactive-technics/.Issue%201)
- . "Convolving Signals: Thinking the performance of computational processes." *Performance Paradigm* 9, (2013): 1-21.
- Murphie, Andrew & John potts. *Culture and Technology*. New York: Palgrave Macmillan, 2003.

- Nash, Adam. "Affect and the Medium of Digital Data." *Fibreculture* 21, (2012): 10-30.
- Newman, James. "Parts and Patches: Digital Games as Unstable Objects." *Convergence* 18, (2012): 135-145.
- O'Sullivan, Simon. *Art Encounters with Deleuze and Guattari: Thought Beyond Representation*. Hampshire and New York: Palgrave Macmillan, 2006.
- Orta, Lucy. *Process of Transformation*. Paris: Edilog, 1998.
- Orta, Lucy and Jorge Orta. *Collective Space*. London: Article Press, 2006.
- Osthoff, Simone. "Lygia Clark and Hélio Oiticica: A Legacy of Interactivity and Participation for a Telematic Future." *Leonardo* 30, no. 4 (1997): 279-289. Accessed 16/03/2010. <http://www.jstor.org/stable/1576475>.
- Parisi, Luciana. *Contagious Architecture: Computation, Aesthetics and Space*. Cambridge, MA: MIT Press, 2013.
- Peacock, Alan, "Towards an Aesthetic of the Interactive." Soundtoys. Accessed 25/8/10 2010. <http://www.soundtoys.net/journals/towards-an-aesthetic-of>
- Penny, Simon. "Desire for Virtual Space: The Technological Imaginary in 1990's Media Art", 2009. Accessed 10/8/2010
. <http://simonpenny.net/texts/Resources/desireforvirtualspace.pdf>
- . "Towards a Performative Aesthetics of Interactivity." *Fibreculture* 19, (2011): 72-109.
- . "Trying to Be Calm: Ubiquity, Cognitivism, and Embodiment." In *Throughout: Art and Culture Emerging with Ubiquitous Computing*, edited by Ulrik Ekman, 263-278: Cambridge, MA: MIT Press, 2013

- Pickering, Andrew. *The Mangel of Practice: Time, Agency and Science*. Chicago and London: University of Chicago Press, 1995.
- . "Beyond Design: Cybernetics, Biological Computers and Hylozoism." *Synthese*, 168: no. 3 (Jun 2009): 469–91.
- Poissant, Louise. "The Passage from Material to Interface." In *Mediaarthistories*, edited by Oliver Grau. Cambridge: MIT press, 2007.
- Pold, Soren. "Interface Realisms: The Interface as Aesthetic Form." *Postmodern Culture* 15, no. 2 (2005): unpaginated.
- Portanova, Stamatia. "Infinity in a Step: On the compression and complexity of a movement of thought." *Inflexions* 1, (2008):1–15.
- . "Introduction: The Complexity of Collabor(El)Ation." *Inflexions* 2 (2008): 1–17.
- . *Moving without a Body: Digital Philosophy and Choreographic Thoughts*. Cambridge, Massachusetts, London: MIT Press, 2013.
- . "Digital Strain." *Angelaki: Journal of the Theoretical Humanities*, 15, no. 2 (2010): 149-169. Accessed 1/1/2014.
<http://dx.doi.org/10.1080/0969725X.2010.521410>.
- Prigogine, Ilya and Isabelle Stengers. *The End of Certainty: Time, Chaos and the New Laws of Nature*. New York, London, Toronto. Sydney and Singapore: The Free Press, 1996.
- Puig de la Bellacasa, Maria. "Touching Technologies, Touching Visions: The Reclaiming of Sensorial Eperience and the Politics of Speculative Thinking." *Subjectivity* 28, (2009): 297-315.

- Rancière, Jacques. *Aesthetics and Its Discontents*. Cambridge ; Malden, MA: Polity Press, 2009.
- Rhodes, Troy. "From Representation to Sensation: The Transduction of Images in John F. Simon's 'Every Icon'." *Fibreculture* 18, (2011): 146-175.
- Roads, Curtis. *Microsound*. Cambridge and London: MIT Press, 2001.
- Robinson, Jeffery C. *The Walk: Notes on a Romantic Image*. Norman: University of Oklahoma Press, 1989.
- Rokeby, David. "Transforming Mirrors", David Rokeby. Accessed 28/5/2013.
<http://www.davidrokeby.com/mirrorsconclusion.html>
- David Rokeby, "The Construction of Experience: Interface as Content", David Rokeby. Accessed 28/5/2013. <http://www.davidrokeby.com/experience.html>
- Russolo, Luigi. "The Art of Noises." ubo.com. Accessed 10/10/2013.
<http://www.ubu.com/papers/russolo.html>
- Salter, Chris. "Just Noticable Difference: Ontogenesis, Performativity and the Perceptual Gap." *Inflexions* 5, (2012): 111-130.
- Saper, Craig "Electronic Media Studies: From Video Art to Artificial Invention." *Leonardo* 20, no. 3 (1991): 114-134. Accessed 02/03/2010.
<http://www.jstor.org/stable/3685183>.
- Sarkis, Mona. "Interactivity Means Interpassivity." *Art and cyberculture* 69, no. August (1993): 13-16.
- Scholder, Amy and Jordan Crandall, Eds. *Interaction: Artistic Practice in the Network*. New York: DAP, 2001.

- Semetsky, Inna. "The Complexity of Individuation." *International journal of applied psychoanalytic studies* 1, no. 4 (2004): 324-346.
- Serres, Michel. *Genesis*. Michigan: University of Michigan Press, 1995.
- . *The Parasite*. Minneapolis: University of Minnesota Press, 2007.
- . *The Five Senses: A Philosophy of Mingled Sense (I)*. London & New York: Continuum, 2008.
- . "Variations on the Body." (ND). Accessed 2/4/2011.
<http://www.michelserres.com>.
- Serres, Michel and Bruno Latour. *Conversations on Science, Culture and Time*. Ann Arbor: University of Michigan Press, 2011.
- Shanken, Edward, ed. *Art and Electronic Media*. London: Phaidon, 2009.
- Shaviri, Steven. *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics*. Cambridge, London: MIT Press, 2009.
- Simondon, Gilbert. *On the Mode of Existence of Technical Objects*, 1980.
 Accessed 2/2/2012. <http://aaaaarg.org/text/3070/mode-existence-technical-objects>
- Simondon, Gilbert, "The Genesis of the Individual." In *Incorporations* 297-319, eds. Jonathan Crary & Sanford Kwinter. New York: Zone books, 1992.
- Smith, Marquard and Julie Clarke. *Stelarc: The Monograph*. Cambridge, Mass.: MIT Press, 2005.
- Solnit, Rebecca. *Wanderlust: A History of Walking*. Ringwood: Penguin Books, 2000.

- Stelarc. "Prosthetics, Robotics and Remote Existence: Postevolutionary Strategies." *Leonardo* 24, no. 5 (1991): 591-595. Accessed 18/03/2010. <http://www.jstor.org/stable/1575667>.
- Stengers, Isabelle. *Power and Invention*. Minneapolis: University of Minnesota Press, 1997.
- . "Whitehead's Account of the Sixth Day." *Configurations* 13, (2005): 35-55.
- . "Experimenting with Refrains: Subjectivity and the Challenge of Escaping Modern Dualism." *Subjectivity* 22, (2008): 38-59.
- . *Thinking with Whitehead: A Free and Wild Creation of Concepts*. Cambridge, MA: Harvard University Press, 2011.
- Stenner, Paul. "A N Whitehead and Subjectivity." *Subjectivity* 22, (2008): 90-109.
- Stern, Nathaniel. "The Implicit Body as Performative: Analysing Interactive Art." *Leonardo* 44, no. 3 (2011): 233-238.
- . "Interactive Art and Embodiment: The Implicit Body as Performance". Prepublished manuscript, 2012. Pdf.
- . "'Compressionism' - scanner performance art and printmaking". Online video. Accessed 20/2/2013. <http://www.youtube.com/watch?v=ws2ymIITvdI>
- . "Compressionism Documentation", Nathaniel Stern. Accessed 20/2/2013. <http://nathanielstern.com/artwork/compressionism/>
- Suchan, Jaroslaw. "Katarzyna Kobro / Lygia Clark / [Curated by] Jaroslaw Suchan." edited by Muzeum Sztuki. Lodz: Muzeum Sztuki, 2008.

- Thomsen, Bodil-Maree. "The Haptic Interface: On Signal Transmissions and Events." In *Interface Criticism: Aesthetics Beyond Buttons*, edited by Christian Ulrik & Pold Andersen, Soren Bro. Aarhus: Aarhus University Press, 2011.
- Tucker, Ian. "Sense and the Limits of Knowledge: Bodily Connections in the Work of Serres." *Theory, culture and society* 28, no. 1 (2011): 149-160. Accessed 2/8/2011. tcs.sagepub.com/10.1177/0263276410372240.
- Varela, Francisco J. "The Specious Present : A Neurophenomenology of Time Consciousness." In *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, edited by F.J.Varela J.Petitot, J.-M. Roy, B.Pachoud, 266-314. Stanford: Stanford University Press, 1997.
- Varela, Francisco J., Evan Thompson and Eleanor Rosch. *The Embodied Mind*. Cambridge MA: MIT Press, 1992.
- Voegelin, Salome. *Listening to Noise and Silence: Towards a Philosophy of Sound Art*. London, New York: Continuum, 2011.
- Wall-Smith, Matt. "Toward an Ontology of Mutual Recursion: Models, Mind and Media." *the Fibreculture Journal* 12, Metamodels (2008): 1-24.
- Watson, Janell. "Schitzoanalysis as Metamodeling." *The fibreculture journal* 12, Metamodels (2008): 1-18.
- Weiss, Allen. "Radio, Death and the Devil: Ataud's Pour En Finer Avec Le Jugement De Dieu." In *Wireless Imagination: Sound, Radio and the Avante-Garde*, edited by Douglas Kahn and Gregory Whitehead. Cambridge & London MIT Press, 1992.
- Weschler, Lawrence. *Seeing Is Forgetting the Name of the Thing One Sees*. Berkley & Los Angeles: University of California Press, 2008.

Whitehead, Alfred North. "Mathematics as an Element in the History of Thought."

In *The World of Mathematics*, edited by James R. Newman, 1, 402-417.

Redmond, Wash. : Tempus, 1957.

———. *Adventures of Ideas*. New York: Free Press, 1967.

———. *Modes of Thought*. New York: Free Press, 1968.

———. *Process and Reality*. New York: The free press, 1978.

———. *An Introduction to Mathematics*: Project Gutenberg, 2012. Accessed 27/12/2013. <http://www.gutenberg.org/files/41568/41568-pdf.pdf>.

Wilden, Anthony. *Systems and Structures: Essays in Communication and Exchange*.

New York: Tavistock Publications, 1980.

Wood, Aylish. *Digital Encounters*. New York: Routledge, 2007.

Yates, Julian. "Towards a Theory of Agentive Drift; or, a Particular Fondness for Oranges Circa 1597." *Parallax* 8, no. 1 (2002): 47-58. Accessed 20/3/2012.

<http://dx.doi.org/10.1080/13534640110119614>.

Zylinska, Joanna, Ed. *The Cyborg Experiments*. Cornwall: Continuum, 2002.

