the transformative mirror: contemplating the self as an emergent being through active reflection

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Attestation of Authorship:

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institution of higher learning, except where due acknowledgements is made in the acknowledgements.

Nick Konings _____ *Date* _____

acknowledgements_

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introduction

*"I am actively awakening and **transforming my own self**.*
Self-understanding and self-growth occur simultaneously in heuristic discovery"
(Moustakas, 1990, p. 13)

"The heuristic process is **autobiographic**, *yet with virtually every question that matters personally there is also a social – and perhaps universal – significance"* (Moustakas,1990, p. 15).

the**thesis**

This creative-production project is framed as an active reflection on the process of **self-transformation**. This process has been developed through a personal investigation into the concepts of the self as an *emergent* and *reflected being.*

It is communicated through an **exploratory narrative** divided into two sections. The first and primary section is the exhibition. This is staged in three parts.

Part one contains artefacts relating to the development of the main exhibits and the system of heuristic search used to produce them. Part two presents an animation marking a turning point in the journey. Part three is a telematic installation divided into two parts designed to translate the results of this personal investigation into an intersubjective experience through **open narrative**.

The second section is the exegesis; staged in four parts. Part one is the introduction. Part two describes the project methodology with reference to specific processes. Part three develops a critical framework by building a technical language relating to the metaphors of the mirror and the garden. This is then applied to an analysis of the creative disciplines and practitioners influencing the project. Part four is the concluding statement.

The project tests and develops hypotheses from two theoretical perspectives emerging from heuristic search. The artefacts result from a synthesis of these perspectives through a personalised visual investigation translated into multimedia experiences which encourage audience members to engage in their own process of active reflection.

The first perspective conceptualises identity as being constructed through the reflected gaze of others. This concept will be referred to as a *reflected being*, or *reflected self,* throughout the thesis. The metaphor of the mirror acts as a structural device to develop a telematic installation which translates the universal aspects of my personal journey into an intersubjective experience.

The second perspective apprehends identity emerging from a constantly transforming interplay of forces external and internal to an impermanent body. This concept will be referred to as an *emergent being*, or *emergent self,* throughout the exegesis. The metaphor of the garden acts as a method to develop the idea of an emergent being and design the avatars in the installation. This perspective is central to the philosophy of the project which is focused on the process of **self-transformation**.
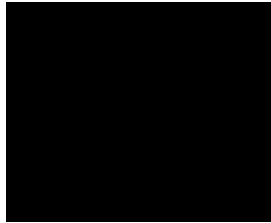
Transformation of a biodegradable **self-portrait** acting as host-garden to cycles of vegetable and insect life was recorded and used as a conceptual study for the design of the telematic environment.

Using this synthetic model, potentials for collaborative transformation of a participant's self-image, observed from the reflected point of view of the *'Other'* are tested to investigate the idea of the self as an emergent being.

Figure 1. Konings, N. (2009). *Untitled.*

theresearcher

Traditionally, academic research has been assumed to represent an objective world view. Contemporary practice-based research theorists such as Steven Scrivener (2000) and Donald Schön (1983) directly challenge this perspective.

Citing Schön, Scrivener identifies research projects where *"the practitioner violates the canon of controlled experiment, which calls for objectivity and distance"* (2000, para. 22) as *"creative-production projects"*.

In these cases the *"practitioner's relation to the situation is transactional. The situation is shaped, but in conversation with it, so that his own models and appreciations are also shaped by the situation"* (ibid.). I believe this transactional model to be of social relevance as a basis for art and design methodologies, because it is my opinion that art and design can be practised as a form of self-improvement. Within this model art becomes a way to add value to the lives of others through the sharing of personal discoveries at a level that can be directly apprehended, beyond the limits of language.

Because this project is based in a reflective practice that has become increasingly transformative on a personal level, I feel it is necessary to give you a sense of my interior life as it was in 2007 when I started this project, so that this transformation can be communicated throughout the rest of the exegesis. I intend this translation to serve not only as a way to communicate the social relevance of the transactional methodology that I have adopted, but also as a working demonstration of how the methodology can be used as a device to improve the quality of life for individuals involved in art making and art appreciation.

"

__On the surface__[1], my story is a disinteresting one; it's not filled with domestic or political violence (at least not at first glance). Part of the problem with my story is that it resists telling. My story whispers to me that it has no right to be heard, that it is a very poor story, one told by a selfish, useless child who refused to grow up. It is middle-class; a story of __fear[2], wasted opportunity and moral decay__. It is a story of disgust. Who would want to subject anyone to the pathetic mewlings of a man who had once had everything and threw it all down in blind, unappreciative disgust? This is the act of an infant demanding to be suckled after vomiting the contents of its mother's breast onto her shoulder.

Imagine being locked in a room alone, endlessly forced to listen to a monologue like this. Imagine that, to be constantly and secretly abused, to be threatened not to tell anybody else or you will pay. Then imagine that the person abusing you is yourself! Maybe some of you don't need to imagine. Perhaps you already know this feeling well. I fear that many of you do. Some of you probably have much worse stories to tell; stories of hate and pain and fear; stories of things that other people did to you. My problem is that __I can't find anyone to blame but myself__[3].

1. As will be described in more length in the **Methodology** section, it is through a process of digging beneath the surface of self-dialogue to access the tacit dimension that one uncovers hidden content and meaning.

2. Fear is revealed to be the paralysing force in my personal narrative that has stood as a barrier to the goal of personal transformation. Therefore methods to confront and overcome fear have been creatively synthesised as project methods to produce art and design artefacts.

3. The illumination of key personal narratives as constructs of fear becomes the theoretical basis for the idea of the emergent self as a being transcendent of these narratives. Transformation therefore becomes a process of discovering these narratives and dwelling within them with the purpose of illuminating, explicating and synthesising them creatively.

Personal histories are funny things... they can be incredibly creative, and they can be equally destructive. I began this project fully invested in a narrative about myself which had shaped a way of perceiving and interacting with other people that caused me a lot of pain (a narrative that is still with me today, but as a recognised fiction[4]). Throughout my life I had continued to build this narrative up, perhaps as a barrier to protect myself, but as you may already well know, barriers don't just keep dangerous things out, they keep **precious things locked inside**.

"

4. This idea will be introduced in the literature review framed by Pierre Bourdieu's (2000) Psychosocial theory the *Biographical Illusion*.

5. My research aim was to destabilise existing preconceptions of identity and narrative. The focus of the investigation was the visualisation of contrasted mental states (e.g. waking versus dream, sane versus insane), their interaction and slippage, through the juxtaposition of different media representing each state. This was explored through writing and illustrating a graphic novel.

Figure 2. Konings, N., & Sidartawan, M. (2007). *The best umbrellas.*

In **2007** I began investigating art and design approaches to communicate a topic of deep personal interest to me. Ironically, while the topic happened to be quite literally that of **personal identity[5]**, experiments were conducted from the impersonal perspective of **objective researcher**. I was involved in a process of data collection, analysis, hypothesis-building and testing. This was effective for building a critical framework and identifying an initial focus of research, but I had still not penetrated this framework to reach the core of the project; I felt I was circumnavigating an issue of great importance to me. I see now that this was due to a fear to engage in **honest self-dialogue**.

2009 marked a turning point for me. In this year I stumbled upon a personal practice that opened my eyes to a system of inquiry known as **heuristics**, which allowed me to enter into a personal dialogue which revealed a creeping illness that had slowly invaded and **petrified** my entire being. This dialogue has led me toward a path of well-being and it is a journey I wish to share with others who may be looking for a way to enter into their own **voyage of self-discovery**.

The exhibition is designed to lead audiences to engage in a process of active reflection. It is divided into three parts and is staged in a sequence representing a narrative of my own journey of **self-reflection** and **transformation.**

Audiences at the exhibition will receive a copy of this map to help establish the goals of the project and guide them through its **narrative logic**. I include the map here for the same reason.

AREA 3B
avatar garden | This is a viewing room where audience members can passively observe avatars created in the *Avatar Build Room* interact with each other and reflect on the idea of the *Emergent Self*

AREA 1
heuristic artefacts | This area contains the organic human replica used as a heuristic study for the development of the telematic installations and photographs of the process capturing three stages of the sculpture's life.

AREA 2
time-lapse | Time-lapse film is projected onto this wall. The footage creatively documents excerpts from a one-year period in which I studied the effects of plant and insect life influencing the structure and texture of a sculptural self portrait.

AREA 3A
avatar build room | In this room individual audience members can build an avatar by interacting with a reflected image of themselves which develops emergent properties related to user input over time.

A **poster** and **abstract** to introduce the aims of the exhibition and printed **maps** for the audience to help them navigate its **narrative logic**.

A copy of this **exegesis** travels down the wall leading to the avatar build room to provide the audience with an in-depth commentary of the project and allow them the opportunity to engage at a deeper level.

Figure 3. Konings, N. (2010). *Floor plan.*

AREA 3B | avatar garden

This room projects two avatars at a time, fed from data generated by exhibition participants in the avatar build room. The avatars behave according to user data and pass information to each other over time through the movement of particles. The avatars will develop new attributes and generate emergent patterns between each other based on but independent from original user decisions. In this room the audience members are given the opportunity to reflect on the idea of the emergent self and consider the interconnectedness of individuals to one another and their communities.

AREA 2 | time-lapse

Having gotten a feel for the visceral reality of the experiment and compared the sculpture at different stages of transformation, the viewer will encounter the time-lapse. This compresses a year's worth of footage into an animation of less than a minute. It translates my experience tending to the life developing on and around the sculpture while observing its transformation from a self-portrait frozen in time into a site of active change. It is also presented as a conceptual bridge between the static moment of the sculptural artefacts and the interactive installations.

Figure 4. Konings, N. (2010). *Self portrait.*

Figure 5. Konings, N. (2010). *Projection.*

Figure 6. Konings, N. (2010). *Avatar build room.*

Figure 7. Konings, N. (2010). *Avatar garden.*

AREA 1 | heuristic artefacts

After reading the abstract at the entrance and taking a map, the first thing the viewer will see as they continue down the corridor is the sculpture used to make the time-lapse animation. It will be in an advanced state of decay with a new layer of organic growth continuing to overtake the original human form. In the same area will be three large photographs of the sculpture at different stages of transformation. This area is designed to stimulate personal reactions to ideas of impermanence and change over time in relation to the human body and the identity inhabiting it.

AREA 3A | avatar build room

In this room a participant stands in front of a screen facing a wall with a webcam built into it. Overhead, a projector transmits a mirror image of the user onto the facing wall. This is transformed with software which translates user input into usable data. Through interaction with this transforming mirror image, mediated by a physical interface, the user is able to build an avatar of themselves which will be stored in a database and then sent via local area network to the avatar garden. This experience is designed to engage the user in a process of active reflection on the notion of an emergent self.

The exegesis is primarily designed to *"elucidate key aspects of the thesis project and set it in its relevant critical contexts"* (AUT, 2010, p. 3).

It also discusses "the aims and structure of the project; the underpinning areas of concept, relevant contexts including art, design and other critical contexts, the focus of the project, the methodology and development of the project" (ibid.) **with a focus on the transformational impact this development has had at a personal level.**

This exegesis is staged in four parts.

The first is this **Introduction**, which has painted a broad picture of the thesis goals, methods and structure; given a brief explanation of the nature of the research, and its relationship to the researcher; and described the exhibition artefacts as they relate to the project's aims.

The second part is the **Methodology** section, which describes the development of my methodological approach from 2007-2010,

with a critical analysis of the systems used, and a rationalisation for my decision to develop a hybrid model. In particular, it introduces the system of heuristic self-search inquiry, which becomes important in the critical framework as a means to develop a method of creative practice designed to encourage self-transformation.

The third part is the **Critical Framework**, which builds a theoretical structure from the metaphors of the mirror and the garden to describe how different social theories, design principles

and creative practitioners have influenced the development of the project. The section also discusses the relationship between the project's development and my personal transformation. This relationship is used to explain the social significance of the artefacts produced, and to suggest an attitude towards and art and design practice I have termed *'active reflection'*.

The fourth part is the **Reflections** section, which reviews the outcomes of this project on a personal and social level, and discusses the potential for new research that has developed from this process.

Section Overview	Tacit Knowing	Placing the Research	Initial Methodology	Current Methodology	Conclusion
		Creative Production in Practice-based Research	Heuristics: A Brief Introduction	Heuristic Self-search Inquiry	
			Proto-heuristic Beginnings	Moustakas' Seven Key Concepts (1990)	
			Action Research: A Brief Introduction	Moustakas' Six Phases (1990)	
			Hybridisation	Analysis of the Six Phases	
				A Realistic Break-down of my Application of these Principles	

section**overview**

The section begins by introducing the concept of *'tacit knowing'* and then relates it to the practice-based research methodologies discussed in this section. Tacit knowing is central to *'heuristic self-search inquiry'* (the system to which this project is most closely aligned).

It then places the project within the broad research paradigm of *'creative-production'* (Scrivener, 2000), stressing its transactional nature and subjective stance.

The specific qualitative methodologies of **heuristics** and **action research** are then discussed, as they were used, with reference to specific processes.

This is followed by a critical discussion of the system of heuristic self-search inquiry; its transformative potential, and how I adapted it to suit the needs of the project.

The section concludes with a rationalisation for my decision to adapt existing methodologies to develop a hybrid that best-suited my project.

"Polanyi (1983) has stated that all knowledge consists or is rooted in acts of comprehension that are made possible through tacit knowing: 'We can know more than we can tell... take an example. We know a person's face and can recognize it among a million. Yet we usually cannot tell how we recognise a face we know... this knowledge cannot be put into words'" (Moustakas, 1990, p. 20).

Moustakas (1990) suggests that this knowledge is possible through an implicit ability to sense the whole from an understanding of its parts. Citing Polanyi he claims that tacit knowledge can be described in terms of its two factor types; **'subsidiary'** and **'focal'** factors. Subsidiary factors are accessible to and describable via conscious processes such as language. Focal factors are not immediately available to consciousness and cannot be easily described with language. Nevertheless, they are essential agents, unifying the subsidiary elements into integrated wholes. A **'focal image'** exists as an integrated whole from which we can draw out specific subsidiary details to make explicit; however, in so doing, we lose the focal image. Mead (2007) explains that this is what makes describing someone's face in terms of its

individual features so difficult. To clarify the point, he uses the example of optical illusions in which focus on specific details destroys their effect.

This relationship can be illustrated by the process of riding a bicycle; the rider needs to explicitly understand the motor skills required such as pedalling, balancing, steering, etc., but these knowledge sets cannot be combined without integration with focal factors such as confidence and an implicit, coordinating sense of the whole process. For example, when a rider focuses on any subsidiary factor in a conscious, analytical matter, such as *"how much body-weight he must distribute to this side of the bike or to the other"*, the process becomes more difficult (Mead, 2007, para. 34). Furthermore, the subsidiary motor skills need to be tested in action and developed; this cannot happen without the involvement and mutual development of the focal factors. It would be unreasonable to expect someone to ride a bicycle on their first attempt by giving them detailed reports of all the technical processes required.

According to these explanations, tacit knowledge can be characterised as a feeling, synthesising, interiorised experience of self, as opposed to an observing, deconstructing, exteriorised experience.

According to Scrivener (2000), Schön's theory of reflective practice (1983) uses this idea of tacit knowing to develop the concepts of **'tacit knowing-in-action'** and **'reflection in action'** which describe the ideal working processes of professionals in the field. Scrivener uses this theory to develop his idea of effective practice-based research. This will be discussed in the next part of this section.

Sela-Smith (2002) describes the nonverbal aspect of tacit knowledge in terms of developmental psychology. Citing Stern; Werner; and Werner and Kaplan, she explains that the acquisition of verbal processing skills in early childhood imposes foreign structure onto a child's preverbal, body-based, non-linear experience of wholes. Time-oriented, differential, generalising and observational linguistic systems cannot process all aspects of the child's experience, thus legitimising only that knowledge which can be spoken and driving other knowledge into the tacit dimension (pp. 59-62). Citing Stern, she explains that this process can alienate us from our experience of intersubjective relatedness; non-verbalised global experiences are *"sent underground into a misnamed and poorly understood existence, and the verbal becomes accepted in awareness while what is experienced is out of awareness"* (ibid., p. 62).

This theme of dissociation, dialectical split and alienation will also be discussed as a key concept in the critical framework.

According to Moustakas (1990) tacit knowledge is *"the deep structure that contains the unique perceptions, feelings, intuitions, beliefs, and judgments housed in the internal frame of reference of a person that governs behavior and determines how we interpret experience"* (p. 32).

Arguably therefore, tacit knowledge is intimately related to personal narrative. Citing Krippner and Ryan, Sela-Smith (2002) makes the same connection to what she calls personal mythology. She states that *"Personal myths let us see and experience what we have already decided is our view of the world"* (p. 60). Accessing the tacit dimension allows direct apprehension of these personal myths which, according to Sela-Smith (2002), can be reorganised to affect personal transformation.

Creative Production in Practice-based Research

Scrivener (2000) identifies **'creative-production'** projects as being different from the problem-solving projects typical to practice-based research. Although both projects are focused on producing design artefacts, in the problem-solving project the *"knowledge reified in the artefact is more important than the artefact"* itself (para. 2). Furthermore, the knowledge is describable separately from the artefact, transferable across contexts and applicable to the construction of other artefacts. Therefore the artefact is usually conceptualised and presented as a useful solution to a known problem.

In creative-production projects however, *"the artefact is more important than any 'knowledge' reified in it"* (ibid., para. 10). In such a case knowledge is intimately embedded within the artefact itself, and not easily abstracted for reuse. This kind of project does not set out to solve a known problem, although it may do this incidentally. The aim of such a project is to generate original, culturally relevant works that *"contribute to human experience"* (ibid., para. 18).

I believe that the difficulty of extracting reusable knowledge from such artefacts is related to the fact that they embody tacit, rather than explicit knowledge.

This also explains why metaphor can be a more efficient means of describing such artefacts. According to Mead (2007), *"Metaphor extends our imaginative grasp when literal articulation is strained to its limits. Indeed, some of the higher reaches of the human imagination require us to move from the literal explicitness of prose to poetic, occasionally even to musical, expression, for the capacity of these less articulate modes of expression sometimes proves more adequate for conveying, or making explicit, those experiences more heavily dependent upon the tacit dimension of knowing"* (p. 307). For this reason I have framed the critical framework of this exegesis with metaphoric structures.

In these respects, this project is a creative-production project. As such, its purpose is not to improve an existing product or mode of communication, nor invent a new tool or method of production. Although I have innovated some technical processes, such as live rotoscoping[6], and reframed an approach to art-making as a form of self-cultivation[7], this knowledge has emerged as *"a by-product of the process rather than its primary objective"* (ibid., para. 11).

My intention has been to produce something that will contribute to human experience at a personal and cultural level. Certain problems have presented themselves throughout the project that I have had to resolve.

6.   See page 103 for more information.

7.   This is discussed in the **Lexicon** section of the **Critical Framework**. See pages 86-87 for an overview of the discussion.

In some cases these problems have led me to rethink my research question, in other cases the solutions have been found and I have been able to progress down more linear tracks (see the generative art experiments in figure 8 below). However, the times that I have been forced to rethink my previous position have been the most valuable. I have found this experience to be one of personal discovery and growth and I hope that the artefacts produced engage audiences at a level that stimulates consideration of their own personal development.

Practice-based research is driven by experimentation; solutions to problems are found through testing, but so are methods to produce original work. Citing Schön, Scrivener (2000) suggests that practice-based research projects require a form of testing that Schön termed *'reflection-in-action'*. By this he means that reflection occurs during the process of practical testing; as the practitioner accesses tacit knowledge, assesses its effectiveness on the fly, restructures it, and embodies it in further action (para. 24). This kind of experimentation is therefore inherently subjective; the role of the researcher is central to the process. Furthermore, the process is transactional, i.e. the researcher's own beliefs and theories are transformed in the process of transforming the situation.

Scrivener (2000) describes three types of experiment in practice:

1. **Exploratory experiments:** testing is experimental, initiated without predictions or expectations. This form of experimentation is designed to lead to discovery.

   ■ Intuitions of connections between different fields within this project (and sometimes outside of it) led me to test out design approaches with little (conscious) idea of how they might progress research. For example, in 2007 I decided to start illustrating with type because I had made a connection between my mental image of a particular character in a book I was reading as being built from text and Bourdieu's (2000) theory of autobiography as historical fiction. This apparently unrelated connection between practice and theory marked the beginning of the development of the critical framework of the entire project and pushed me away from my original idea of developing a graphic novel into researching concrete poetry.
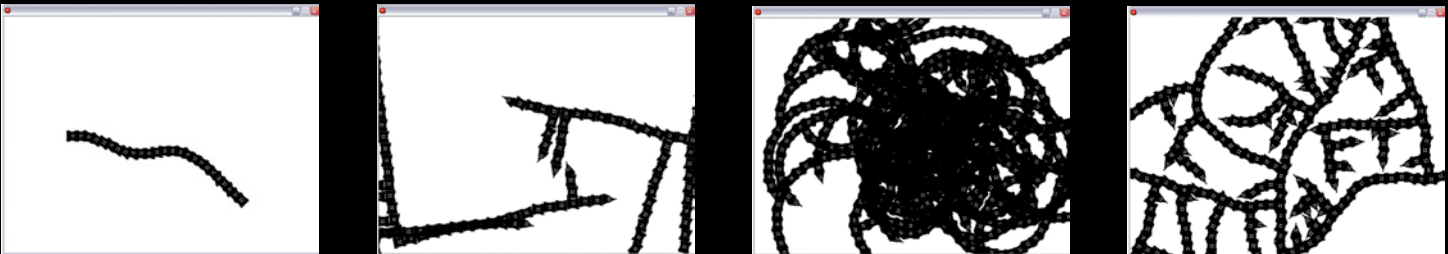
Figure 8. Konings, N. (2007). *Example of linear problem-solving experiment sequence combining move-testing, hypothesis testing and exploratory experimentation.*

Figure 9. Konings, N. (2007). *Typographic illustration.*

2. Move-testing experiments: testing is designed to produce an intended change which, if successful, is integrated into the research, or if negated can lead to reassessment of method, hypothesis or goals. A negated experiment may become more productive to the research than expected, by leading the researcher in more promising directions.

- For example, in the previous case, I later began experimenting with interactive text illustrations (figures 9 & 10) with the hope that I would be able to embed hidden information about the illustration within the text that could be accessed through physical exploration. This proved too difficult to achieve but the negated experiments forced me to reconsider how a similar technical setup and the knowledge gained so far could be reconceptualised to achieve a similar effect to the above. This led me to research telematic art and eventually develop the exhibition installations.

Figure 10. Konings, N. (2007). *Metanarrative.*

Figure 10: Various zooms of an interactive text animation. The word 'truth' is composed of iterations of the word 'lies'. The hidden paradox is only revealed at the appropriate scale.

Figure 11: Design model for a large scale interactive installation reusing the same idea in a different context.
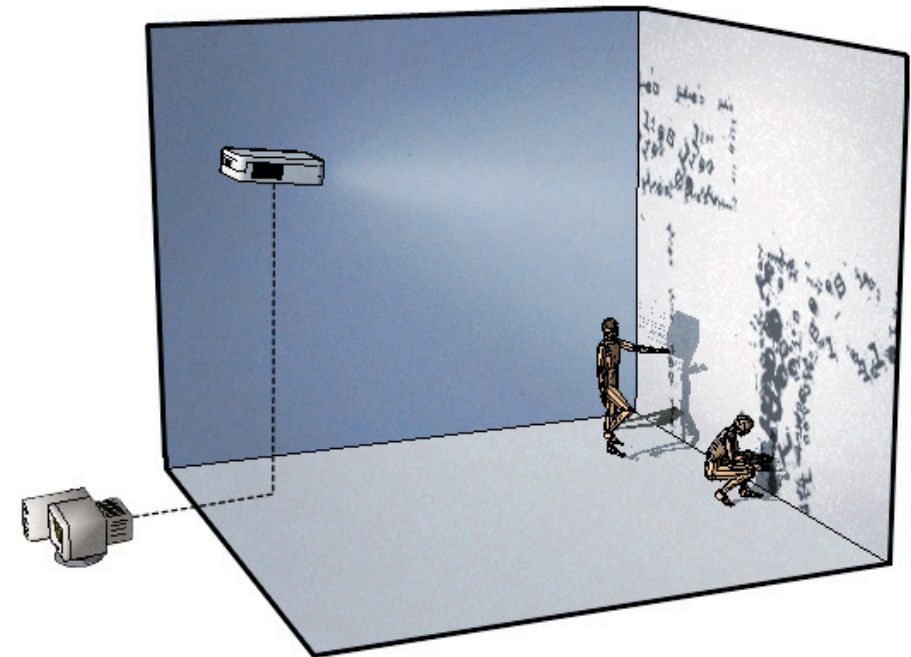
Figure 11. Konings, N. (2007). *Installation design.*

3. Hypothesis-testing experiments: these are not concerned with logical proof so much as finding acceptable answers to design questions. There may not be one 'right' answer, but there may only be one good fit for the designer. Therefore, hypothesis testing in this context is finding the best fit from a range of possible approaches.

- In the case of this research, investigating sculptural substrates capable of retaining a detailed human form and supporting plant life required a great deal of hypothesis-testing[8].

Scrivener also claims that *"when a practitioner reflects-in-action, experimentation is at once exploratory, move-testing, and hypothesis testing. The three functions are fulfilled by the very same actions"* (Scrivener, 2000, para. 27). I am still uncertain if this is always the case but am aware that at many stages in my research this has been true; particularly when I combine classical problem-solving experimentation with exploratory practice.

Figure 12. Konings, N. (2009). *An early substrate test with agar and soil.*

8. Figure 12 shows an early substrate test where seeds where mixed into the substrate before casting. This technique proved successful, although the substrate itself was unstable and incapable of sustaining plant life until maturity.

For example, when finding methods to detect the boundaries of avatars to attach growth animations and apply decay effects to, many conceptual sketches were made that continually negotiated between pragmatic, programmatic strategising (move-testing), comparisons of those strategies (hypothesis-testing), and complete conceptual shifts. This resulted in new rounds of move and hypothesis testing when moves were negated or all hypotheses were inadequate. Sometimes these moves could all occur within the same sketching period.

This project is inherently subjective and transactional in nature, driven by ongoing personal and social concerns, and focused on enhancing human experience through the production of original content. Therefore I chose a qualitative research methodology that could exploit the perceived risks involved with changes in goals, hypotheses and methods, as well as maximise the potential for discovery and creative synthesis.

Figure 13. Konings, N. (2009). Concept sketches extracted from journal.
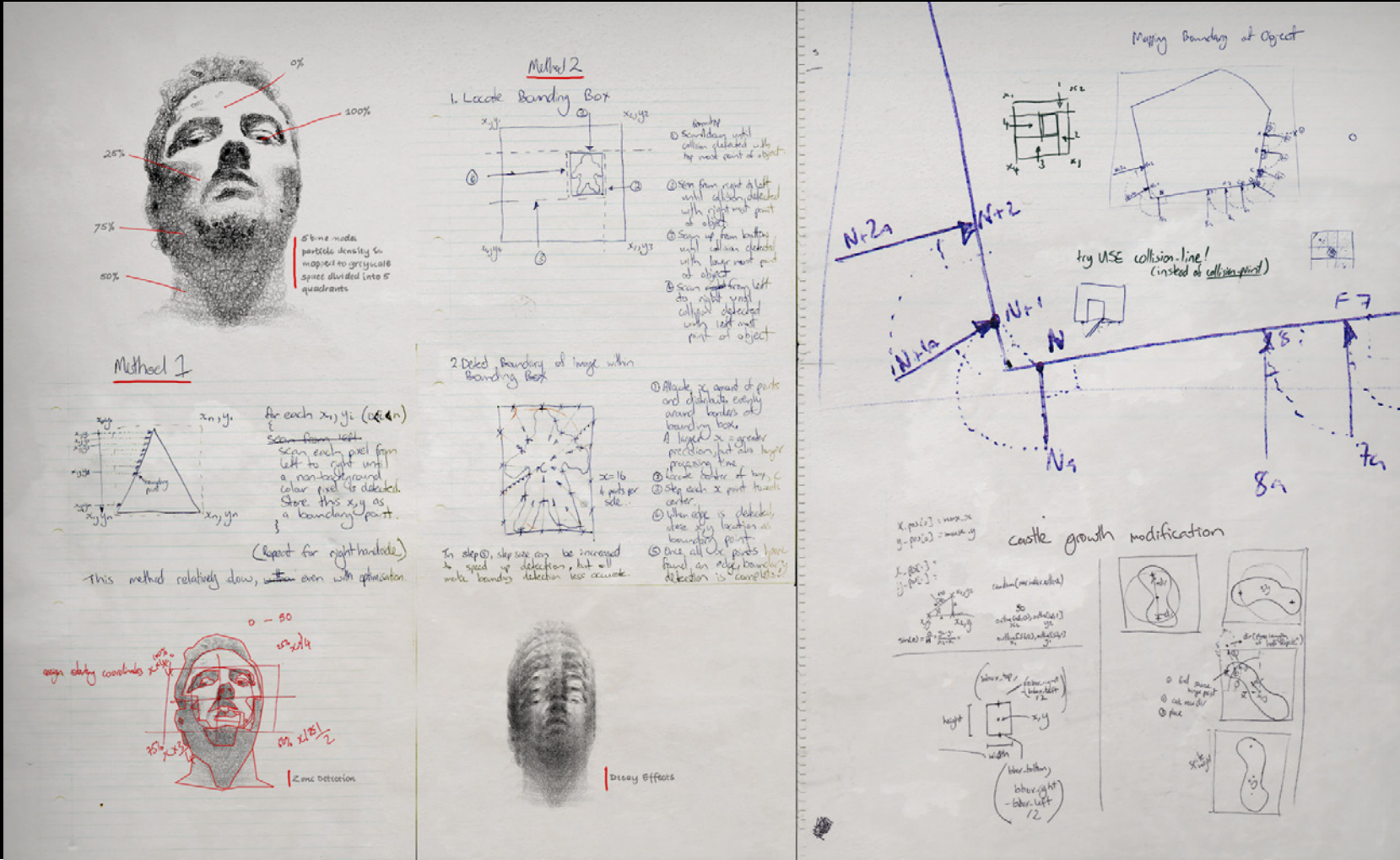
Over the course of the project I have moved from an **action research** paradigm incorporating aspects of heuristic analysis, to a form of **heuristic self-search inquiry** (Moustakas, 1990) utilising action research methods as a supplementary toolset when engaged in collaboration.

Heuristics: A Brief Introduction

Heuristics as a research paradigm is qualitative rather than quantitative. It is a system for maximizing creative discovery as opposed to a methodology designed to prove hypotheses (Wood, 2004, p. 51). Kleining and Witt (2000, paras. 8-11) suggest four mutually dependent rules for maximising this chance of discovery:

1. The research person should be open to new concepts and change his/her preconceptions if the data are not in agreement with them.

2. The topic of research is preliminary and may change during the research process.

3. Data should be collected under the paradigm of maximum structural variation of perspectives.

4. The analysis is directed toward discovery of similarities.

The project's alignment with these principles will be discussed shortly.

Moustakas (1990) describes the experience of heuristic research as a *"process of internal search through which one discovers the nature and meaning of experience and develops methods and procedures for further investigation and analysis. The self of the researcher is present throughout the process and, while understanding the phenomenon with increasing depth, the researcher also experiences growing self-awareness and self-knowledge"* (p. 9).

As such, heuristics can be connected to the process of accessing tacit knowledge to gain personal insight and catalyse self-transformation. Sela-Smith (2002) emphasises the transformative potential that the research artefact(s) can have on others:

"When a story is formed with the embedded wholes of the transformation in it, the story itself contains the power to transform anyone who dares to surrender to the listening" (p. 64).

In art and design research, the 'story' is embedded within the artefacts themselves and recounted in the exegesis.

Proto-heuristic Beginnings

For me, this process of internal search and self-transformation did not begin until I had completed the first year papers of the Masters programme. These papers were completed part-time over 2007 and 2008. In that time, I amassed a body of knowledge relating to:

- Identity, e.g. Lacan's *Mirror Stage Theory* (2001) and Bourdieu's *Biographical Illusion* (2000);

- Postmodernism, e.g. Barthes' *Death of the Author* (1977), Ryan's ideas on virtual reality and literary theory (1994);

- Concrete poetry, e.g. the works of Hamilton Finlay such as *Sea poppy* (Hamilton Finlay & Cant, 1966), and his garden *Little Sparta* (Hamilton Finlay 1966);

- Game design, e.g. Rollings' and Adams' (2003) game theories;

- Telematics, e.g. Sermon's art installation *There's no Simulation like Home* (1999);

- Interactive art, e.g. Yamada's installations *Tampopo* (2005), *Kiss* (2006) and Yugop's online artwork *Amaztype* (2005).

This investigation had been wide-reaching, experimental, and somewhat superficial. Abstracts and project goals skipped about and many connections were made across diverse fields and examined from different angles (criteria 1, 2 & 3 from Kleining & Witt's list). In this respect I was already showing some degree of heuristic inquisitiveness.

My process was very synthetic, searching for patterns and similarities across paradigms looking for new ways to express myself (criterion 4 from Kleining & Witt's list). From this synthetic approach I developed an idea that exploited telematic technology (projection) and interactive design, to visually explore the idea of the self as a construction of narrative (Lacan, 2001; Bourdieu, 2000). This approach was very useful for developing a field of knowledge but did not allow me to develop a sense of personal engagement. This process was originally guided by an action research methodology (O'Brien, 2001), with a heuristic element built into it.

Action Research: A Brief Description

Action research is similar to heuristics in that it is reflexive, i.e. aware of the researcher's subjective role in the process (Moustakas, 1990, p. 11; O'Brien, 2001, para. 18). Both methodologies are dialogic, relying on transaction to achieve results (Moustakas, 1990, p. 16; O'Brien, 2001, para. 11). Both methodologies allow for the research question to change over time (Kleining & Witt, 2000, paras. 10, 13; O'Brien, 2001, paras. 11, 15), and are committed to affecting transformation (Moustakas, 1990, p. 56, O'Brien, 2001, paras. 11, 13). What distinguishes it

from heuristics is its emphasis on hypothesis testing (O'Brien, 2001, para. 13), its collaborative focus (ibid., para. 10), and the relatively linear nature of its experiment structure (although multiple experiments can be carried out simultaneously) (ibid., figure 1). Action research is carried out in linear, iterative cycles:

Cycle 1

    1.1 Planning: data collection, strategy, formulating research question.

    1.2 Action: implementation and testing.

    1.3 Observation: fact finding about results of action.

    1.4 Reflection: discussion, critique, synthesis.

Cycle 2

    2.1 Revised plan, etc.

I found this a powerful system for testing technical hypotheses in collaboration with my programmer while we were designing software and experimenting with hardware. This process also helped fulfil the third of Kleining and Witt's criteria for heuristic enquiry, *"Data should be collected under the paradigm of maximum structural variation of perspectives"* (2000, paras. 8-11).

This dialogue with an external collaborator allowed me to review my own ideas, as well as receive constructive creative input from a valued team member.

Hybridisation

Therefore 2007 and 2008 saw a certain amount of methodological hybridisation taking place. The system was predominantly that of action research, but as the following diagram illustrates, heuristics was involved at the reflective stage of the process, particularly in regard to analysis being focused on the discovery of emergent patterns. A heuristic approach at this level allowed me to step back from the current experiment to observe the relationships between parts of the whole body of research, thereby achieving a certain amount of non-linearity and an opportunity for synthesis and invention.

Action Research

Heuristic Research

| Plan: design hypothesis | → | Action: practical testing | → | Observation | → | Reflection & dialogue | → | Heuristic exploration & synthesis | → | Final design |

- Theoretical research
- Historical research
- Input from heuristic synthesis
- Collaboration/dialogue

Evaluation, synthesis & dialogue

Evaluation of final design
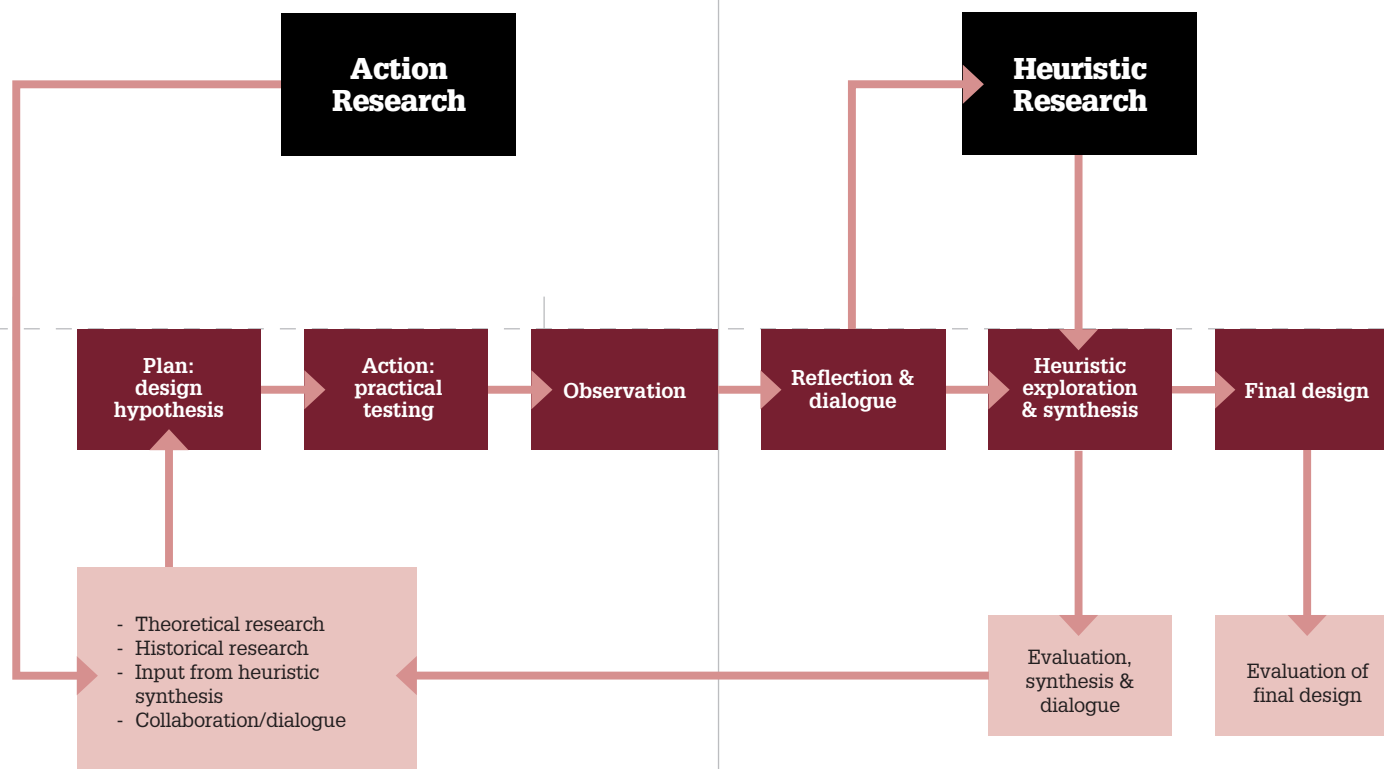
However, action research's externalised, collaborative, social focus and its experimental linearity is not suitable for the kind of *"process of internal search"* (Moustakas, 1990, p. 9) that makes heuristics a powerful alternative for artists and designers interested in discovering personally meaningful content and technique capable of moving audiences on visceral and emotional levels.

This is why in 2009, after discovering a deeper understanding of the process while engaged in a sculptural gardening project, I decided to explore a more heuristic approach to develop the body of knowledge I had already amassed in the first year papers. However, I didn't realise the extent to which this project would take over my life and lead me on a process of self-discovery and healing.

I now follow a process more related to the system of heuristics as described by Moustakas (1990), but still involving action research methods to drive creative-production experimentation and manage collaboration.

Heuristic Self-Search Inquiry

Moustakas (1990) adapted Polanyi's (1983) ideas on tacit knowledge and heuristic inquiry by focusing on the potential of tacit knowledge to affect change on a personal level through self-dialogue. This was designed to encourage emotional growth at a cultural level through the production of public artefacts which creatively synthesised findings from the search.

Moustakas' Seven Key Concepts (1990)

Moustakas identified seven highly interrelated key concepts in this system (pp. 15-26):

1. **The internal frame of reference:** Heuristics recognises the subjective bias inherent in human experience. It does not attempt objectivity.

2. **Tacit knowing:** This concept has already been discussed in depth and is the cornerstone of this particular heuristic philosophy.

3. **Identifying with the focus of inquiry:** The topic of inquiry must be one the researcher can engage in from the inside-out.

4. **Self-dialogue:** The researcher must be able to enter into dialogue with the phenomenon. Therefore the researcher must have some kind of autobiographic or direct emotional relationship to the topic. Moustakas (1990) states, *"In self-dialogue, one faces oneself and must be honest with oneself and one's experience relevant to the question or problem"* (p. 17). Self-disclosure facilitates disclosure from others and encourages positive social change. In this project, self-dialogue emerged naturally while involved in the repetitive tasks of caring for garden sculptures as part of the research. The reflective state I entered became a daily ritual that I decided to record in a reflective journal.

Figure 15. Konings, N. (2009). *Final design in early stages of life.*

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Seven to ten times each day I am confronted with this transforming self-portrait. My form is being consumed by alien forces, subterranean thoughts and feelings erupt into conscious life. Time will eventually erode this shell and all I have attached to it. As I contemplate the evolution of this sculpture I am reminded of my own failing body – my increasing waistline, my wasting musculature, the weathering of my skin, the hardening of my arteries. This may seem a gloomy pursuit, but it is becoming a liberation. I question my attachment to my own appearance. Does this growing belly deserve my contempt? Were regular visits to the gym for the sake of health or vanity? The lines that spread across my face creep towards the hour of my expulsion from the gardens of youth. For how long have I strived to belong to that imaginary domain? For how long have I judged myself by my ability to attract others physically? I feel there is something here to be defeated. This exercise is helping me to release attachments to adolescent desires. The decline of the physical body presents the birth of a spiritual one. I am not merely witnessing the decline of a physical state; I am witnessing the birth of new potentials from within it. I am witnessing the dance of these energies in and around an effigy of a static identity. This is a call to embrace the emergence of new energies within my own being and to join the dance of life. Death is not the end of life but the necessary catalyst to the birth of new life.

5. **Intuition:** According to Moustakas (1990), intuition provides the bridge between the tacit and explicit dimensions. Applying intuition allows the researcher to make inferences from the subsidiary factors of a phenomenon to build a focal image that can be communicated to others through creative synthesis. Intuition can be seen as the ability to recognise hidden patterns in systems to discover new or enhanced meanings. Even in hard science, it is intuition that enables the researcher to formulate exploratory hypotheses that lead to discovery (Polanyi, 1983). In the project, intuition enabled insights gained from the gardening rituals to be applied to the design of the software.

6. **Indwelling:** This became a key feature in my research. According to Moustakas (1990), it *"involves a willingness to gaze with unwavering attention and concentration into some facet of human experience in order to understand its constituent qualities and its wholeness"* (p. 24). The researcher must establish a personal relationship with the project and a commitment to the method of self-dialogue.

7. **Focusing:** This relates to all of the previous concepts. It refers to the process by which the researcher enters a reflective state allowing him to access and dwell within the tacit dimension,

engage in self-dialogue, and apply intuition to recognise emergent patterns. For me this was the process of cultivating and recording garden sculptures following a repetitive daily routine.

Moustakas' Six Phases (1990)

He also outlines six phases that should occur chronologically when involved in this system of self-inquiry (pp. 27-32):

1. **Initial engagement:** Before a heuristic inquiry can genuinely begin, the topic of investigation must be of intense personal interest to the researcher and be of social relevance. While completing the first year papers I identified a field of interest of genuine personal interest; that of human identity formation. In particular I was interested in how certain behaviours are treated with distain, fear or indifference; and how certain states of mind, attitudes and practices are considered less valuable than others.

   However, this field was still very wide and somewhat abstract; I hadn't found my own intimate connection to the topic. This was because I was still afraid to identify with the focus of inquiry; too afraid to engage in honest

self-dialogue. I was yet to ask *myself* some important initial questions such as:

"What is my motivation for asking these types of questions?"

"Is it because I myself feel marginalised in some way?"

"How do I feel so different from others that I feel there is a problem with the way people perceive and treat me?"

"Does the problem itself actually lie in the way that I perceive others?"

"Or does it lie in the way I perceive myself?"

This type of self-dialogue did not develop until partway through 2009 when I had become immersed in the ritualistic processes of my garden sculpture project.

2. **Immersion:** Moustakas suggests that this is supposed to occur after the initial engagement with the project question(s)[9]. For me it was the catalyst to engage in self-dialogue, which led to the revision of the project question(s). The term

9.	I use the plural form here to indicate that due to the tacit nature of the investigation it is linguistically very difficult to formulate the 'question' (singular) with one simple interrogative statement. The issue I am investigating is a systemic problem of intimately related subsidiary issues, forming a focal whole. But an attempt to make the question explicit in one sentence could be, *"How is fear a barrier to my personal transformation?"* However, the concept of fear is tied up with many subsidiary issues, and the idea of self-transformation is tied up with my understanding of personal identity. Therefore, answering this apparently simple question involves the complex unravelling of many related questions. This will become more apparent in the critical framework section.

'immersion' in relation to this system refers to the idea that the research questions are dwelt within during waking and even dreaming states. It refers to a level of engagement that permeates the very being of the researcher. For me this occurred naturally, due to intense maintenance and recording schedules, leading to sleep deprivation and trance states. This was also due to the symbolism inherent in: *the act of cultivation; the garden as a sacred space; the garden as microcosm; the garden as a portal, and; the garden as a symbol of emergence, which are all conductive to states of reflection*[10]. Furthermore, the decision to create a self-portrait that transformed over time heightened the metaphorical experience of self-cultivation. I was quite literally cultivating myself, as well as witnessing my own gradual return to nature.

3. **Incubation:** This refers to periods of withdrawal from the intensity of focused immersion to allow connections to form at a subtle level.

4. **Illumination:** This occurs as a breakthrough when the researcher has dwelt within the experience of his focus of inquiry long enough and with sufficient openness and focus to bring tacit knowledge into conscious view.

5. **Explication:** This entails a detailed analysis of what has been brought to light, through the organisation and depiction of core themes, in order to develop a conscious understanding of the different layers of meaning. This detailed analysis of the subsidiary parts prepares the researcher to communicate the focal whole in the next phase.

6. **Creative synthesis:** This final stage involves creative-production. The artefact(s) produced are a tacit expression of the knowledge gained throughout the entire process. The artefacts communicate a personal world view unique to the researcher.

Analysis of the Six Phases

My own process was *guided* by this system, but I do not believe that the process described can be followed *literally* in post-graduate practice-based research. In my own practice, the six phases above occurred non-linearly throughout the process.

The need to test ideas through creative-production requires an ongoing, deliberate, active and critical approach throughout the process. This means that the researcher must tear themselves

away from self-dialogue to reflect-in-action. Designer's journals are generally used to test hypotheses, strategise, consider materials and processes, compare outcomes, develop themes, etc., not only to record self-dialogue.

In order not to disrupt my personal inquiry, reflection-in-action had to be built into all phases of the process. This meant that creative synthesis occurred all the time; it could not be left to the final stage. It was also inevitable that, through this process, explication was occurring often as well. I believe that Moustakas'(1990) system is more linear and prescriptive than he thought.

The ritualistic practices of sculptural maintenance, garden cultivation, and time-lapse recording; their very nature as ongoing acts requiring patience and attention to small changes, are conducive to reflection. This allowed me to maintain immersion throughout the process. However, for someone whose project is more immediately goal-oriented and focused on the reflective production and development of artefacts day-to-day, I believe Moustakas' (1990) brand of heuristics could become a barrier to action. This kind of heuristics, when followed prescriptively, is more suitable as a form of art-therapy.

This is why I retained an action research approach to reflection-in-action experimentation running parallel with each stage of the heuristic cycle. The development of the artefact cannot be left until the last minute, especially with a time-based project like mine. Reflection must bounce between focal and subsidiary aspects throughout the process.

10.   These will be discussed in detail in the critical framework section.

A Realistic Breakdown of my Application of these Principles

Below is a breakdown of the processes involved in this creative-production project. You will notice that most processes are mixed, i.e., involving more than one heuristic phase, not always entirely heuristic and sometimes problem-solving:

Predominantly tacit processes (preoccupied with self-dialogue and immersion)

1. **Garden maintenance (immersion, indwelling, focusing, self-dialogue):** This involved a daily routine of repetitious chores focused on maintaining the plant life on sculptures, but allowing me to focus on self-dialogue in an unstructured manner to access and question personal narratives. This process was purely tacit and conformed to Moustakas' (1990) system in every respect.

Figure 16. Konings. N. (2009). *First garden studio.*

Figure 17. Konings, N. (2009). *Substrate test.*

2. **Photography, post-production (immersion, indwelling, creative synthesis, reflection-in-action):** These were spontaneous, simple reflection-in-action experiments focused on capturing states in the sculptures' "lives" and playing with colour and tone to enhance mood. This process also conformed with Moustakas' (1990) system.

3. **Time-lapse photography (immersion, indwelling, self-dialogue, creative synthesis, problem-solving):** Although this required a certain amount of technical experimentation, the purpose was purely heuristic. This allowed me to observe and reflect on ideas around personal identity, mortality and transience at a tacit level by viewing sculptural and botanical transformations at an accelerated frame-rate. This process also fed directly into the more technical aspect of software design, but at a tacit level.

Figure 18. Konings. N. (2009). *Final design in early stage.*

Figure 19. Konings, N. (2009). *Time-lapse studio.*

- Furthermore, I decided to run a move-testing experiment with projection to compress two narratives into the same frame. While this experiment was negated, it was actually valuable because of the sleep deprivation it caused. Although not altogether a healthy experience it allowed me to enter into a reflective state that catalysed illumination. It was around this time that I realised that in my life I had become paralysed with fear due to certain narcissistic personal mythologies. This illumination revealed the critical framework of the project and marked the beginning of my commitment to personal transformation. The negated experiment also gave rise to a new idea that is not part of this project but will be discussed in the conclusion as an area of potential future research.

Figures 20-22: This technique allowed me to compress different timeframes into a single narrative; for example, a naturally filmed sequence running at 29 frames per second can be overlaid onto a timelapse sequence which captures 6 months growth in 5 minutes. Sequences can also run in reverse over a sequence running forwards. This concept is not limited to projection and can be applied in a variety of ways to communicate the relationships between imagined or remembered time and actual time. I find this particularly interesting in relation to self-image and biological reality. However this process was too exhausting to complete manually.

Figure 20. Konings, N. (2010). *Video for projection.*

Figure 21. Konings, N. (2010). *Projection on sculpture.*
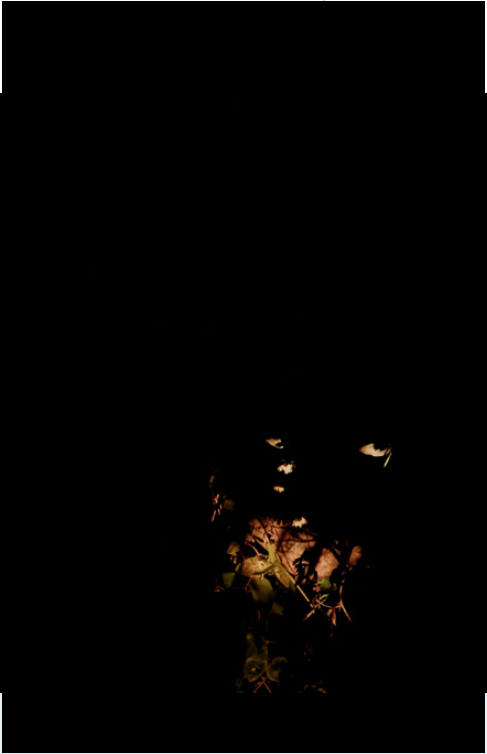
Figure 22. Konings, N. (2010). *Combined animation.*

4. Dialogic Journal (immersion, self-dialogue, creative synthesis): I filled four A4 exercise books with notes. Most entries were nothing more than calendar entries marking cultivation and recording duties, significant events and technical problems, but also included poems, recordings of dreams, personal reflections, and experimental ideas to pursue.

More analytic processes (preoccupied with explication, creative synthesis and problem-solving; these were often conducted using the hybrid model illustrated by figure 14, p. 23):

1. Sculptural design (problem-solving, action research, reflection-in-action, creative synthesis): This was the first step towards creating the immersive environment from within which heuristic self-search inquiry was undertaken, but was in fact an entirely technical, problem-solving exercise of substrate testing, molding, casting and planting.

Figure 23. Konings, N. (2009). *Molding process.*

2. **Software design (problem-solving, action research, reflection-in-action, creative synthesis):** While the programming itself was clearly not a tacit process, many design processes were. These included; conceptualising the routines required, discussing the themes that needed to be communicated, and creatively synthesising ideas from the garden experiments. A great deal of reflection-in-action was also required as different ideas were tested.

3. **Designer's journal:** The electronic documents and paper drawings that were used to help conceptualise artefact production were not kept in a physical *'journal'* but can be grouped together by that term:

   - **Concept sketching (reflection-in-action, creative synthesis):** These consisted of drawings that ranged from conceptual diagrams, to rough sketches, to finished illustrations used to help my programmer, lecturers and me understand what I was doing and what needed to be done next. It contained the exploratory, move, and hypothesis tests described earlier.

Figure 24. Konings, N. (2007-2010). *Software design testing.*

- **Information design (problem-solving, action research, reflection-in-action):** These were technical diagrams showing data flow and other aspects of the software architecture. These were largely to help me understand what my programmer was doing, so we could discuss strategy.

- **Test exhibits and surveys (problem-solving, action research, reflection-in-action):** Including assessments, I held three exhibitions in which feedback was collected about the effectiveness of the software to communicate themes. During an independently run test exhibition in Gallery Three, I also circulated a survey relating to the effectiveness of the interface, which confirmed my hypothesis that a minimalistic physical interface would be preferable over a graphical one that required too much user interpretation.

Figure 25. Konings, N. (2009). *Designer's journal excerpts.*

_conclusion

My methodology is clearly hybridised. This is a creative-production project, but it also contains problem-solving experiments, and evidence of transferable technical innovation[11]. It is a heuristic self-search inquiry but it doesn't follow Moustakas' (1990) six phases in a linear fashion. Furthermore, action research methods were also used when collaborating with my programmer, so that communication would be clear and experiments could be run in an orderly fashion.

My heuristic self-search provided the creative direction, but due to its tacit nature, could not be directly communicated to the programmer. Therefore getting together to translate each other's ideas with pen, paper and software, to plan a run of orderly experiments, was the best way for us to operate. At each meeting, we could discuss results and plan a new run. At this stage I was able to feed the results of my heuristic enquiry back into the loop.

11. See page 103 for a brief description of the live rotoscoping technique I have developed with my programmer Paul Chambers.

| Section Overview | 1. The Lexicon | 2. The Field | 3. Conclusion |

1. The Lexicon

i. **The Metaphor of the Mirror**

ii. **The Metaphor of the Garden**

iii. **Synthesis**

2. The Field

i. **The Mirror**
- Telematic Art
- Interactive Digital Art
- Elemental Transfers

ii. **The Garden**
- Photographing Mortality
- Concrete Poetry
- Data Visualisation

iii. **Synthesis**
- Boundary Detection and Movement

> The scope of this project is broad and interdisciplinary, but narrows to focus on a personal inquiry into the nature of fear as a barrier to personal growth. This focus is then re-examined in relation to the broader field established in this section to extrapolate a hypothesis that is tested with a telematic installation in the exhibition. Therefore, the traditional literature review is wrapped into a discussion of the development of the project's critical framework.

section**overview**

This critical framework is divided into three sections. The first section develops a conceptual overview of the project. It examines a range of social and scientific theories and literary devices relating to personal identity, philosophy of mind, ethics, mental health and mythology. It is titled **'The Lexicon'**, because it builds a metaphorical and technical language that assists the reader to access the more pragmatic discussions held in the later sections.

The second, supporting section, provides an overview of the practitioners and creative disciplines that played key roles in the development of the project both conceptually and pragmatically. This section is titled **'The Field'** because it defines the practical area that the research sits within. The relationships between players within this field and the concepts in the project's lexicon will be discussed, as well as relationships to methodology and practice methods.

This section has been structured to mirror the lexicon section so that conceptual relationships are easier to draw out. However there are sometimes relationships that connect across these categories that will be noted also.

The conclusion then draws together the threads of these discussions to summarise the project's critical framework, conceptual focus and social intention.

the**lexicon**

This section is divided into three parts.
The first two parts are divided thematically by the
Metaphor of the Mirror and the **Metaphor of the Garden**[12].

These metaphors encapsulate the overarching aims, perspectives and methods of the project and have shaped and been shaped by the development and production of the exhibition artefacts.

The third part of this section discusses the relationship between the two metaphors and will frame the project by developing a metaphoric structure that relates to my own personal tranformation. This structure is used to develop the telematic installation that is designed to communicate a transpersonal experience through open narrative.

12.   See Mead's quote (2007) on page 16 regarding the relationship between metaphor and tacit knowing.

themetaphorof_themirror

Section Overview	Basic Concepts	Mythic Figures	Shattering the Essential Self	The Mirror and Dialectical Logic

Basic Concepts

The Mirror as a Symbol of Reflection

The Mirror as a Metaphor for the Mind

The Mirror as a Symbol of Truthfulness

The Mirror as a Transformative Device

The Mirror as Portal

The Mirror as Talisman against Evil

The Broken Mirror

Mythic Figures

Medusa

Perseus

Pegasus

Narcissus

Shattering the Essential Self

Bourdieu's (2000) Biographical Illusion

The Mirror and Dialectical Logic

Hegel's Master-Slave Dialectic (1977)

The 'Other' in the Mirror

The **metaphor of the mirror** became a key concept in this project in 2007 while I was researching telematic artist **Paul Sermon**. There are individual entries devoted to **telematic art** in general, and Sermon's own work, in **The Field** section and these are mentioned in relation to **Lacan's** *Mirror Stage Theory* **(2001)** later in this discussion. Nevertheless it is important to acknowledge that his work marks the chronological entry point of the metaphor into this project.

section**overview**

This section opens with a personal statement reflecting on the significance of the **metaphor of the mirror** in human life and introduces the basic concepts that will be examined by a critical review of a range of theorists and systems of thought that deal with the metaphor. The purpose of this short introduction is to familiarise the reader with the general themes that will be built upon throughout the section. The myths of **Narcissus**, and **Perseus and Medusa** will be introduced to develop a project framework that informs the design of the software in the **Synthesis** section.

Bourdieu's *Biographical Illusion* (2000) is then presented as a challenge to the idea of an essential self that can be directly apprehended through reflection and objectively communicated through personal narrative.

I then introduce **Hegel's** *Master-Slave Dialectic* (1977), which provides the conceptual framework for Lacan's (2001) particular use of the mirror metaphor as a **subject-of-language** theory of identity formation. This dialectic is fundamental to the project and will be referred to throughout the exegesis.

The project concept of the **'Other in the mirror'** is then developed as a method of describing the subject-object problem that arises from the discussion of the *Master-Slave Dialectic*. In order to do this, a definition of the problematic term **the 'Other'** is developed through a comparison of its general use with its specific use in subject-of-language theories. The 'Other in the mirror' is a transitional concept designed to help develop the idea of the **'petrifying Other'**, which will be raised in the concluding **Synthesis** section of the **Lexicon**.

Subject-of-language theories are then explained, not only to prepare readers for the development of Lacan's psycholinguistic theory, but to emphasise that his theory decentres notions of self as an essential being that can be directly accessed through reflection.

Lacan's *Mirror Stage Theory* (2001) is then established as a model that can be modified to design software that challenges users to actively reflect on the concept of the self as an emergent being through dialogic reconstruction of their own self-image.

Lacan's idea of the **'misrecognition of the Imago'** is then connected to **Ovid's poem** *Narcissus and Echo* as a method of considering two potential outcomes of self-reflection. The first outcome represents the negative route which is based in a misrecognition of

the image of the self and leads towards unhealthy narcissism and developmental arrest. The positive route is based in the recognition of others as equal subjectivities and leads towards self-transformation and personal growth.

The negative route is explored through a deconstruction of the clinical descriptions of unhealthy narcissism in order to establish that the **metaphor of the mirror** is still relevant and that Lacan's theory (while no longer a dominant model in the field of psychotherapy) is a powerful poetic device with connections to contemporary theories. It is also necessary to develop a profile of the narcissistic personality, as it will play an important part in the **Synthesis** section.

The positive route of self-reflection is then discussed as a method of deconstructing personal narrative to overcome fear and experience the self as an emergent being.

The conclusion provides an overview of the topics discussed in this section to build a problematic picture of **'the reflected self'**. It then describes the relevance of this concept to the project through the metaphors of the mirror as a talisman against evil and as a transformational device.

Figure 26. Konings, N. (2010). *Mirror-gazing.*

mirror |

"early 13c., from O.Fr. **mireor** 'a reflecting glass', earlier **miradoir** (11c.), from **mirer** 'look at,' from V.L. *****mirare**, from L. **mirari** 'to wonder at, admire' (see **miracle**). Fig. usage is attested from c.1300. The verb meaning 'to reflect' is first attested 1820 in Keats' 'Lamia.'

Related: **Mirrored**; **mirroring**. Used in divination since classical and biblical times; mirrors in modern England are the subject of at least 14 known superstitions, according to folklorists. Belief that breaking one brings bad luck is attested from 1777."

(Harper, 2010)

The Mirror as Symbol of Self-Reflection

The only way we can see our own face is in a reflected surface. Therefore the mirror, being the commonest example of a recognisably accurate reflected surface in our everyday lives, becomes the best way we have of **seeing ourselves as others see us**. Considering this, the mirror becomes a powerful symbol of awareness, self-consciousness, introspection and analysis. Encouraging a process of self-reflection is one of the key goals of the project.

The Mirror as Metaphor for the Mind

The intuition of the mirror as a symbol of self awareness was seized upon by psychoanalysts as a metaphor for the mind. Shengold (1974) recounts Freud's model of the mind as being comparable *"to visual instruments like the camera and telescope, whose basic principle is that of the mirror"* (p. 99).

In this model, a plane of reflective material **divides the world into two opposing spaces** – the original and the reflected. This is analogous to the external (environmental) and internal (mental) spaces inhabited by an individual (ibid.).

The Mirror as Symbol of Truthfulness

Mirrors are often assumed to be accurate and impartial reflectors of objective fact, but the physical reality is that every surface contains a certain amount of distortion, even the most highly polished, industrially produced mirror.

This idea of the mirror as flawed reveals the mind to be an imperfect reflector of reality. When we consider the possibility of intentional distortion, the

destabilising effect of this realisation becomes even more pronounced. Intentionally distorting mirrors (for example, mirrors in fashion outlets designed to make customers look slimmer, or carnival mirrors designed to entertain) become editors of reality.

The questions are then raised, *"If my mind is an imperfect reflector of reality how can I trust my own perceptions?"* and, *"if I view myself through the reflected gaze of others' perceptions,* **how can I trust their reflected image of me?"**

As a patient of Auckland Hospital many years ago I was neighbour to a dying man who, in a brief return to consciousness, exclaimed with great passion and awe that he had discovered the workings of the universe and it was all done with mirrors. To me this is testament to the deep position the image of the mirror holds in our psychological lives. The symbol of the mirror runs so deep within our psyche that its image crops up as a powerful occult device in myth and religion, a structural device in psychoanalysis, as meaning complexes in our dreams, and as metaphor in our art and literature.

The idea of polishing the self as if it were a mirror in order to more accurately reflect the nature of self becomes a theme in Christian, Muslim and Buddhist thought. In this symbolic scheme, distorting imperfections such as dust and rust signify sin and ignorance (Chevalier & Gheerbrant, 1996, pp. 658–661). This is related to the next theme.

The Mirror as Transformative Device

Citing Danielou and Bernard, Chevalier and Gheerbrant explain that the act of polishing represents a relationship between the self and the mirror which is *"no longer mere reflection, but participation, in which the soul becomes a part of that beauty to which it lays itself open to".* In this relationship the *"mirror's task is not simply to reflect an image".* Through its polishing *"the soul becomes part of that image and, through becoming part, undergoes transformation"* (ibid., p. 660).

The Mirror as Portal

Throughout history the mirror has been thought of as a portal to an unknown and terrifying other dimension (Pendergrast, 2007, p. 2). Mirrors were sometimes thought of as doorways through which evil spirits could enter our physical dimension from the 'other side'. As such, mirrors were often 'sealed off' with veils at death scenes in order to protect the deceased soul from evil influences, and to prevent it returning to haunt the world of the living (Ryan, 1999, p. 226). In ancient societies it was feared that bodies of water could steal a person's soul by snatching away their reflection (Elkisch, 1957, pp. 235–236).

These superstitions suggest a deeply felt fear of the phenomenon of the reflected self. This can represent a fear of self-examination. Chevalier and Gheerbrant describe this as the "*numinous aspect of the mirror"*, that being, *"the terror which self-knowledge inspires"* (1996, p. 660). This notion of the reflected self as numinous and terrifying will become a central feature of the project framework in conjuction with the mythic figure of Medusa.

The Mirror as Talisman against Evil

Chevalier and Gheerbrant also bring to light the opposite symbolic function of the mirror as a talisman against evil. Citing Harva, they relate that certain central Asian shamans wore robes adorned with mirrors to protect them from *"the arrows of evil spirits"* during *"spirit flight"* (1996, p. 659). They also report that the Taoist practice of hanging octagonal mirrors above the doorways of houses is still observed. The original purpose was to bar entrance to evil influences through two symbolic functions; revelation of their true natures and repulsion through reflective force (ibid.).

In Ancient Greek myth, Perseus uses the reflective properties of a magic shield in a similar way to look upon Medusa without being turned to stone (Ovid, 2001b). This action will become a central concept of the critical framework.

The Broken Mirror

The theme of the fragmented self will reoccur throughout the exegesis. This has been contextualised through the **metaphor of the broken mirror**. For the reasons associated with the **mirror as portal** theme, breaking a mirror is still believed to be bad luck – the primordeal fear is that one's soul could become trapped within its broken shards.

A broken mirror is multi-faceted, multi-dimensional and reflects a multiplicity of perspectives. The theories I discuss in this section conceptualise the self as a fragmented subjectivity attempting to reconstruct itself as a total being. In a sense, this endeavour is the struggle to recover one's soul through the reconstruction of multiple perspectives.

Four figures from Greek mythology will be introduced here with a decription of their relationship to the **metaphor of the mirror** and a brief description of their relationship to the project. However, the full significance of their roles will be built throughout this section and the explicit function of their relationship within the project will be revealed in the **Synthesis** section of the critical framework.

Medusa

Of the three monstrous Gorgons, Medusa was the mortal sister, the other two were immortal (Hesiod, 1914). In Ovid's classical poem, *Perseus* (2001b), Medusa was once an attractive young woman with exceptionally beautiful hair whose good looks incited the god Neptune to rape her in his wife Minerva's temple. In outrage Minerva transformed Medusa's hair into a nest of snakes, causing all those who gazed upon her face to turn to stone. Perhaps even more cruelly, apart from this one terrible deformation, the goddess left the attractive girl's features intact. Medusa's beauty remained but could never be known except in a moment of **petrifaction**.

The Medusa figure has been interpreted in a variety of ways; from the Freudian version as a representation of the monstrous aspect of the mother figure who threatens the immature male with castration (Pines, 1984, p. 34), to feminist interpretations as an empowering symbol of feminine rage (Cixous, Cohen, & Cohen, 1976, p. 885). Regardless of the interpretation, she typically symbolises a mysterious, overwhelming force.

Medusa is simultaneously a symbol of fascination and terror; the only way to know her face is to see it in the moment of your own death. In relation to the **metaphor of the mirror** therefore, her visage symbolises its *"numinous aspect"* (Chevalier & Gheerbrant,1996, p. 660); to gaze upon her face causes **petrifaction** because a direct confrontation with the unknowable is too much to bear.

In this interpretation Medusa becomes a symbol of the sublime terrors inherent to the human condition, and the paralysing effects of their direct apprehension. Her face becomes an image of that which we fear most about ourselves reflected back at us.

This concept is related to the fear of self-knowledge described in the **Mirror as Portal** section and will be developed throughout the section in relation to Medusa as a symbol of the **'petrifying Other'**.

Perseus

In the same poem (Ovid, 2001b), Perseus, the demi-god and son of Zeus, defeated Medusa with the aid of a bronze shield gifted to him by Minerva which functioned as a **magic mirror** and **talisman against evil**.

By watching her reflection in the shield Perseus was able to decapitate Medusa without directly meeting her gaze.

The significance of this action will be discussed in the **Synthesis** section of the critical framework.

Pegasus

Pegasus, a winged horse, was **born from the blood of Medusa** (Ovid, 2001b). Citing Diel, Chevalier and Gheerbrant relate that the winged horse represents "'creative imagination and its real powers of elevation' and for sublime and spiritual values" (1996, p. 746).

Bellerophon rode Pegasus to destroy the Chimera, a horrific beast, and Medusa's own sibling (ibid.). Born of a monster but used to kill monsters, Pegasus is also a symbol of transformed negativity and realised potential[13].

13. And because her death resulted in the birth of Pegasus, Medusa is the converse symbol of negated genius and latent potential.

Narcissus

In Ovid's version of the myth (2001a) Narcissus was the son of a river god and water nymph, and was so beautiful that countless individuals of both sexes fell in love with him. However, Narcissus was too proud to have feelings for anyone and rejected the advances of all suitors. Narcissus was eventually cursed to love only himself and fail in the endeavour, by Nemesis, the goddess of retribution, for his arrogance.

The curse took effect when Narcissus saw his own reflection in a pool of water in the forest in which he had been hunting. Narcissus fell hopelessly in love with his own mirror image and eventually starved to death fixated upon a substanceless phantasm that constantly eluded his grasp.

Within the context of this critical framework, Narcissus had become metaphorically petrified by a reflection of his own Medusian gaze, and is therefore also related to the symbol of the **'petrifying Other'** and fear of self-knowledge.
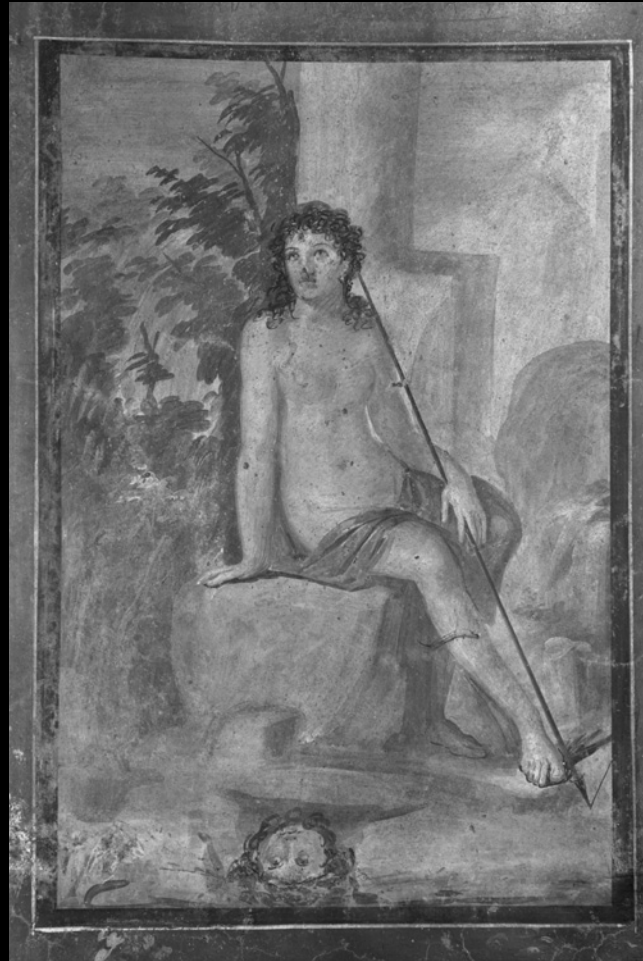
Figure 27. Bartl. (n.d.). *Fresco of Narcissus by the pool.*

"[...] the reflected face of Narcissus, upside down at the bottom-centre of the visual field, seems to resemble not so much the slender youth as a Gorgon's head. Since the Gorgon's head turned anyone who looked at it into stone, this is a particularly appropriate characterisation of the reflection which petrified Narcissus." (Elsner, 2000, p. 103)

The Biographical Illusion

Bourdieu (2000) describes life history as a method to reconstruct experience, producing the effect of a total self. Identities can be seen as works of creative fiction designed to facilitate a subjectivity's interaction with institutions and individuals through life (p. 298). The agent behind this fiction is something ephemeral, continuously emerging from an interplay of social and biological forces which must apprehend itself through integration into the narrative (ibid., p. 299).

A life history is conceptualised as a chronological narrative thread creating a sense of unity and purpose by explaining the present and future in relation to the past. Bourdieu connects life history as a construction rationalising disconnected life events with the birth of the postmodern novel (ibid., pp. 298–299). This suggests that identities can be deconstructed as narratives.

He notes that a person's proper name is a functional shell which holds within it shifting sets of social relations. The proper name is a locative device used to establish a person's singularity over a number of discrete social fields and periods in time (ibid., pp. 299–301). Narrative deconstruction of the subject's identity in each of these fields reveals only fragments relative to a specific context. The inner-life of the subject becomes lost.

Bourdieu suggests it would be more accurate to conceptualise a life as a shifting movement within a field constrained by the movements of other individuals and groups. Discrete events within the field have no objective meaning themselves except when considered in relation to other events (ibid., p. 302).

I have framed Bourdieu's theory in relation to the metaphor of the broken mirror. It is used as a destabilising device to set the project framework against the idea of an essential self. Therefore it is also related to the **metaphor of the garden**.

Hegel's (1977) Master-Slave Dialectic

Dialectical logic involves a movement of synthesis between two opposing arguments (thesis and antithesis) to reach agreement.

Returning to **the mirror as a metaphor for the mind**, another issue is raised when we consider the oppositional structure of a metaphor which divides our experience of reality in half.

Hegel (1977) raised the essence of the problem in 1807, long before Freud reintroduced it, in his seminal tome *"The Phenomenology of the Spirit"* when in Section B. *Self-Consciousness*, he presented the *Master-Slave Dialectic* (pp. 111–119).

To drastically summarise, Subject-A (thesis) confronts Subject-B (antithesis). The confrontation involves a struggle for subject position[14] within the relationship, with Subject-A attempting to objectify Subject-B, and vice versa. This situation represents the *subject–object problem*[15] that has continued to engage philosophical debate throughout history.

Hegel suggested that there would be no synthesis until both parties recognised each other as equals and that power struggles would continue until

then, because a situation of subject-dominating-object provides no satisfaction for either party. A dominated subjectivity cannot enjoy status as subject when it is treated as an object, and a dominating subjectivity cannot enjoy the true status of subject when that status is only recognised by the diminished subjectivity of the objectified party.

We can read the relationship of an individual **standing before a mirror** in a dialectical way. The individual is confronted with his mirror image. The effect, as discussed earlier, is disturbing if we doubt the perfect equivalence of the image to our concept of self. We become alienated from ourselves.

From my perspective, synthesis becomes the attempt to 'know' what the object standing before us is in relation to our own subjectivity actively viewing it. We are viewing ourselves as objects that can be 'known' by other subjectivities in the world while being simultaneously aware of our own subjectivity.

Somehow we are not equivalent to this objectification of ourselves, and we realise the unknowability of our own natures, not only to other subjects misperceiving us as objects, but to ourselves as subjects involved in self-objectification.

This idea is central to the development of Lacan's (2001) ***Mirror Stage Theory*** which will be introduced in this section and elaborated upon in relation to the design of exhibition artefacts in the literature review and the heuristic map.

The 'Other' in the Mirror

By recognising the subject-object problem, and realising our own alienation from ourselves, we have been confronted by the **'Other' in the mirror**. This is a phrase I have coined to refer to a being that we simultaneously experience as *the most intimate and immediate centre of our consciousness*, and a being that is *fundamentally alien to us*. The **metaphor of the mirror** is used here to emphasise the idea that *'Otherness'* is not only a relationship we have with phenomena external to us, but a relationship we have with ourselves.

To develop a more precise sense of this metaphoric relationship, I will define the concept of the *'Other'* as it is used in subject-of-language theories. Initially though, I will develop the general sense of the concept as a field of reference. This will be achieved by contrasting dictionary definitions of the terms 'otherness' and 'subject'.

Otherness, or *alterity* is defined by the Mirriam Webster Dictionary ("Alterity", 2010) as *"the quality or state of being radically alien to the conscious self or a particular cultural orientation."*

It is important to note that the phrase *'the Other'* is a collective noun that encompasses both the idea of alterity in an abstract sense as well as individuals, groups of individuals, systems and concepts alien to a subject.

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14. *"the sole centre of active universality"* (Findlay, 1977, p. xvii).

15. For example, take Jean-Paul Sartre's position as related by Robert Hicks (2003, p. 127): *"According to Sartre, […] this project of identifying 'subject' with 'object' is impossible to achieve, owing to the irreducible tension between consciousness as (1) that which thinks about things and regards them as objects, and consciousness as (2) that which is thought about, as it stands as one of the very objects of the active consciousness's attention. In the former instance, the subject is an active and projective awareness; in the latter instance, the 'subject' is an object that the active consciousness thinks about. Sartre refers to this object-like projection of the actively thinking subject as the 'ego' and he characterizes it as an entity which emerges as a construction of consciousness-as-subject, and which stands on a par with all of the other objects in the world. This ego is consciousness in a deadened and frozen form, and Sartre maintains that it cannot coincide with the active, thinking subject, and that these two aspects of consciousness stand in perpetual tension throughout the duration of human existence. Sartre maintains that subjects and objects are two incompatible kinds of being, and that the human being is an internally tension-ridden host of both kinds of being."*

A subject, according to the Oxford Dictionary is, *"a thinking or feeling entity; the conscious mind; the ego, especially as opposed to anything external to the mind"* ("Subject", 2010). The concept of 'the Other' is already emerging from these definitions as something **external and oppositional to a subject**.

I find Corinne Whitaker's personal statement (2007) particularly poignant when we consider the emotional reality of confronting the *'Other' in the mirror:*

"I remember thinking once that old people were 'Others', as though they lived in a country with a nontranslatable language and uncomfortably strange customs. But at 73 I am now one of these Others and still find the terrain forbidding. How did I suddenly catapult from part-of to outside-of? I feel no different from last year or last decade, and yet I am thrown on a heap of discarded oddities. As Jacques Barzun has said, 'Old age is like learning a new profession. And not one of your own choosing'" (Whitaker, 2007).

The dialectical tension here is that we experience our mirror image simultaneously as an alien entity of potentially fearful, unknown qualities, and as a representation of a quantifiable physical object bound by predictable laws of physical and social science. The terrifying aspects of the **'Other' in the mirror** will be developed into the concept of the **'petrifying Other'**. Confrontation and synthesis with the *'petrifying Other'* becomes a project goal and will be discussed in more depth in the **Synthesis** section.

Definitions of 'the Other' shift according to its use within a variety of theories relating to the status of the conscious subject. Du Gay, Evans and Redman (2000, p. 2) identify three broad categories of theory relating to the status of the subject, which I have truncated as *subject-of-language theories, psychosocial subject theories,* and *sociohistorical subject theories*. For the purposes of this project, I chose to focus on *Subject-of-language theories.*

Figure 28. Konings, N. (2008). *Untitled.*
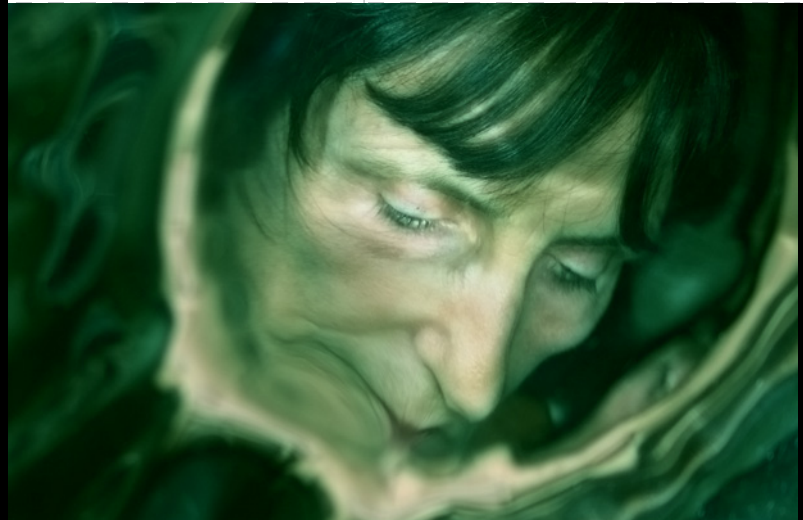
What is common to all theories within these categories is a rejection of the Cartesian subject[16]; the idea of an "integral", "self-sustaining", "free agent" (ibid.), i.e., an **essential being**. The oppositional concept of an **emergent self** will be pursued throughout the project and is introduced in the **Metaphor of the Garden** section.

16. **The Cartesian subject: Essential and objectifying**

"Descartes found himself in the position to doubt the existence of other minds, because he regarded his knowledge of other minds as being on a par with his knowledge of everyday objects such as tables and chairs." (Wicks, 2003, p. 45)

Through a method of eliminating every belief that could be doubted, eventually including the existence of everything around him, In 1644 Descartes (1985) arrived at his famous conclusion, *"Cogito ergo sum"* (I think therefore I am), believing that the only thing that he could not doubt was the fact that he was thinking.

Descartes' concept of the mind, therefore, exists independently of other minds. A mind existing separately from the world of objects (including its own biology) is necessarily autonomous, self-sustaining and irreducible, i.e. **essential**. This model objectifies everything exterior to the subject; the possibility exists that other people in the world are merely automated or imagined objects. The model also assumes that the subject's mind itself is an object of knowledge that can ultimately be understood through direct reflection, as if it were a precious substance with immutable properties waiting to be unearthed and refined.

Subject-of-language theories claim that:

"there is no 'essential', 'true' or pre-social self […] identities are constituted or 'performatively' enacted in and through the subject positions made available in language and wider cultural codes […] identities are constructed through difference and are in consequence inherently unstable, divided and haunted by the liminal presence of those 'Others' from whom they seek to distinguish themselves" (du Gay, Evans & Redman, 2000, p. 10).

It is important to note at this stage that research into the **metaphor of the mirror** has allowed me to develop a critical framework that supports my intuition that the idea of an essential being is untenable. This framework will continue to be built throughout this discussion.

Lacan was a psychoanalyst and philosopher, influenced by Hegel and Freud, who developed a subject-of-language theory of identity formation centred around the **metaphor of the mirror**. This model is commonly known as the *Mirror Stage Theory* (2001).

This theory became of relevance to the structural design of the project and will be discussed in more detail in the **Synthesis** section.

I will build a basic conceptual framework here to support that discussion and also to develop the project goal of provoking a process of confrontation and synthesis with the paralysing aspects of the **'Other' in the mirror**[17].

*This synthesis is framed by the mythic figures of **Narcissus**, **Perseus** and **Medusa** and **Pegasus** who are all associated (Pegasus indirectly) with the symbols of **petrifaction**, **destruction** and **transformation**, centred around the **metaphor of the mirror**. Through this frame the fearful aspects of the 'Other' in the mirror are communicated through the symbol of the **'petrifying Other'** as represented by the face of Medusa and Narcissus' self-petrifying gaze.*

The Mirror Stage Theory: Foundations

Building from Hegel's observation in the *Master-Slave Dialectic* (1977) that there is a critical subject-object problem between individuals that can only be resolved through synthesis, Lacan developed a theory which suggested that synthesis with the Other can never be fully realised. To do this he built a schema of three 'Orders':

1. The 'Real'; which refers to the natural world of objects existing as a raw continuum, outside of human interpretation.

2. The 'Imaginary'; which refers to the world of a subject's imagination. It is in the Imaginary that the subject attempts to comprehend the Real through images and representations. In this order the subject can imagine itself as it is seen by others, thereby achieving recognition of itself as a simultaneous subject and object.

3. The 'Symbolic'; which refers to existing social systems (particularly language) that exist prior to and outside of the subject but which provide it with the structure to construct the images and representations that comprise the Imaginary.

17.   It is important to note that I am not developing a theory which suggests complete synthesis with the 'Other' is possible, but merely suggesting that aspects of this 'Other', perceived as terrifying to an individual, may not be entirely alien, and that methods to confront these aspects without fear can be developed so that one can synthesise them. The intention is to expand the boundaries of the self to encompass areas that were thought alien, so that individuals can become more tolerant, not only toward others, but towards the Other existing within themselves. I conceive this as a movement away from self-reflection as a means to uncover an essential self existing as a fully integrated unity, towards a method of experiencing the self as a creative growth towards unknown positive potential.

Lacan's conception of the Other exists in the realm of the Symbolic. In order to understand why we must contrast his use of the term 'Other' with his use of the term 'other'.

According to Evans (2001, pp. 132–133), Lacan's *"[…] little other is the other who is not really other, but a reflection and projection of the Ego. He […] is simultaneously the counterpart and the specular image."* However, *"The big Other designates radical alterity, an other-ness which transcends the illusory otherness of the imaginary because it cannot be assimilated through identification… The Other is thus both another subject, in his radical alterity and unassimilable uniqueness, and also the symbolic order which mediates the relationship with that other subject."*

The Mirror Stage Theory: Misrecognition of the Imago

Lacan suggested that a typical child, starting at the age of about six months, gradually becomes cognitively capable of recognising itself in the mirror. Before this stage the child exists in the order of the Real as a consciousness undifferentiated from its environment and in a state of satisfied *"syncretic unity"* (Grosz, 1990, p. 34) with its

mother. During this period, the self is experienced as networks of sensory inputs developing at different rates which *"cannot be attributed to a continuous, homogenous subjectivity"* (ibid.).

The recognition of itself in the mirror marks its *"first recognition of a distinction between itself and the (m)other"* (ibid., p. 32), catapulting it into the order of the Imaginary in an attempt to make sense of this new relational structure. Lacan suggests that in an attempt to resolve this previously absent sense of lack, and return to the sense of satisfaction experienced in the order of the Real, the child invests the concept of itself as a self-sufficient entity into its mirror image. The mirror image is *"a totalised, complete external image […] the subject as seen from outside […] in conflict with the child's fragmentary, disorganised felt reality"*[18] (ibid., p. 48).

In relation to Hegel's *Master-Slave Dialectic* (1977), we can see the child's confrontation with its mirror image as the first moment self-consciousness; it is presented with the knowledge that it is both a subject in the world, and an object of its own subjectivity. It is thus faced with the threat of other subjects in the world, and realises that it is viewed by them as an 'other'[19]. In a similar way that Subject-A and Subject-B in the *Master-Slave*

Dialectic are involved in competition with each other, the child experiences a sense of inadequacy to its mirror image (it is seen as 'totalised' and 'complete', while the infant feels 'fragmentary and 'disorganised') and enters into competition with it.

Synthesis (a return to the Real) is therefore attempted through a fictional act. The child identifies itself with an 'Ideal-I', an imagined self initially correlated to its mirror image, that evolves through paranoiac interaction with others as a working construction of how the child imagines it is being viewed from the outside. For the subject this becomes a hopeless cycle of self-invention in an attempt to achieve synthesis with its Ideal-I throughout life[20].

This framework may be compared to Ovid's (2001a) version of the myth of Narcissus. The child's identification with an ideal-I correlates to Narcissus' tragic fixation upon his own reflected image.

I am aware that Lacan's theory is of little interest to many contemporary psychologists because it is not considered to be empirically testable and is therefore unscientific (Evans, 2005, p. 10). However, the dialectical structure Lacan developed is an elegant model which inspired me to think about how it could be modified to design an interactive environment that would challenge a user to reflect on the nature of their identity.

Lacan's subject-of-language model is also useful for art and design approaches as it accentuates *"the fundamentally poetic nature of the human mind"* (Wicks, 2003, p. 130), providing a conceptual arena to test creative methods to inspire reflection.

18. The idea of fragmentation, already framed by the metaphor of the broken mirror and extended by a discussion of Bourdieu's (2000) *Biographical Illusion* will become a key concept in the project and is disscussed in the **The Metaphor of the Garden** section.

19. This is equivalent to Lacan's earlier conception of **'the Gaze'**, the version still widely used in film theory (Evans, 2001 , p. 72).

20. Lacan saw no way out of this situation. He believed the individual's sense of self to be based in the realm of the imaginary, structured through the pre-existing order of the symbolic; alien systems of language and cultural law. Therefore, the individual's identity is founded on illusion - apprehension of a true self remains impossible within this structure. The intention of his psychotherapy was not to lead the person to a realisation of their true self, but to "a realistic assessment of the person's place in the world, as the person stands in relation to others" (Wicks, 2003, p. 130).

The **metaphor of the mirror** is not new to interactive artists. For example, Sermon (1999) used *Lacan's Mirror Stage Theory* (2001), to contextualise his telematic[21] exhibition, *There's No Simulation Like Home,* over a decade ago*:*

"Jacques Lacan suggested in his early psychoanalytical writings that the human psyche is constructed as a mirror image that we contemplate as if it is on stage in front of us. This metaphor has become significant for the present developments in new media art, as we can observe a similar process of identity construction through a digitally mirrored world in networks and installations."

As mentioned earlier, the structural similarity of the child's misrecognition of the imago in Lacan's *Mirror Stage Theory* (2001) and Narcissus' misrecognition of his own reflected image is marked.

Some might argue that this project is intensely narcissistic. It has been argued that there is *"a fundamental narcissism evinced in the project of self-portraiture itself"* (Koerner, 1993, p. 31). Constructing a sculptural self-portrait and then obsessively following a strict, timetabled routine of watching and recording it transform over a period of a year, at the cost of a social life and even decent sleeping habits, is an activity that can be compared to the process of starving to death staring at one's reflection in a pool of water.

However, as Koerner also mentions (ibid., p. 179), the Renaissance mystic Nicholas of Cusa (1453) regarded "narcissism as the starting point of devotion", and Campbell compares "the stage of Narcissus looking into the pool" to "the Buddha sitting contemplative under the tree" (2008, p. 333). I take these observations to indicate that self-reflection can lead in two very different directions.

The negative route, which will be discussed first, is based in misrecognition and self-deception, and leads to unhealthy narcissism and developmental arrest.

The positive route leads in an opposite direction towards a recognition of the relatedness of the self to the Other, a **destruction** of fabricated boundaries and to personal **transformation**.

The critical difference between the two routes lies in a moment of recognition or misrecognition. In Lacan's model, the child, "*identifies with an image of itself that is also always the image of another. Its identification can only ever be partial , wishful, anticipated, put off into the future, delayed" (Grosz, 1990, p. 40).* It has invested its identity in a fictionalised image of unified totality, an image in which *"its internal or felt reality can only ever be incompletely approximated or represented"* (ibid.). This fixed image of a future potential becomes a kind of perfected shell into which the individual projects their own ego.

This is much the same problem faced by Narcissus; he mistakes the imagined for the real, the self for the other, and falls in love with an insubstantial mirror image of himself that he can never enjoy physical or mental exchange with[22]. Lacan's hypothesis bases human identity upon fundamentally narcissistic foundations.

21. Telematic art will be explored in the **Field** section.

22. By failing to make the distinction he becomes trapped within a closed circuit of self-love. A closed circuit that cannot accept new data can only endlessly repeat without hope of development.

Reconstructing the Metaphor of the Mirror from the Clinical Texts

Despite attempts to avoid figurative language when defining unhealthy narcissism, modern psychology and psychiatry still retain references to the **metaphor of the mirror** and a relationship to the **myth of Narcissus**.

This subsection will extract the metaphor to prove that misrecognition of the self and self-deception play a key role in Lacan's (2001) *Mirror Stage Theory*, contemporary clinical understandings of pathological narcissism, and in a negative reading of Ovid's (2001a) Narcissus myth. This will help establish the relevance of the mirror metaphor and the mythic figure of Narcissus as key devices in the conceptualisation of the telematic installation as will be described in the **Synthesis** section of this critical framework.

According to Dimaggio et al. (2006) of the British Psychological Society, there is a general consensus amongst contemporary researchers that narcissists consider themselves to be *"special, superior and unique"*, and *"expect others to be able to see their qualities as a matter of principle and to admire them, without having to make any effort to deserve this admiration"* (p. 497).

This is verified by the DSM-IV[23] (American Psychiatric Association, 2000), a standardised medical handbook which attempts to classify mental disorders from a theoretically neutral perspective by presenting statistical data focused on symptoms over causes. It defines Narcissistic Personality Disorder as, *"a pervasive pattern of grandiosity, need for admiration, and lack of empathy"* (para. 1).

Dimaggio et al., citing Akthar and Thomspon, go on to observe that the manual really only describes what practising clinicians term the "*overt*" type, which is also characterised by *"arrogance"* and the *"search for power and success"* (2006, p. 497). This type is boastful, over-confident and eager to be the centre of attention. Dimaggio et al. identify the other type as more subtle, less easily identified, and associate it with the term *'covert'* (ibid.). Covert types are *"timid, inhibited and expectant that others will find them lacking"* (ibid.).

Regardless of their behavioural type, narcissists are generally characterised as having a *"fragile self-esteem"* and as a result, *"feel easily hurt and threatened; their way of reacting [to this hurt and threat] is to take refuge in their grandiose self-image"* (ibid.).

The **metaphor of the mirror** is not explicit in these models, however we can easily reconstruct the **dialectical mirror structure** to represent the discordant relationship between the narcissistic individual's fragile sense of self-esteem and his grandiose self-image. The parallel with Lacan's idea of the disparity between the fragmented internal state of the child and its totalised Ideal-I is unmistakable.

An example of this parallel can be seen in psychodynamic theories of narcissism (e.g. Otway & Vignoles, as cited in Tracy et al., 2009, p. 197) which refashion this **mirror dialectic** in terms of a *"structural split in the self-representational system – implicit feelings of inadequacy coexisting with explicit feelings of grandiosity".* The split is made possible through dissociation; the narcissist identifies with an idealised self-image and buries all negative self-images at an implicit level (Kernberg; Kohut, as cited in Tracy et al., 2009, p. 197).

This underlying structure can still be traced directly back to Hegel's (1977) *Master-Slave Dialectic.* For example, citing Modell, Dimaggio et al. describe the narcissist's goal *"to be to demonstrate their own indisputable superiority. When faced with this, others can either enter into the contest or give way. This pattern may also take a dominance/submission form, involving tyrant and slave roles"* (2006, pp. 500–501).

The **metaphor of the mirror** continues to emerge as a subtext in the 'language neutral' medical description of the DSM-IV when it describes the narcissist *as being "preoccupied with how well they are doing and how favorably they are regarded by others"* (American Psychiatric Association, 2000, para. 6). Grosz (1990, p. 46) describes this in relation to the *Mirror Stage Theory* as *"imaginary relations [...] two-person relations, where the self sees itself reflected in the other."*

23. DSM-IV is an abbreviation of the Diagnostic and Statistical Manual of Mental Disorders (4th edition).

This concept of using **others as mirrors** to observe one's own reflected image is also embedded in criterion 7 of the DSM-IV entry for Narcissistic Personality Disorder, which states that the narcissist *"lacks empathy"* (American Psychiatric Association, 2000, para. 2). Others are seen as objects to reflect what the narcissist wants to see rather than as subjects in their own right with the freedom to perceive what they will. If others do not confirm the narcissist's grandiose self-image, he may attempt to manipulate their perception. This behaviour demonstrates criterion 6, in which the narcissist is defined as "interpersonally exploitative" (ibid.). The theme of **mirror-gazing** continues in Criterion 4 which states that the narcissist *"requires excessive admiration"* (ibid.).

It is interesting to note that the words 'admire' and 'mirror' share a common etymological ancestor; the Latin term 'mirari' which means 'to wonder at' (Harper, 2010). The concept of the mirror is inherent in the very language used to describe the disorder despite medicine's great efforts to appear neutral and non-figurative. The idea of distortion is also present in the term "mirage", which stems from the same root, and correlates to the idea that the narcissist's self-image is fundamentally misrecognised.

If the narcissist fails to elicit admiration from his '**magic' mirrors**[24], and instead receives criticism or indifference, he is prone to *"react with disdain, rage, or defiant counterattack"* (American Psychiatric Association, 2000, para. 9) in an attempt to maintain the integrity of his self-deception.

Citing Millon and Davis, Dimaggio et al. confirm the fragility of this dissociative structure when they note that narcissists *"risk a major depressive episode when they see the difference between their inflated self-image and the failures they have in their lives"* (2006, p. 498). This explains the self-deceptive reactions described above that such people have to threats to their explicit, grandiose self-image.

As a final deconstruction of the 'neutral' language of the DSM-IV, the term **'mirror'** emerges literally from the text in the outline of criterion 3, which explains that the narcissist's *"own self-esteem is enhanced (i.e., "mirrored") by the idealized value that they assign to those with whom they associate."* (American Psychiatric Association, 2000, para. 5).

As I have shown from this deconstruction, there are definite structural parallels between Narcissus' misrecognition of his own reflection, Lacan's (2001) *Mirror Stage Theory*, and the pathological narcissist's dissociative self-representational system.

These parallels are reinforced by analysis of narcissistic behaviours including those outlined in criteria 4, 6 and 7 of the DSM-IV, as being centred around the idea of mirror-gazing. Therefore the **metaphor of the mirror** is still present at a structural level and sometimes even becomes present in the clinical language both etymologically and literally.

Reflections

For me, self-search has led to the discovery of specific unhealthy narcissistic beliefs arresting my personal growth, but has also led towards a method of overcoming them. The installation is not specifically about narcissism but uses intimately related metaphors to engage self-reflection, so a discussion of the relationship has been useful. The intention of the installation is to encourage a positive experience of self-reflection, but this reading must be understood in relation to the negative to bring attention to the obstacles leading to self-transformation. A reconstruction of the mirror metaphor from contemporary clinical texts was necessary to reestablish its psychological significance and to give some background to the project famework which will be built in the **Synthesis** section.

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24. The magic mirror crops up in myth and fairytale as a symbol of self-analysis through comparison with others. Take for example this extract from a version of the famous Grimm's fairy tale Snow White:

"Now this queen had a magic mirror and whenever she looked into it, she would say: Mirror, mirror, on the wall, Who's the fairest of them all? And the mirror would reply:You are the fairest of them all. Each year, however, Snow White grew more beautiful. One day, when the queen looked into her mirror and asked it who was the fairest of them all, the mirror replied: You are very fair, 'tis true. But Snow White is more fair than you! When the queen heard that she turned green with envy." (Greenway & Augenstine, 1991, p. 11)

The Path to Self-Transformation: Active Reflection

As described earlier, Campbell (2008) compares Narcissus' self-relations with Buddha's aescetic meditations. However, while Narcissus eventually recognises that he is not his own reflection, he responds with confusion:

"Look! I am he; I've loved within the shadow
Of what I am, and in that love I burn,
I light the flames and feel their fires within;
Then what am I to do?" (Ovid, 2001a, p. 99).

He then realises the terrible futility of his own self-infatuation:

"Am I the lover or the beloved? Then why make
love? Since I
Am what I long for, then my riches are
So great they make me poor" (ibid.).

This realisation leads to a desire to leave the relationship,

"O may I fall
Away from my own body – and this is odd
From any lover's lips – I would my love
Would go away from me" (ibid.).

Tragically, he is unable to take action on this insight and recommits himself to his original state of misrecognition:

"And now love drains
My life, look! I am dying at life's prime.
Nor have I fear of death which ends my trials,
Yet wish my lover had a longer life,
If not, we two shall perish in one breath" (ibid.).

His decision to continue the relationship despite this earlier moment of self-recognition shows a fear of self-knowledge, a perverse willingness to consciously ignore what has been brought into his field of view, and a desire to return to a state of ignorance. This symbolises the narcissist's self-deceptive ability to maintain a structural split between explicit and implicit self-representations. In both situations the result is metaphorical petrifaction; developmental arrest.

This moment of turning away from a realisation marks the point within self-reflection at which one can make a conscious decision to continue to be self-deceptive, or make a concerted effort to break habits.

In my heuristic inquiry, I have come to the opinion that concerted efforts to break habits require true discipline; this is directly related to the concept of

indwelling (Moustakas, 1990, p. 24) and the process of immersion (ibid., p. 28). One must develop a routine that allows for disciplined reflection and stick to it. Self-reflection is not self-admiration, although there is no reason not to acknowledge and cultivate one's strong points. By the same token, self-reflection is not necessarily critical, but in my practice it is sceptical. By this I mean I am sceptical of the thoughts that arise while involved in the routine; I am actively listening to myself. The reason for the need for scepticism has been developed in this critical framework; personal narrative can be self-deceptive.

To take Bourdieu's perspective, these personal narratives cannot be objective; they are rationalisations of past events lent meaning through a retrospective analysis designed to provide a sense of linear progression and future direction. These stories frame the self as the hero in a narrative complete with a beginning, middle and end, character developments, plot twists, intrigue and moral themes. If one were to seek self-knowledge through the recounting of biography, it would be wiser to listen to the stories told about you by the people in your life. Better yet, to secretly record these stories while you were not present. Perhaps then you would be able to begin to map some kind of objective view of the qualities you embody in the world.

To take Lacan's position, these narratives would be stories of the self's ideal-I. Events that suggested its non-existence would have to be re-evaluated somehow to explain the misunderstanding that led to the perception of its non-existence. This is the same problem faced by the pathological narcissist; evidence to suggest that he was anything but infinitely superior to those around him would have to be rejected, discredited, redirected or in some other way rationalised.

Therefore, when involved in self-dialogue I am cognizant of my capacity for self-deception. Self-dialogue is a two-way street; it is not enough to passively experience one's thoughts. An active listener must be prepared to challenge, engage, and progress dialogue into unfamiliar territory. As Moustakas says (citing Roads), *"In such an odyssey, I know little of the territory through which I must travel. But one thing is certain, the mystery summons me and lures me to swim in an unknown current"* (1990, p. 130). Hidden assumptions and causes must be dredged up and investigated before transformation becomes possible.

This process is analogous to the religious metaphor of the **mirror as transformative device**; the mirror is continuously polished to reveal new ways of seeing and therefore being. This process is not only a method of deflating grandiose fantasy, negative self-beliefs must also be interrogated, when these are overcome hidden potential is unlocked… from Medusa's blood springs the Pegasus.

I am not suggesting we psychoanalyse ourselves. Self analysis runs the risk of even wilder personal narratives and rationalisations being invented. This kind of activity can become circular, ineffectual, narcissistic theorising.

What I *am* suggesting is a form of self-reflection designed to separate the self from stories about the self. This may appear to be an attempt at distance, but it is only a distancing from the construction of the self, or to use the project term, the *'reflected self'*. The *'reflected self'* is a construction that we mistake for an **essential self**; in Lacanian terms it is the ideal-I.

Identification with an essential self, with a perfected image, represents a turning away from genuine self-reflection towards narcissistic dissociation. This act of fear transforms the *'Other in the mirror'* into a *'petrifying Other'*. The perfected self-image becomes an image of the Medusa; gazing upon it petrifies. In this way, failure to differentiate self from Other, metaphorically kills; this fate is symbolised by the fate of Narcissus. Direct apprehension of the *'petrifying Other'* kills also; this is the fate symbolised by those who dare to directly gaze upon the face of the Medusa.

However, the **metaphor of the mirror** provides a solution to its own problem. The mirror as a **talisman against evil** and as a **transformative device** allows a subject to confront its own nature in an indirect manner.

This method provides enough distance from the constructed self and the stories stitching it together to give one the level of silence required to approach a relationship with a fundamental experience of self.

According to the critical framework being developed, this experience of self is not essential, it is emergent. Contemplation of the self as an *'emergent being'* encourages personal growth. The concept of the **emergent being** will be developed in the next section, **The Metaphor of Garden**.

The method developed to allow access to active reflection of the self as an *'emergent being'* will be explained in the **Synthesis** section.

_conclu

_conclusion

In this section, the discussion of the **metaphor of the mirror** in relation to human identity and mental health has built a picture of a being I call the *'reflected self'*. This metaphoric individual represents a concept of the self that typifies attitudes developed from 1644 (Descartes, 1985) through to the current day regarding human identity.

The 'reflected self' can be negatively characterised as being fragmented (dialectically split/ dissociative) and petrified (fearful/developmentally arrested). This 'reflected self' can be represented by the image of two versions of the self facing each other as mirror images.

On one side of this symbolic divide stands an image of totality, unity, clarity and competence. This image is a visual echo of the Cartesian precept *"Cogito ergo sum"* (1985) and represents the idea of an essential self that can be directly apprehended through reflection. This self exists prior to and independently of the biological and social realms. Within such a structure this image is assumed to be the direct correlate of a subjectivity: **a perfect reflection.**

On the **other side** of this Hegelian divide stands a **fragmented being. Fragmented by** biology (Bourdieu, 2000; Lacan, 2001), and **reconstructed through** language and social systems (du Gay, Evans & Redman, 2000; Bourdieu, 2000; Lacan, 2001); this being stands in **a position of inferiority to its own reflected image.** Within this structure there is cognitive dissonance between the subjectivity and its self-image: **a distorted reflection.**

Identification with the essential self is founded in fear and self-deception, and results in developmental petrifaction. A solution is offered using the metaphors of the mirror as a talisman against evil and as a transformative device to facilitate active reflection of the self as an 'emergent being'. The concept of the 'emergent being' will be developed in the following section and the solution will be explained in the **Synthesis** section.

Figure 29. Konings, N. (2009). *Eun Sil.*
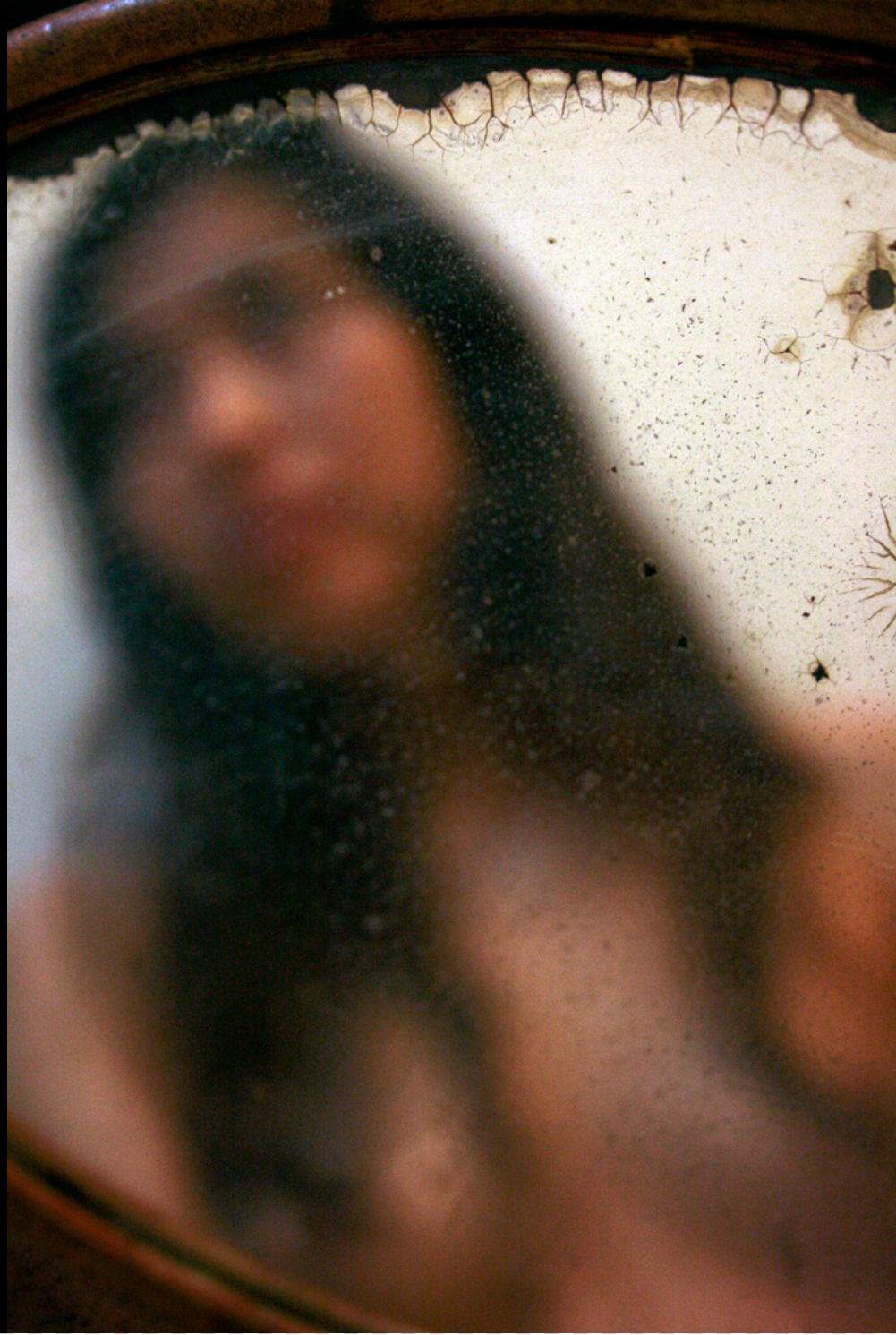
themetaphorof _thegarden

Section Overview	Basic Concepts: Emergence	Basic Concepts: Self-Cultivation	Locating the Emergent Self	Conclusion

Basic Concepts: Emergence

The Garden as a Symbol for Paradise

The Garden as Microcosm: Interconnectedness

The Garden as a Symbol of Impermanence

The Garden as a Multivalent Space

The Garden as a Symbol of Emergence

Basic Concepts: Self-Cultivation

The Garden as a Symbol for Cultivation

The Garden as Sanctuary

The Garden as Portal

Locating the Emergent Self

Emergence: A Scientific Perspective

The Emergent Self

Emergence in Software Design

The **metaphor of the garden** began to emerge as a dominant theme in 2009, when I started designing sculptural portraits that could sustain plant life. I had already constructed much of the framework discussed in the previous section, developed a concept of the 'reflected self', and had an intuition of its problematic nature. However, I had no idea how to approach this problem. The notion to construct biodegradable portraits was initially technical. I had already been sketching and photomontaging avatar designs for software that transformed user images since 2008. The decision to begin observing naturally transforming portraits was based in an intuition that unexpected results could move the project in a more interesting direction, uncover hidden motivations, and produce more authentic imagery.

section**overview**

At this stage the **metaphor of the garden** was not particularly important to me; I had also been experimenting with images of human growths/deformations and architectural constructions as methods to communicate transformation.

The decision to use plant growth was pragmatic - it would be much easier to produce a substrate that could retain a human form and support plant growth than one that could support the development of animal tissue.
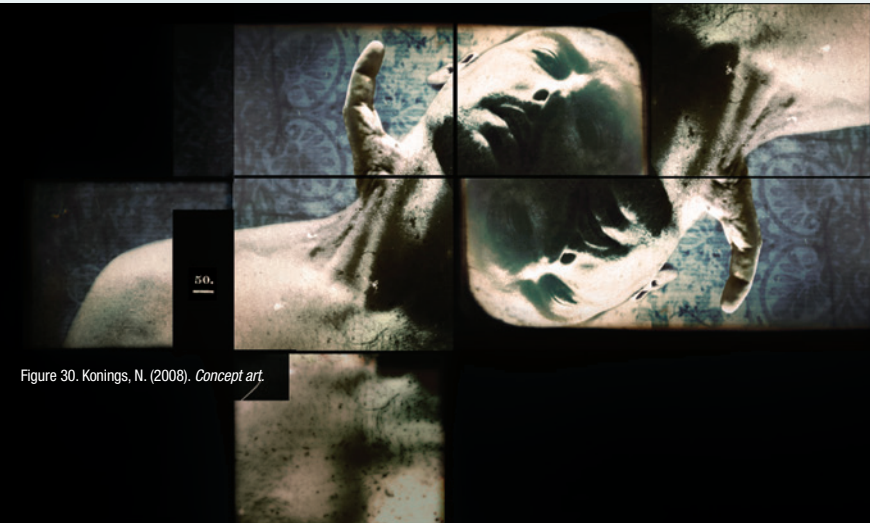
Figure 30. Konings, N. (2008). *Concept art.*
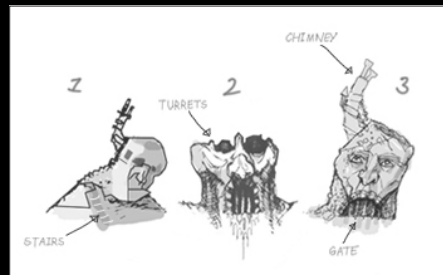
Figure 31. Konings, N. (2008). *Sculptural designs.*

The architectural and robotic models were similarly restrictive - static models could be built and even animated, but self-constructing growths would have to be virtually modelled or built with the aid of experts, defeating the original purpose. Luckily for me, the decision to examine the metaphor would have rehabilitative effects.

paradise

"late 12c., **"Garden of Eden"**, from O.Fr. paradis, from L.L. paradisus, from Gk. paradeisos "park, paradise, Garden of Eden," from an Iranian source, cf. Avestan pairidaeza **"enclosure, park"** (Mod.Pers. and Arabic firdaus **"garden, paradise"**), compound of pairi- "around" + diz "to make, form (a wall)." The first element is cognate with Gk. peri- "around, about" (see peri-), the second is from PIE base *dheigh- "to form, build" (see dough). The Gk. word, originally used for an orchard or hunting park in Persia, was used in Septuagint to mean **"Garden of Eden"**, and in New Testament translations of Luke xxiii.43 to mean **"heaven"** (a sense attested in Eng. from c.1200)." (Harper, 2010)

This section begins in the same way as the last; by setting down some basic ideas relating to the metaphor under consideration. These are developed towards two ends. The first is to flesh out the idea of an emergent self. The second is to suggest a method of cultivating an experience of it.

The concept of emergence is then located within the field of science. This definition is designed to establish a sound working relationship between the concepts of emergence and the self.

This working relationship is then explored further within the paradigm of philosophy of mind. Within philosophy of mind, the concept of an emergent self is situated within a field enclosed by two opposing ontological[25] territories: Dualism and Monism. By working in from the far edges of these contrasting zones towards an area of grey, the project will establish this field as the conceptual field of interest.

The software, a significant part of the exhibited thesis and a result of this philosophical inquiry, was consequently developed using an emergent design model, therefore it is also necessary to connect it to the discussion at this point.

Having established the ontological possibility of an emergent self and discussed the type of software model which was most suitable to experiment with, the critical framework then proceeds to the Synthesis section.

25. Davies (2005, p. 155) defines ontology as, *"the study of the kinds of things there are in the world"*. The Oxford Dictionary (2010) describes ontology as *"the branch of metaphysics dealing with the nature of being"*. Ontology is concerned with defining fundamental categories and hierarchies of being to test whether or not entities (physical and non-physical) can exist according to them. Therefore ontology as a system is the process of developing and assessing coherent beliefs concerning the nature of reality. In relation to the project, ontology is important as a method to establish the possibility of the existence of an emergent self.

The Garden as Symbol for Paradise

"The oldest of surviving sacred stories have their roots in the garden and reflect how humanity sought to understand the changeable patterns of their world and, at the same time, to imagine a world no longer subject to change. It's no accident that our own word 'paradise' comes from a Persian word for an enclosed garden" (Streep, 2003, p. 12).

The most obvious symbolic meaning of the garden is that of paradise, as epitomised by the Garden of Eden. This Earthly paradise represents the ideal of natural harmony and the myth of original perfection. Love of the garden is therefore connected with a desire to return to a state of original perfection or inner harmony - there is a strong connection between this desire and Lacan's concept of the return to the Real. This symbolism is not restricted to Christian thought - the idea crops up in its variations around the world in the ancient (and contemporary) cultures of Israel, Rome, Greece, Iran, Babylon, Egypt, China and Japan (Chevalier & Gheerbrant, 1996, pp. 418-420).

In this project, all metaphoric references to the garden are intimately related to this symbolic goal.

The Garden as Microcosm: Interconnectedness

"The traditional garden of the Persians was a sacred space that was supposed to bring together inside its rectangle four parts representing the four parts of the world, with a space still more sacred than the others that were like an umbilicus, the navel of the world at its center (the basin and water fountain were there); and all the vegetation of the garden was

supposed to come together in this space, in this sort of microcosm [...] The garden is the smallest parcel of the world and then it is the totality of the world" (Foucault, 1986, pp. 25-26).

In this description Foucault notices that the ancient Persians conceptualised the garden as a microcosm of the universe within which a person could consider the totality of experience as mediated through an idealised symbolic structure.

Creating a garden space gave me a sanctuary within which to reflect upon my research. Tending to the life emerging on human forms degrading over time gave me an opportunity to physically explore the problem of the 'reflected self'. Being involved in an intensely repetitive daily routine gave me the mental space for ideas to incubate. Observing the breakdown of human features through the erosion of form and permeation of boundaries as plant life claimed space and spread roots engaged me in a visceral meditation on the nature of impermanence. This led to a reframing of the project.

When one becomes intimately involved in a garden, as a gardener, or admirer, it can be fascinating to observe the activity taking place at a miniature level, the drama unfolding, the cycles of life and death unwinding at a speed and scale that suggests that one could be observing the mechanations of a self-contained microverse.

"The more affectionate we feel our way in nature's unknown essense, the more harmonious our garden becomes. Its totality is a microcosm and thus affords the individual an opportunity to take part in the greatness of creation on a small human scale" (Ammann, 2008, p. 51).

Figure 32. Konings, N. (2009). *Stills from time-lapse.*

26. **The symbol of the garden as a sanctuary** will be discussed in this section.

27. **The garden as a symbol of impermanence** will also be discussed in this section.

In the same way that the garden can be a metaphor for the universe, the garden is a metaphor for the mind. Retreat to a **sacred garden**[26] to consider one's place in the universe is an act of reflection,therefore the **metaphor of the garden** as microcosm is symbolically related to the **metaphor of the mirror**.

In ancient Korea, garden landscapes were also conceptualised in this way. Nature was considered a macrocosm of the human body, and therefore landscape features were attributed to different parts of that sacred body:

"mountains were regarded as the holy trunk of nature, rocks as bones, rivers as veins, and flowers, plants and trees as hairs on the holy trunk" (Chung, 2002, para. 30).

Figure 33. Konings, N. (2009). *Stills from time-lapse.*

Therefore, humanity and the cosmos shared the same body. Caring for nature was the same act as caring for the self. In this system, all beings are **interconnected**; the ideas of a dialectical self and its 'Other' become peripheral.

This idea of **interconnectedness** is related to the idea of **impermanence**[27]; holding the view above, even rocks have a temporal and dynamic aspect to them, though one that is not immediately observable to the insensitive observer. Sensitivity to the impermanence of natural objects allows us to develop a sense of empathy with all things, as Fung illustrates:

"Mi Fu, the famous painter and calligrapher, was said to have bowed down in front of a rock and addressed it as his elder brother. This became a popular theme in Chinese painting. Rocks were not considered inanimate objects but manifestations of dynamic natural processes charged with qi ('pneuma' or 'energy')" (2002, para. 13).
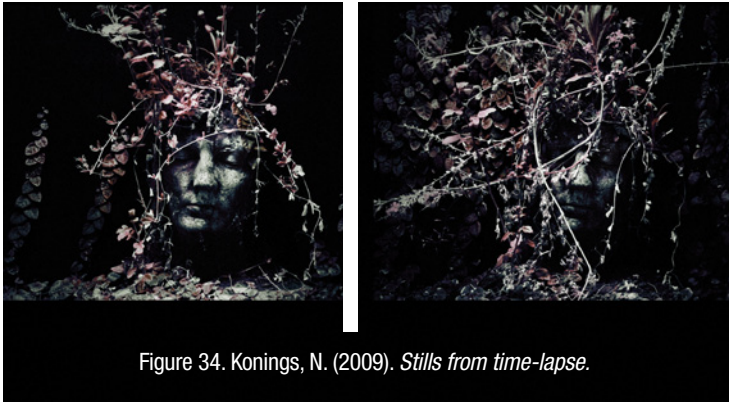
Figure 34. Konings, N. (2009). *Stills from time-lapse.*

The Garden as a Symbol of Impermanence

"Chinese gardens are intrinsically ephemeral. Because their appearance varies with the season and time of day, they were not intended to be fixed in design or form" *(Fung, 2002, para. 3).*

The garden is four dimensional, i.e., as an artform it is observably constrained by the dimension of time. By the nature of its media a garden is in constant flux. Decomposition, fertilisation and germination, growth and retreat, seasonal change, blossoming and fruiting, weather effects, design interventions, and the presence of visitors all act upon the nature of the garden from moment to moment. A garden is never static. According to Fung (2002), the Chinese garden of the Tang and Song periods,

"[...] was not primarily defined as a type of spatial object but as a kind of experience, a conjunction of feelings or sentiments (qing) and scenery (jing). Perfect accord between the two elements, in which the person and nature became one, was the ideal aspired to" (para. 11).

In Japanese aesthetics impermanence is raised up as an ideal. Appreciating impermanence in nature and celebrating it in art and in the garden is a way

to aestheticise human mortality (Saito, 2010). This identification with the transience of nature is not dissimilar to the Korean attitude described previously and also leads to an appreciation for the interconnectedness of all things, a destruction of emotional boundaries, and to an increase in empathy.

The Garden as a Multivalent Space

The transient nature of the garden, and the sense of personal imminence it excites, encourages one's mind to flow where it will. Organic shapes blend and insinuate other forms, paths lead only to other points of view. Urgency and directon is lost. The rigid structures of the outside world; times, dates, responsibilities and desires, material points of reference, become fluid. Foucault described the sacred Persian garden as a heterotopia, a real place stitching together multiple spaces into one virtual site. A heterotopia exists inside and outside of conventional space and time (1986, pp. 25-27).

If the metaphor of a broken mirror represents the fragmented nature of consciousness, the **metaphor of the garden as a multivalent space** represents a place where multiple perspectives are celebrated. In a garden, delight is experienced through the apprehension of multiple forms and

sensations, and through appreciation of the transition of innumerable moments resulting in unique, never to be felt again experiences. Within multivalent space, singularity; a fixed point of reference, becomes a barrier to pleasure.

The Garden as a Symbol of Emergence

"The slime mold spends much of its life as thousands of distinct single-celled units moving separately from its other comrades. Under the right conditions, those myriad cells coalesce again into a single larger organism, which then begins its leisurely crawl across the garden floor, consuming rotting leaves and wood as it moves about. When the environment is less hospitable the slime mold acts as a single organism; when the weather turns cooler and the mold enjoys a large food supply, 'it' becomes a 'they'. The slime mold oscillates between being a single creature and a swarm." *(Johnson, 2004, p. 13)*

In 2000, scientist Toshiyuki Nagagaki managed to train a collective of these extremely primitive organisms, with no *"centralized brain"* to find the shortest route through a maze (Johnson, 2004, p. 11). The kind of collective intelligence the slime mold displayed can be described as an *'emergent property'*. This term has been coined for *"those properties that emerge at a certain level of complexity but do not exist at lower levels"* (Broad, as cited in Capra, 1997, p. 28). Schwab (2009) describes an emergent property as *"a trait or behaviour exhibited by a creature that reaches beyond the capabilities of its constituent parts"* (p. 594). Bedau terms the lower level constituent parts *"micro-level"*, and the higher order emergent phenomena *"macro-level"* (2008, p. 158).

Emergent phenomena like the slime mold can also be thought of as *"self-organising"* systems (Halley & Winkler, 2008, pp. 10-14).

According to Seevinck & Edmonds (2008) purely aesthetic emergence is known as 'perceptual emergence'. They describe emergence as occurring *"when a new form or concept appears that was not directly implied by the context from which it arose"* (p. 543). Interesting patterns, shapes or ideas emerging from interactions are perceptual if they rely on an observer to exist, and are 'physically emergent' if they don't.

When the new features of the emergent phenomenon affect the state, behaviour or performance of its constituent parts, it has an *'intrinsic'* structure. When the effects are only present at the global level, it has an *'extrinsic'* one (Seevinck & Edmonds 2008). According to these definitions, the slime mold would be considered physically and intrinsically emergent, while a beautiful pattern would be perceptually and extrinsically emergent.

The garden is full of such organisms, performing feats of geometry, economics and construction without the need for a central intelligence, following sets of simple localised behaviours for the benefit of the global whole (Johnson, 2004, pp. 22, 73-86; Buchanan,

2002, pp. 51-60). Other visual moments captivate viewers through the interplay of transient shapes or the evidence of simple substrates evolving into complex structures.

From phototrophisms motivated at the cellular level allowing plant tendrils to twist, hook and climb towards the light, to the complex social systems and physical structures of bee and ant colonies, to the intricate functional designs of spiderwebs and the elaborate patterning of root and branch systems, to the symbiotic behaviours of lichens, mosses and fungi, the garden is a site of constant emergence.

Emergence can only occur through time; with the transfer of information, energy and/or material, as fields meet, and in the transformation of their states - in the ephemeral moment. Emergence can only occur in a system that is interconnected at multiple levels. Emergence is the macrocosm coming into being through the interaction of its micro-level components. It suggests nature (including humanity) to be one vast interconnected system of transient parts creating a related, transforming whole.

Therefore the garden as a symbol of emergence encapsulates all of the meanings of impermanence, microcosm and multivalence discussed in the previous entries.

Figure 35. Konings, N., & Bogun, A. (2010). *Impermanent type.*
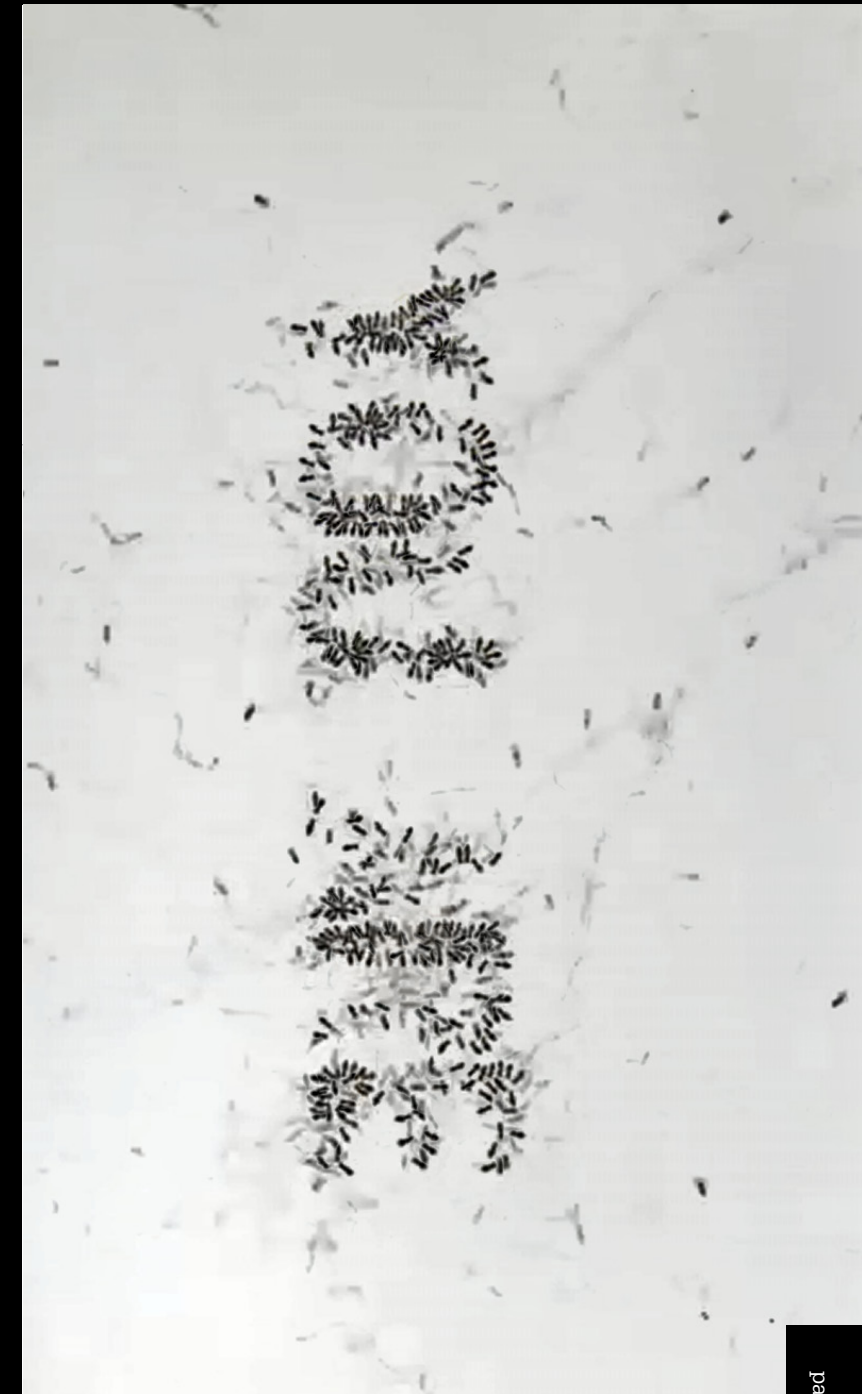
The previous entries have established the **metaphor of the garden** as representative of an idealised state and have built a symbolic language communicating the relationship between the concepts of emergence and identity as a potential embodiment of that ideal.

This state embodies the ideals of impermanence, interconnectedness and multivalence, as opposed to uniform structure, individuation and dialectical logic; it is experienced as a shifting, dialogic process rather than a fixed and centralised subjectivity.

The following entries build a similar framework around the idea of the garden as anenvironment encouraging active contemplation of the self as an emergent being.

The Garden as a Sanctuary

"Sanctuary means place of secrets. This is certainly the meaning attached to the word by Philo of Alexandria when he speaks of entering the sanctuary as denoting uncovering divine mysteries" *(Chevalier & Gheerbrant, 1996, p. 824).*

The sacred Persian garden, with its etymological connections to paradise, was walled off from the outside world:

"pairidaeza 'enclosure, park' (Mod.Pers. and Arabic firdaus 'garden, paradise'), compound of pairi- 'around' + diz 'to make, form (a wall)'" (Harper, 2010).

The idea of the garden as a sacred space revolves around the notion of a boundary; of separation from the everyday world. This separation allows an individual or group entering a garden to mentally separate from the routines of everyday life to enter into a new frame of mind.

This concept is taken to the extreme in the contemporary practices of Carthusian monks who meditate in solitude within small walled gardens attached to private cells (Ammann, 2008, p. 50).

If a garden has a wall then it must have a gate through which to enter; through the gate lies a sacred space where transformation is made possible, and so the garden also comes to signify a portal.

The Garden as Portal

"A garden to explore and recognise the 'Other' lying outside our personality. Our search for self-knowledge, knowledge of the world, or experience of God should not be directed merely inward but needs to turn toward the Other, the 'Thou' and that which lies outside of us (Ammann, 2008, p. 49).

The garden encourages communion with the 'Other' within a controlled environment. Self-reflection is indirect; it occurs through identification with the natural activities occurring outside of the self. Death, a Medusian aspect of the sublime, can be observed, in a well maintained garden, simultaneously with birth. The cycle is apparent; there is balance and harmony. Communion with nature in the garden is recognising death in the microcosm as death of the self but in a mediated way.

A mirror represents an unknown zone equivalent in spacial dimensions to our own - the reverse potential of our conscious world. It is a portal associated with fear, the (super)natural forces represented on the 'other side' are unknown, wild, overwhelming - they manifest as a frontal encounter with Medusa. In the garden, the Medusian chaos of the 'Other' becomes contained, and observed indirectly to the self.

This allows reflection to become outward as well as inward looking (Ammann, 2008, p. 50), and numinous terror is transformed into appreciation and wonder.

The Garden as a Symbol for Cultivation

"What fairer sight is there than rows of trees planted in ranks which present straight lines to the eye from whatever angle they are viewed" (Chevalier & Gheerbrant, quoting Quintilian [ancient Roman rhetorician], 1996, pp. 419).

This Western view of garden maintenance represents an attitude of 'man versus nature'. Nature is conceived as an 'Other' to be conquered, very much in the Hegelian sense of the *Master-Slave Dialectic* (1977). East Asian views have been somewhat different, according to Chung (2002), in ancient Korea,

"Trees were not planted in a row or in a geometric formation, they were not pruned and no attempt was made to shape them artificially" (para. 31).

Regardless of the underlying philosophy, the act of cultivation itself becomes a metaphor for self-cultivation when we think of the garden as a microcosm, portal or sacred space. For example:

"Gardens became an important part of Japanese Zen temple grounds because they provided an isolated setting for devotional practice, where the daily routine of picking weeds and raking gravel was viewed as one path to self-understanding. According to Zen tradition, many monks had attained enlightenment while working in their gardens" (Coates, 2002, para. 51).
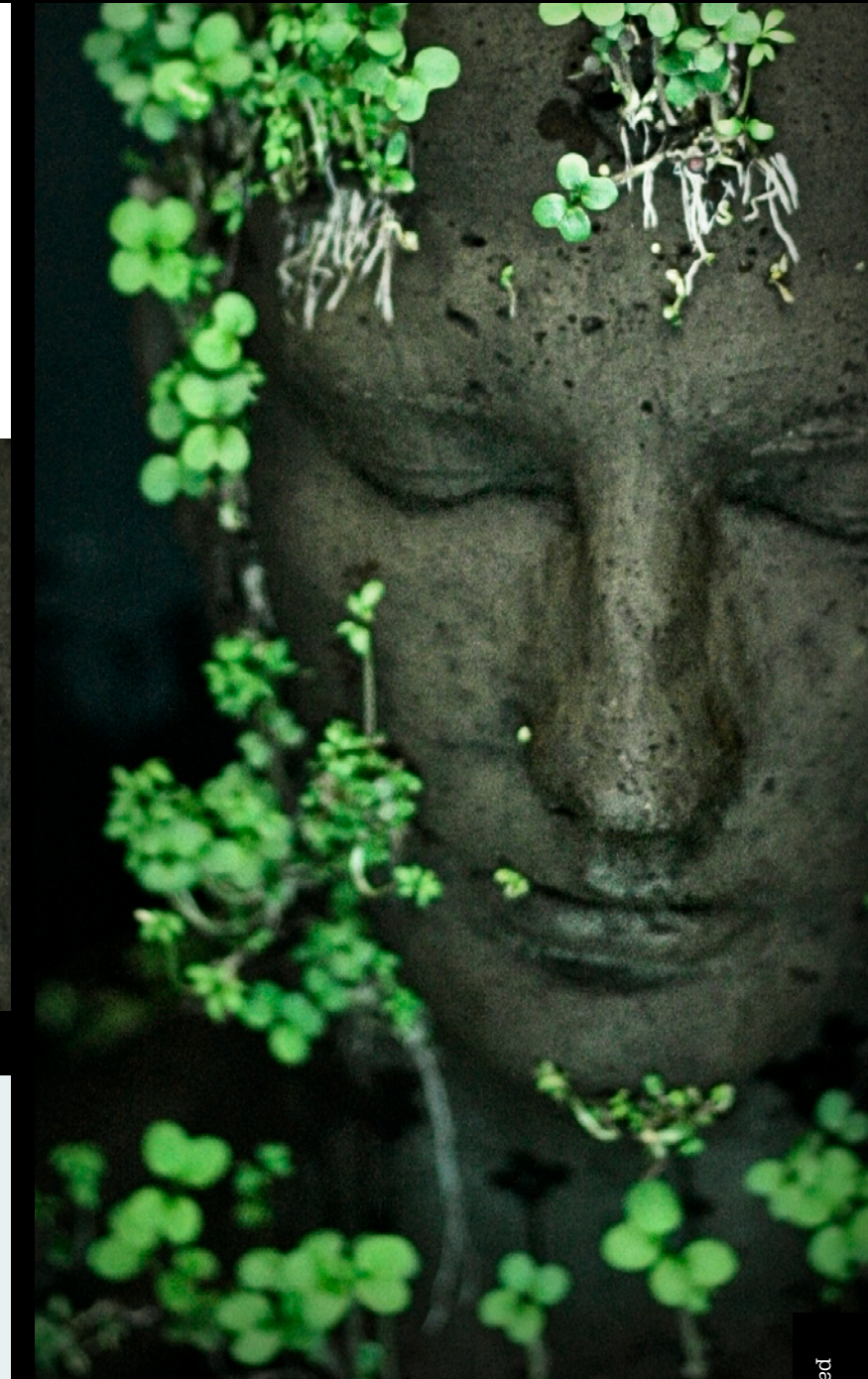
Figure 36. Konings, N. (2009). *Untitled.*

3 JUNE 2009

Today it is 10 in the morning; the sun is in the right place to begin. There are two tripods fixed into a dirt enclosure between the side of the house and the neighbour's fence. Low overhead is a sheet of plastic to keep out the rain, behind me is a bucket of cold water and a hand towel to keep my hands and camera clean.

The ritual begins. Head One, a plaster and soil mix cemented into a baking tray is placed into the fixture where every head in this garden studio is recorded. I take care to clean and level the fixture which is really nothing more than a muddy hole. I give Head One the once over and notice that tiny mosses have established themselves around the crevices of the nose and mouth.

The rest of the head is doing well; the plants are going strong and the mustard sprouts are developing their first pairs of mature leaf. I notice with concern that a couple of the taller sprouts are dislodging themselves at the root, but there is nothing I can do about it. The philosophy that has developed around these sculptures is to let nature take its course; observing the gradual transformation of a human replica into something more and more similar to a miniature landscape from day to day.

Care and design goes into the construction of a head or bust but once it is built and planted I treat the object as I would a garden; with care and attention to the health of the whole. I don't want to interfere with the nature of each object, but rather examine how each behaves under certain basic conditions.

Over the next 60 minutes I will place four more heads into the fixture to record the changes that have occurred over the last day. Once Head One is placed into its fixture I clean my hands. I plunge them into the familiar chill of the bucket and remove the soil from my palms and fingers.

The towel that dries my hands warms them slightly and I set my grubby camera to take the shot. While I proceed with these repetitive chores my mental chatter begins to quieten. I become conscious of the fears and resentments buzzing around in the back of my mind and as these threads of thought present themselves, I confront them and lay them to rest. I'm starting to loosen up:

Yes, I may fail this course – is that the end of the world? No, it's not. Yes, I want accolades; to be vindicated for the outcomes of my life choices. Do I need these things? No, I don't. Should I even want them? I highly doubt it. Stop thinking like this Nick. What's important? Right now. Good. Be here now. I forget the harsh words of a recent argument. I forget my feeling that I haven't fulfilled the promises of a precocious childhood. I realise that is gone now. I'm reborn. These tiny plants are in the now, here they are living and dying before me.

Tiny worms have made their home in an older head which has begun to compost. Change is all around me. I meditate on the feeling that change is to be embraced, not fought against. This has become a feeling now, not an intellectual knowing. Each day I feel more comfortable in this changing body. Death is becoming less terrifying to me. I think of my mother approaching seventy, I remember her approaching forty. I will be forty soon.

Change is now. Life is now. Death is now. Death and life are one. Without one there cannot be the other. I realise I am not my life history. I realise I am not that 'something' I wanted to be in the future. I am just here now, in a state of becoming.

Immersed in a sacred space, and tending to an ephemeral macrocosm of his own body, a microcosm of the universe, the reflective gardener becomes involved in a self-transformative act.

The garden as a symbol for cultivation is analogous to the symbolic act of polishing a mirror. Both are active self-dialogic processes.

My experiences in the garden, exploring methods to sustain plant life on and around sculptural substrates,

involved in repetitive menial chores and methodically recording the process, led me to consider the problem of the 'reflected self' from a new perspective. An alternative model began to develop, I came to think of this new being as an *'emergent self'*.

I became curious about this idea of an emergent self: the idea that consciousness is an effect of physical processes; the high level result of a chain of lower level physical relationships increasing in complexity through interaction.

The symbolism inherent in the garden as a reflective space multiplied the effect of the metaphor of the mirror, but the image reflected back at me was no longer the intimidating spectre of Cartesian totality; a Lacanian ideal-I. The effect was profoundly anti-narcissistic. The image reflected back at me was as multi-faceted as I felt; a networked collection of communities functioning independently of one another but interacting at different levels within intersecting territories. This led to an association of identity with the concept of emergence.

In this model is consciousness nothing more than a 'ghost in the machine'? A pattern of interactions complex enough to be mistaken for a thing in itself?

If true, does this devalue the experience of self by revealing it as an illusion, or does it free us from the greater illusion of the self as essential, fixed and total, existing as a self-sustaining, indivisible entity?

Does this model free us of the Cartesian assumption that we are all gods of our own private universe?

Are we then liberated from the Hegelian state of war on other consciousnesses which is the attempt to maintain *"the sole centre of active universality"* (Findlay, 1977, p. xvii)?

Does this perspective render the narcissistic structures imposed on us by Lacan obsolete?

In order to answer these questions I must continue to locate the idea of the *'emergent self'* in relation to the project. It is therefore necessary to define the intersecting conceptual areas it sits within. For this reason, the concept of emergence will first be located within the field of science.

A Classical View

"Every resultant is either a sum or a difference of the cooperant forces; their sum, when their directions are the same- their difference, when their directions are contrary. Further, every resultant is clearly traceable in its components, because these are homogeneous and commensurable... It is otherwise with emergents, when, instead of adding measurable motion to measurable motion, or things of one kind to other individuals of their kind, there is a cooperation of things of unlike kinds... The emergent is unlike its components in so far as these are incommensurable, and it cannot be reduced to their sum or their difference" (Lewes, as cited in Corning, 2002, p. 19)

The idea of emergence in science is not a new one; in 1874, Lewes coined the term 'emergent' to describe phenomena that displayed properties or behaviours that were irreduceable, or incommensurate to the sum of their parts. He contrasted these with 'resultants'; phenomena which were directly explainable in relation to the sum of their parts (Corning, 2002).

A Reductive Physicalist View

According to Anderson (2008), "the great majority of active scientists" hold a reductive view of the idea of emergence (p. 221).

Reductive physicalists posit that not only is everything derivable from definite laws of physics, it is possible in principle to *"explain the behaviour of derivative objects once the behaviour of all [their] base elements can be fully understood"* (Bedau & Humphreys, 2008b, p. 213).

Considering the classical view described earlier, the idea of an emergent phenomena as something irreducible to, and therefore ontologically distinct from, the sum of its parts seems rather difficult to reconcile with reductive science. Therefore modified definitions have been sought.

According to Bedau, complexity science is the field most involved in examining emergent phenomena, and therefore the one most equipped to provide an answer. While noting that definitions are still contested, he recognises two (seemingly contradictory) characterising relationships between macro-level emergent phenomena and their micro-level constituents, which he uses as a definitional test (2008, p. 157):

"(1) Emergent phenomena are dependent on underlying processes.

(2) Emergent phenomena are autonomous from underlying processes."

The autonomy criterion accounts for the fact that micro-level constituents do not possess all of the properties of the emergent phenomena. Bedau illustrates this with the example of the H_2O molecules comprising a body of water not having the properties of fluidity and transparency possessed by the body of water (ibid., p. 158).

He then identifies three theoretical types of emergence; *"nominal"* and *"weak"* emergence, which he considers scientifically useful, and *"strong"* emergence, which he considers scientifically irrelevant (ibid., p. 158-161).

Nominal emergence occurs simply when the macro-level entity possesses properties that its micro-level constituents do not. This explains the way an emergent phenomenon can be simultaneously dependant upon, yet autonomous from its constituents without violating reductivist tenets. However, Bedau notices that this definition does not differentiate genuinely emergent properties from resultant properties, which can be easily predicted from the properties of their constituents. Therefore, nominal emergence is too broad a definition and further conditions must be added to differentiate emergent properties from resultant ones.

Strong emergence, to swing to the other extreme, adds a condition that pushes it outside the bounds of science. This interpretation is perhaps the most commonly understood version of emergence, and is the most similar to the classical view.

Strong emergence defines emergent properties as being supervenient and having irreducible causal powers. Bedau describes supervenient properties as, *"macro properties that can differ only if their micro property bases differ"* (ibid., p. 185). The property itself is still dependent on underlying processes to come into being, but its causal powers are inexplicable, i.e., they have come into being as ontological simples in their own right as something physically other than the sum of their parts (ibid., 159). This model has merely shifted the problem of ontological irreducibility one step further up the causal chain.

A macro level in one context could be a micro level in another, therefore a hierarchy of successive macro levels can give rise to multiple levels of emergence (ibid., p. 157). When levels of complexity become this deeply nested, reductive models of emergent phenomena can become computationally infeasable to formulate. This can lead to an assumption that these phenomena are irreducible in principle. This problem makes strong emergence and nonreductive theories attractive as alternative strategies to approach problems of great complexity such those found in philosophy of mind (Bedau & Humphreys, 2008b, p. 213).

However, Bedau proposes **weak emergence** as the model which best facilitates a workable scientific approach. It encapsulates the mystery of the concept without violating the spirit of reductionism:

"Weak emergence refers to the aggregate global behaviour of certain systems. The system's global behaviour derives just from the operation of micro-level processes, but the micro-level interactions are interwoven in such a complicated network that the global behaviour has no simple explanation. The central idea behind weak emergence is that emergent causal powers can be derived from micro-level information but only in a certain complex way" (Bedau, 2008, p. 160).

Weak emergence fulfills the two defining relationships between emergent phenomena and their components as set out by Bedau. The first relationship is self evident; weak emergent phenomena only exist through the interaction of their micro-components. The second relationship is satisified because they can only be derived through simulation, i.e. predictive algorithms cannot pinpoint their emergence due to their context sensitivity and complexity (ibid., p. 161-162). In this sense they have *"explanatory autonomy and irreducibility"* (ibid., p. 160), but are still reducable in principle.

Philosophy of Mind and the Mind-Body Problem

"The mind-body problem. In a broad sense, the problem of accounting for the place of mind in a world that is fundamentally physical is coextensive with philosophy of mind. In a narrower sense, the problem is that of explaining the relationship between mentality and the physical nature of our being" (Kim, 2005b, p. 608).

The idea of consciousness as an emergent property of physical processes is a contemporary topic in philosophy of mind. Philosophy of mind has become an interdisciplinary field involving much collaboration and debate among logicians, psychologists, computer scientists, neuro-scientists, and philosophers (Flanagan, 2005, p. 607).

In philosophy of mind, the concept of an emergent self is situated within a field enclosed by two opposing philosophical territories. By working in from the far edges of these contrasting zones towards an area of grey, I will establish this conceptual no-man's-land as my territory of interest.

Competing Ontologies: Dualism versus Monism

Ontology is *"the science of being in general, embracing such issues as the nature of existence and the categorical structure of reality"* (Lowe, 2005, p. 670). Dualist philosophies of mind separate mind and matter into two ontologically distinct categories and are therefore in direct opposition to monist theories which claim that mind and matter belong to the same single category. Certain theoretical positions share enough characteristics from both ontologies to make them candidates for inclusion in either field. It is within this contested zone that the idea of an emergent self can be placed.

Extreme Dualist Position: Substance Dualism

Substance dualism has existed as a dominant ontology in the West since at least the time of Plato's *Phaedo* (Carone, 2005, p. 211) which has been dated to around 390 BC (Grube, 1977, p. 1). Substance dualism supports the belief in a soul that is separate from the body and is therefore an ontology shared by some religions. A purely dualistic worldview cannot support the idea of an emergent self because it views the self as existing outside of physics, chemistry and biology. It is also unnecessary for substance dualists to conceive of an emergent self since they have already established mind as existing as an ontological category in itself.

Substance dualism, most famously represented by Descartes' (1644) dictum *"I think therefore I am"*, claims that mind and matter belong to two distinct categories of being. Because the self is irreducible to matter, no physical, mechanistic theory is capable of explaining consciousness. The self is essential and can only be apprehended directly through reflection. In this model the consciousness or self is mystical, i.e. it defies rational analysis. The biggest problem with the theory is that it cannot satisfactorily explain how these two distinct categories interact.

Extreme Monist Position: Fundamental Reductive Physicalism

Fundamental[28] reductive physicalists believe that everything in the universe, including consciousness, can be reduced to relationships between properties described by the laws of physics (Bedau & Humphreys, 2008a, p. 337).

For a fundamental reductive physicalist, the idea of an emergent self is redundant. The idea of an ontologically distinct mental property emerging from a set of physical properties is adding an unnecessary layer to a model which claims that everything is reducible to measurable principles. The notion of emergence in this framework is nothing more than a failure to accurately model the interactions of the microproperties constituting a macroproperty.

According to Chalmers (1995, pp. 201-203) a reductive model can explain the basic functions of consciousness, such as the ability to discriminate, categorize, and react to environmental stimuli; deliberately control behaviour; report mental states, etc., but it cannot explain the subjective aspect of experience. According to this argument a strongly reductive model is not useful for theorists interested in examining the nature of the self as it relates to qualitative experience.

However, using Bedau's definition of *"weak emergence"* (2008, p. 160) it is possible to hold a reductive view of consciousness emerging from a complex system - despite the possibility that this may not ever be accurately modelled or recreated.

The Grey Areas: Compatibility with the Emergent Self

Property dualism as a philosophy comes closer to a middle ground with physical monism by accepting that mind and matter are not categorically different substances (i.e. they are both physical) but maintains that the properties they possess belong to distinct categories; the physical and the mental. In this model, a mental state arises from physical interactions in the mind/body, but the state itself cannot be reduced to physical properties (Nagel, 2005, p. 221).

Kim (2005a) identifies a broad group of physicalists who *"reject the reductionist view that all properties had by physical systems are exclusively physical properties; they hold the dualist thesis that complex physical structures, like biological organisms, can have irreducibly non-physical properties, such as consciousness and intentionality, two properties often taken to be constitutive of mentality. This is what is known as non-reductive physicalism, a position that combines **physical monism** with **property dualism**"* (pp. 716-717).

For example, David Chalmers' *double-aspect theory of information* (1995), a form of dualism which can be characterised by the quote above, is in application extremely similar to Sayers' (1996) notion of the physicalist theory that he calls *emergent materialism.*

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28.   I use this term to contrast with Bedau & Humphrey's (2008a) use of the term *"liberal"* to describe physicalist positions that *"allow scope within the domain of physics itself for a form of emergence based on irreducibility."* (p. 338)

Both these theories can be broadly described as nonreductive physicalist ontologies, i.e. they do not dispute physicalist theories in principle but claim that at a certain level of analysis it becomes impossible in principle to reduce events to their constituent parts.

According to Viger (2000), Dennett has made a strong argument against nonreductive physical approaches such as these. He suggests that the way we conceptualise beliefs, desires and other abstract mental experiences through language is a separate explanatory practice from the way we conceptualise observable phenomena through physics. Attempting to explain the causal relations of one practice in terms of the other is simply a category mistake. The failure to map beliefs or desires to physical mental events does not indicate that beliefs or desires are the results of nonphysical processes, it indicates that language about beliefs and desires is incongruous with physical explanations of mental events. Both explanatory practices are true if they have explanatory power, they are not mutually exclusive, they are parallel.

Reflections

While debates still rage around the world, I feel that for the purposes of this project it is safe to say that I have established a broad ontological area within which to continue my discussion of the emergent self in good faith.

Material dualism as an ontology seems entirely incompatible with the ethos of the project. Reductive physicalism is incompatible with the idea of strong emergence but allows for the possibility of an emergent self if using a definition of weak emergence. Nonreductive physicalist theories also provide a possible solution to the mind-body problem.

In either case, reductive and nonreductive physicalist theories both support the concept of consciousness being the result of ephemeral physical process and discount the possibility of an essential self.

While we are still a long way from developing an accurate model of consciousness, software designers use principles of emergence to model other complex systems in fields as diverse as biology, artificial life, city planning and economics (Johnson, 2004). Successes in these fields indicate, at the very least, the metaphorical relevance of the concept to identity, and to many scientists and philosophers, real hope that a working model of consciousness can be designed.

For the purposes of this project I will limit this discussion to two examples that, although relevant to the topic in general, are of particular interest to game design. Both of these examples are relevant to the design of this project and the principles they embody have been applied programmatically.

Flocking: An Example of an Emergent Behaviour

According to Buckland (2005), the flocking behaviour of birds an excellent example of emergence. He describes emergent behaviour as,

"behaviour that looks complex and/or purposeful to the observer but is actually derived spontaneously from fairly simple rules. The lower level entities following the rules have no idea of the bigger picture; they are only aware of themselves and maybe a few of their neighbours" (p. 118).

The classic example is a group of migrating geese flying in 'V' formation. A recent study (Nathan & Barbosa, 2008), used a computer simulation to test the theories that individual geese benefited from such cooperative behaviour through the emergence of improved group aerodynamics and visual coordination.

In the simulation three simple positioning rules relating to proximal, visual and aerodynamic feedback were applied to the behaviours of each simulated bird. While each individual behaved only in accord with these three rules, the patterns that emerged from the simulation closely resembled those found in nature.

Application of Flocking in this Project

Within this project, flocking occurs through the local interaction of individual moving particles with interdependent sets of eleven properties. Of these properties three directly affect flocking behaviour. These are ***'rotation'***, ***'speed'*** and ***'gravitational pull'***. 'Rotation' and 'speed' set the primary flight path and speed of the particle. 'Gravitational pull' affects the flight path of neighbouring particles by drawing them in. Three other properties have an indirect influence on flocking. These are ***'influence'***, ***'resistance'*** and ***'jitter'***. 'Influence' represents the ability of a particle to transfer its own properties to another particle, this indirectly influences flocking because the properties being transferred include 'rotation', 'speed' and 'gravitational pull'. 'Resistance' represents the particle's ability to retain its own properties, including those influencing flocking. 'Jitter' has a slight affect on the particle's movement and so therefore also slightly affects flocking.

Figure 37. Konings, N., & Chambers, P. (2010). *Flocking.*
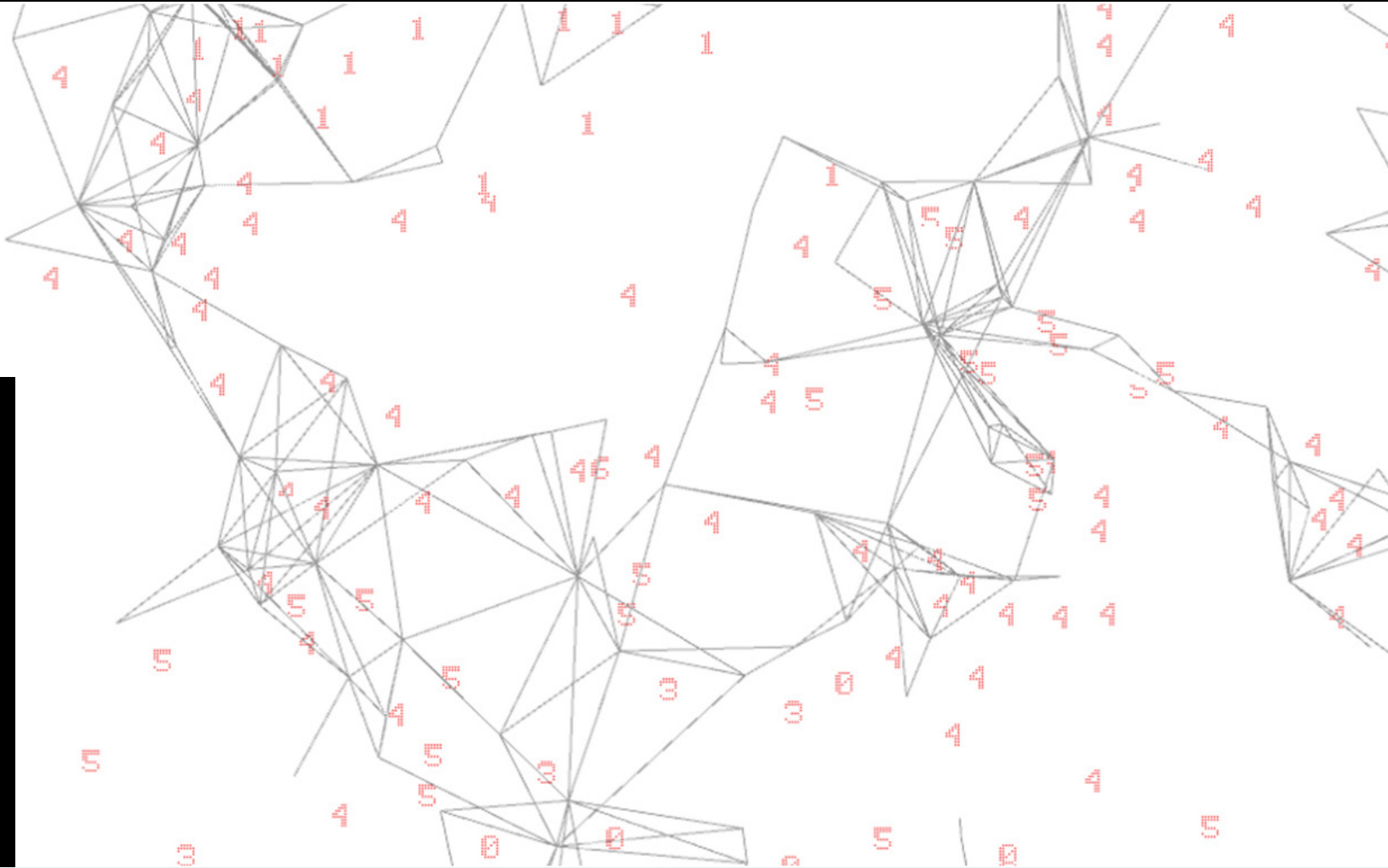
Cellular Automata

Cellular automata[29] operate by the same basic principle demonstrated in the flocking example; a small set of simple universal rules governing the local state of individual elements can create unexpected results at a global level. In the example below, Wolfram[†] (2001, pp. 24-27) demonstrates how eight simple rules defining whether a generated cell is black or white depending on the state of the immediate three cells preceding it can yield patterns ranging in complexity from fixed to highly complex.

This graphic represents the eight rules that generate the black pyramid (**Figure. 38**) below. As Wolfram explains, *"The top row in each box gives one of the possible combinations of colours for a cell and its immediate neighbours. The bottom row then specifies what colour the centre cell should be on the next step..."* (2001, p. 24). As you can see, except when three white cells generate another white cell, all rules generate a black cell. In **Figure 39**, only the sixth rule is different, creating the regular checker board pattern. In **Figure 40** the first and third rules are different from Figure 39, creating the nested pattern. In **Figure 41** the second and sixth rules are different from Figure 40, creating a complex pattern that cannot be predicted even after 15,000 steps (ibid., p. 30).

Conway's Game of Life

John Conway helped pioneer complexity science when he invented a mathematical system based on the concept of cellular automata called the *Game of Life* (Gardener, 1970). His automated system runs on only three basic rules applied through time to each cell and its eight neighbours on a grid. Despite the simplicity of the arrangement, the automation is capable of incredible complexity; certain configurations have even been shown to function as calculators and other *"virtual machines"* (Salen & Zimmerman, 2004, p. 162).

Figure 38. Wolfram, S. (2001). *Uniform pattern* (p. 24).
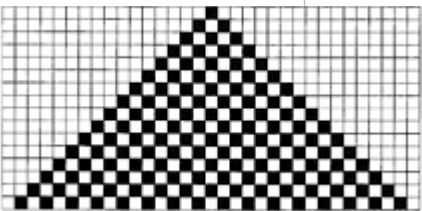
Figure 39. Wolfram, S. (2001). *Simple pattern* (p. 25).
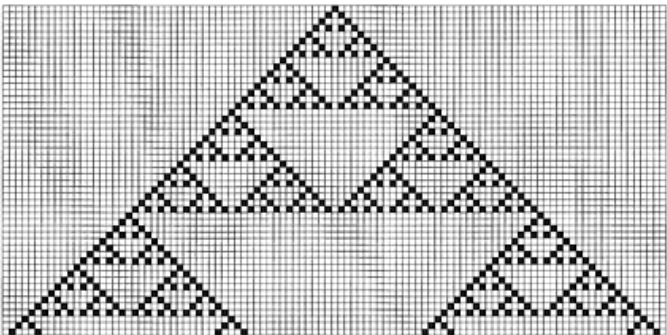
Figure 40. Wolfram, S. (2001). *Nested pattern* (p. 25).
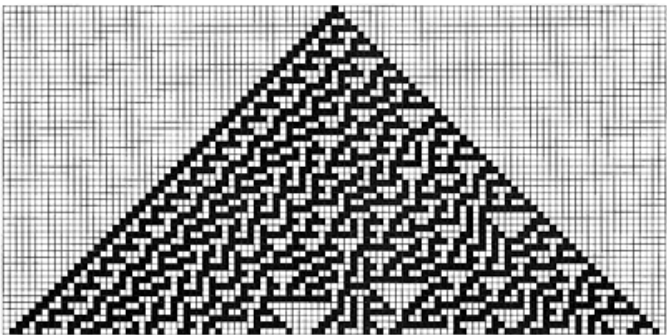
Figure 41. Wolfram, S. (2001). *Complex pattern* (p. 27).

29. *"Cellular automata are grid-based systems that vaguely resemble game boards. At any moment, a grid square can either be occupied or unoccupied. A set of rules dictates how the cells behave and how their states change over time. The name "cellular automata" comes from the grid of squares, called 'cells', and the fact that once the system is set in motion, the rules move the system forward so that it runs 'autonomously', without further input from the outside."* (Salen & Zimmerman, 2004, p. 161)

†. Wolfram, S. (2001). *A new kind of science.* Illinois, USA: Wolfram Media, Inc. Available from http://www.wolframscience.com. All images on this page are the copyright of Wolfram Media and have been used with their permission. Wolfram Research does not endorse the particular substance or general quality of this thesis.

Amazingly, the rules capable of generating such complexity are:

"1. Survivals. Every counter with two or three neighboring counters survives for the next generation.

2. Deaths. Each counter with four or more neighbors dies (is removed) from overpopulation. Every counter with one neighbor or none dies from isolation.

3. Births. Each empty cell adjacent to exactly three neighbors--no more, no fewer--is a birth cell. A counter is placed on it at the next move" (Gardener, 1970, p. 120).

According to Salen and Zimmerman (2004), the emergence of complexity from such simple rules is due to two features common to the kinds of interaction occurring in complex systems. They identify the first feature of such interactions as being **'coupled'**; this refers to the fact that in a complex system the interaction between two elements is never isolated. Each element is related to all of its neighbours, each of which is related to a further set of neighbours, and so on; creating a web of connected relationships across the entire system.

Therefore local behaviours spread across the system to and from multiple points in the network. The second feature of such relationships is that they are **'context-dependent'.** This refers to the fact that relationships are occurring dynamically over time, shifting with every moment, to create new contexts for the elements in the system to respond to.

Project's Relation to Cellular Automata

In cellular automata programs the illusion of movement is achieved through the 'death' and 'birth' of cells through time. In this project, movement is driven by properties inherent in the particles themselves. In this respect the project does not resemble a cellular automata program. However, particles do influence each other through proximity according to local rule sets. Furthermore, each particle has a lifespan that is dependent on its proximity to other particles. These features allow the particles composing a user's avatar to adapt over time and form communities with each other. Therefore, the relationships between particles are both coupled and context-dependent.

Figure 42. Konings, N., & Chambers, P. (2010). *Decay demo.*
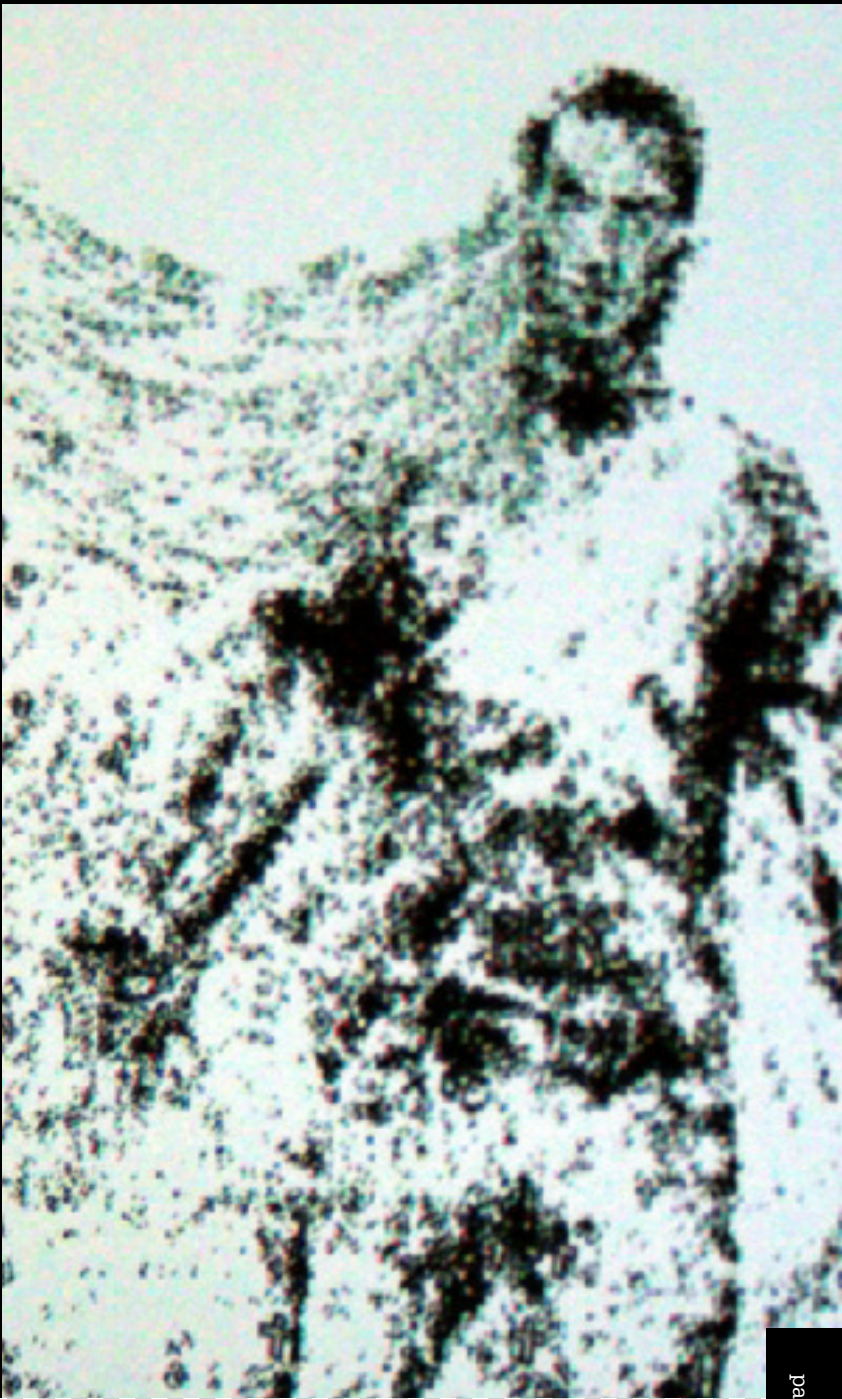
_conclusion

This section has used the **metaphor of the garden** to develop a concept of the emergent self. The emergent self stands as an alternative to the image of an essential self.

While the essential self is fixed, totalised and dominating, the emergent self is shifting, multifaceted and dialogic. While the essential self conceptualises the world in terms of a binary dialectical split between 'self' and 'other', the emergent self is simultaneously multiple and singular; it exists as one of many. While the essential self is located as the universal centre of experience, separate from the world of objects, the emergent self exists only in its relationships with others. While the essential self is conceived as a mental substance, the emergent self is conceived as a process.

When experiencing the self as an emergent being, the Other is no longer perceived as a threat but as a necessary condition of existence. In the same way that there can be no patterns of motion in a cellular grid without the coupled and context-dependent interactions of its elements, an emergent self cannot exist outside of its physical and social fields.

These fields are populated by other entities. Not only is an emergent self intimately related to these other entities, it is the product of multiple levels of microentities engaged in their own complex relationships. The concept of a fixed identity becomes redundant in this model; not only is the social aspect of self undergoing constant reconstruction in relation to its shifting context, its physical body, providing the cognitive substrate for the emergence of consciousness, is involved in a continual process of biological flux. The boundaries of our bodies, which appear to be fixed when seen in a reflective surface, are involved in constant negotiation with alien material. At increasing levels of microscopic zoom the boundaries between interior and exterior, between self and other, become harder to differentiate. From increasing levels of distance the same effect occurs. The Cartesian image of the essential self becomes an illusion of scale, and the image of a vast, networked system emerges.

The **metaphor of the garden** is also used to develop the idea of self-cultivation. Self-cultivation is suggested through active reflection of the self as an emergent being. As explained in the previous section (pp. 53-54), active reflection involves self-dialogue, not as a means to uncover atoms of personal truth in the Cartesian sense, but as a means to deconstruct personal narrative. Personal narrative is a function of the reflected self; it is used to help construct an ideal self-image and rationalise events which threaten its cohesion. Realisation that we are not equivalent to these self imposed limits allows us to pursue personal development through creative expansion of the self. This signals a shift away from the idea of self-knowledge as a function of introspective self-search towards the idea of self-actualisation through movement towards unknown potential.

Figure 43. Konings, N. (2009). *Compost.*

Because this is a creative-production project, meaning is embedded within the artefacts themselves. Therefore this section focuses on a description of the interactive artefacts in order to extract meaning. This will establish how the metaphors of the mirror and garden were synthesised to produce them.

After a description of the artefacts relation to the theoretical framework, I will conclude with a personal reflection on how a synthesis of these perspectives has affected my personal transformation. This will be related through the metaphorical language built in this section.

synthesis

Section Overview – – **The Artefacts** – – **Conclusion**

Area 3A: Avatar
Build Room

Area 3B: Avatar Garden

The interactive installation is divided into two rooms. Each room is operated by separate software communicating via network. Therefore the following section is divided into two parts: Area 3A (Avatar Build Room) and Area 3B (Avatar Garden).

Area 3A: Avatar Build Room

This interactive installation combines a mirror structure influenced by Hegel's *Master-Slave Dialectic* (1977) and Lacan's *Mirror Stage Theory* (2001) with an avatar-building routine that is based on theories of emergence inspired by the **metaphor of the garden**.

The user is confronted with a projected mirror image of themselves[30] that is built using live rotoscoping techniques to transform video footage into active data points. The user inhabits the projected avatar to physically interact with a virtual interface.

The interface is a questionnaire based on the psychological taxonomy known as the *"Big-Five factor structure"* (Goldberg, 1993). This taxonomy is a descriptive model of personality based on data-driven research (John, & Srivastava, 1999). It divides personality into 5 factors: extraversion, agreeableness, conscientiousness, neuroticism

30.   This structure is based on Hegel's (1977) and Lacan's (2001) theories
        as mentioned in the previous paragraph.
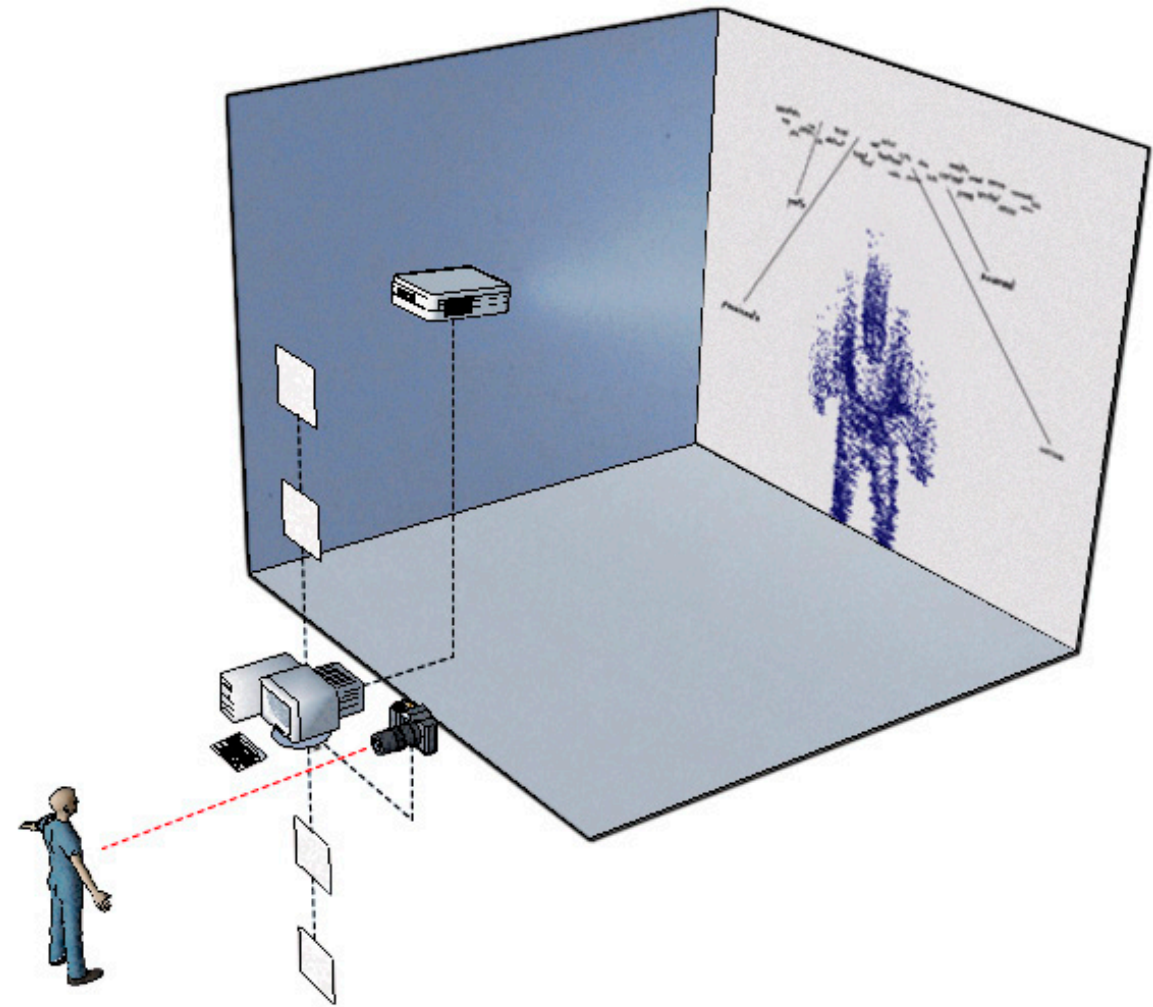
Figure 44. Konings, N. (2009). *Avatar build room.*

and openness. The questionnaire consists of forty words describing personality traits that map to the five factors. For example, the word *"talkative"* maps to extraversion 73%, agreeableness 14%, conscientiousness -12%, neuroticism -5%, and openness -5%. These values are used by the software to apply transformations to the particles' properties. The user interacts by selecting words that they identify with most as they come within reach. By interacting with the questionnaire the user actively programs the avatar, affecting its appearance and behaviour.

The decision to use the big five taxonomy was due to its metaphorical resonance with ideas developed in the **Metaphor of the Mirror** section. The user is actively constructing a fictional personal identity by responding to the questionnaire. Immediate feedback from the avatar's visual transformation gives the user clues that this what they are doing. This activity relates to subject-of-language theories (du Gay, Evans & Redman, 2000, p. 10), in that a representation of a personal identity is being built from language as the user attempts to define a stable position within a linguistic field. In relation to Lacan's theory (2001), the user is involved in an encounter reminiscent of the mirror-stage, except that in this sitiuation the relationship is reversed.

Recognition of self in mirror

The Other

Reflection

Mirror

feedback

gaze

Personal narrative

Internal self

**Undifferentiated subjectivity
(unaware of the Other)**
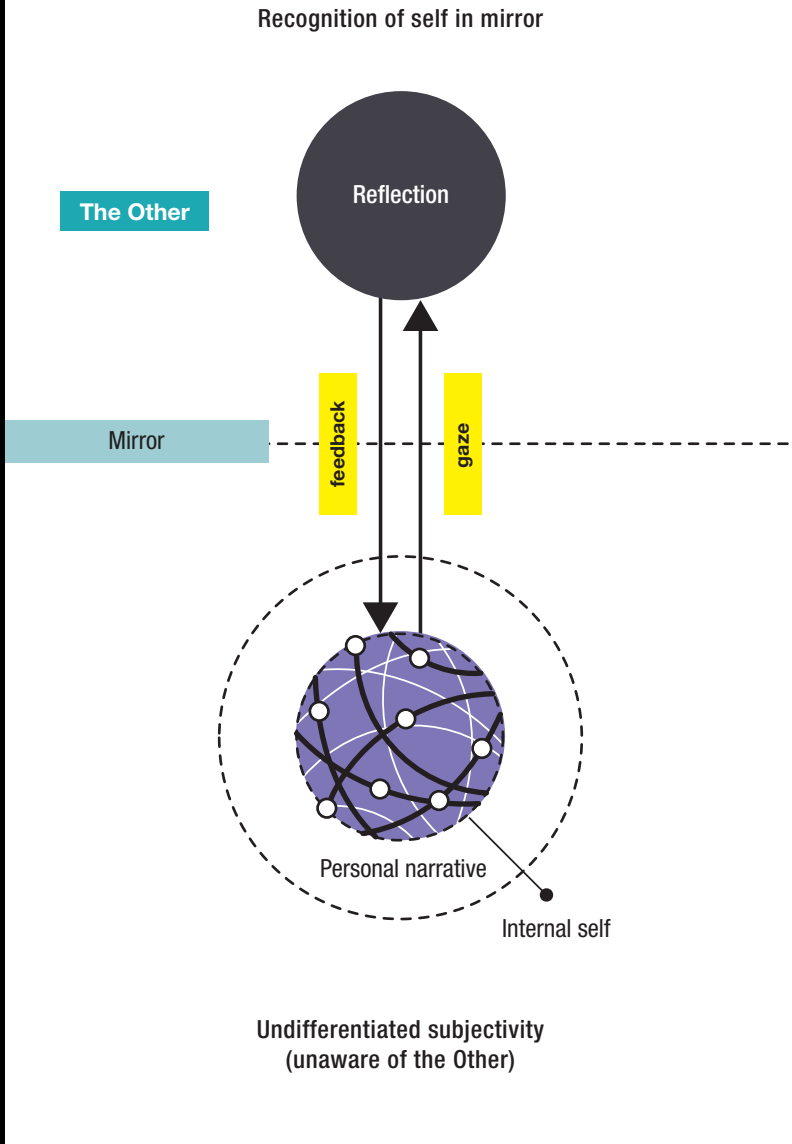
Figure 45. Konings, N. (2008). *Recognition of self in mirror.*

Misrecognition of the Imago

The Other

Imago
(idealised
self-image)

Mirror

identification

gaze

The self

Personal narrative

Internal self

**Alienated subjectivity
(aware of the Other)**
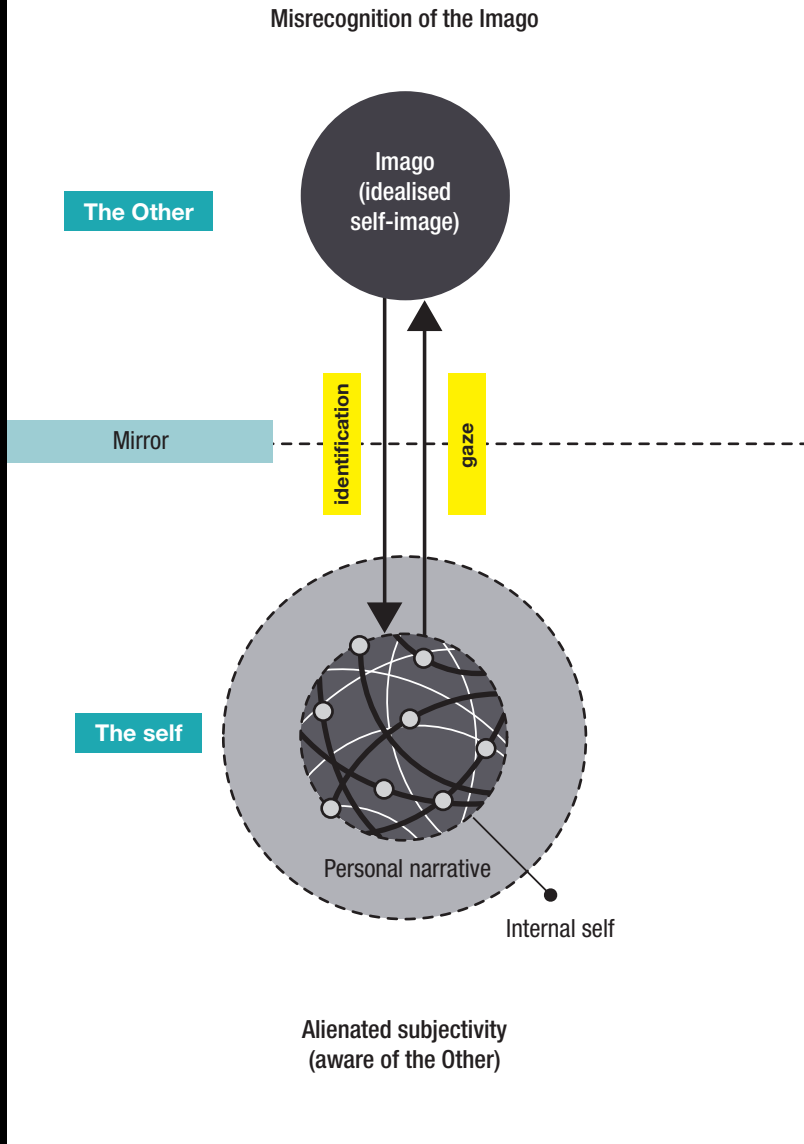
Figure 46. Konings, N. (2008). *Misrecognition of imago.*

Emergent self

The Other

identification · gaze

Mirror

The self

Personal narrative

Internal self

Essential self (petrified)

Figure 47. Konings, N. (2008). *Reversed structure.*

Figure 45: Represents the period just prior to the child beginning to recognise itself in the mirror. The child is still undifferentiated from its environment. It has not developed a sense of identity or felt a need to differentiate itself through the construction of a public persona. The internal experience of self is an uncoordinated network of sensory inputs.

Figure 46: Represents the child's identification with an imaginary, idealised self-image. The public persona has started to materialise. This represents the child's attempt to resemble its ideal-self, and indicates the onset of the construction of personal narrative. This identification with a stable, totalised self-image represents a petrifaction of the self. This is indicated by the greying out of the internal self and personal narrative spheres. The child begins to impose limits upon itself, reducing the potential for creative expansion. Behaviour becomes formulaic as narratives are constructed.

Figure 47: Represents the reversed structure used to design the Avatar Build Room[31]. The user may still identify with an idealised self-image (the essential self). This is represented by the total greying out of the sp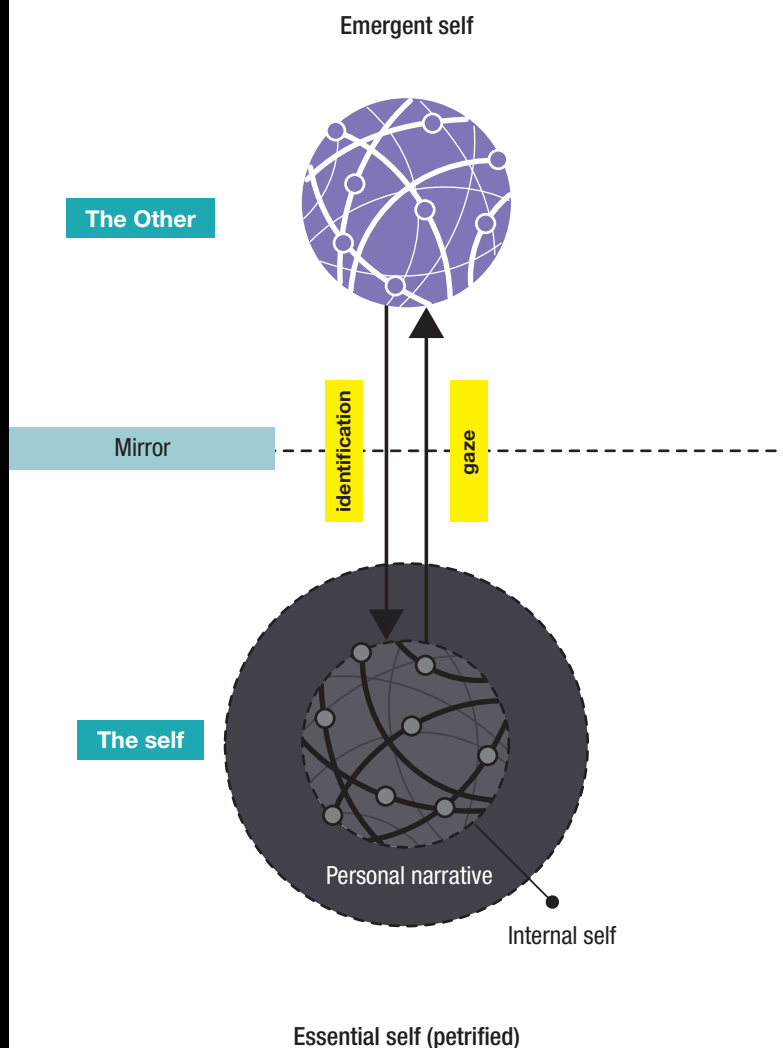here - the internal self and the personal narrative have become homogenised in an attempt to resemble its imago (as represented by the dark grey sphere in figure 46). The image reflected back at them in the Avatar Build Room represents an interconnected network of meanings and experiences. This structure is designed to suggest the idea of an emergent self.

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31. **The Time-lapse Experiment**

     This experiment had an identical structure to figure 47. The dark grey sphere labelled "Essential self" represents me at the beginning of the experiment, the purple sphere labelled "Emergent self" represents the sculpture I was observing. Observation of the transformation of the sculpture through the growth and decay of plants emerging from its surface provided the inspiration for the design of the project and development of the critical framework.

There is also a connection to Bourdieu's (2000) *Biographical Illusion,* since the user is attempting to construct a kind of narrative about themselves through this activity. The way the avatars have been designed as systems of interconnected yet relatively autonomous particles also ties into Bourdieu's theory. He compares the attempt to impose a personal narrative structure onto a shifting field of complex events to *"trying to make sense out of a subway route without taking into account the network structure"* (Bourdieu, 2000, p. 302).

Bourdieu's use of complexity theory as a metaphor in his theory also ties it to the **metaphor of the garden**. His theory acts as a bridge between the two metaphors. Within the context of the **metaphor of the mirror**, his theory presents the self as fragmented. Within the context of the **metaphor of the garden**, his theory presents the self as multifaceted. To the image of the essential self built in the **Metaphor of the Mirror** section, his theory is destructive, to the concept of an emergent self, as built in the **Metaphor of the Garden** section, his theory supports an appreciation for multivalence and interconnectedness.

There is no need to attempt to reconstruct the fragmented mirror to create an illusion of totality: this leads to dialectical split between self and other, to alienation and fear. Learning to appreciate multiplicity encourages empathy by blurring the boundary between 'self' and 'other'. The lack of a dialectal structure in which the interiorised self is set against the exterior world (including its own self-image) also works to reduce fear.

Once the user has finished constructing their avatar, it is saved to a database and queued to generate in the next installation.

Area 3B: Avatar Garden

Area 3B enables user-avatars to interact by pulling them from the database driven by Area 3A. Individual avatar particles behave according to the properties assigned to them in Area 3A. Coupled and context-dependant relationships between particles create fields of force relations. Behaving locally, the particles form impermanent systems with idiosyncratic behaviours. Properties are passed between particles through proximity. Through this process, the boundaries of the avatars become permeable and avatars exchange information, causing transformations which affect the overall 'personality' of the system. Over time dominant avatars will subsume others and new avatars will be drawn into the room to replace them. The event is time-based and emergent. The artwork is unpredictable and reliant on user input. Behaviours and patterns emerging from these interactions will be observed as unique events. This multivalent space has been designed as an extension of the first room so that users will be able to observe their avatars in action. It is conceptualised as a garden of emergent selves. Viewers are able to observe an ever-changing visual system of interactions representing a social field that they co-created. This is designed to encourage active reflection of the self as an emergent being.

Figure 48. Konings, N. (2009). *Avatar garden.*
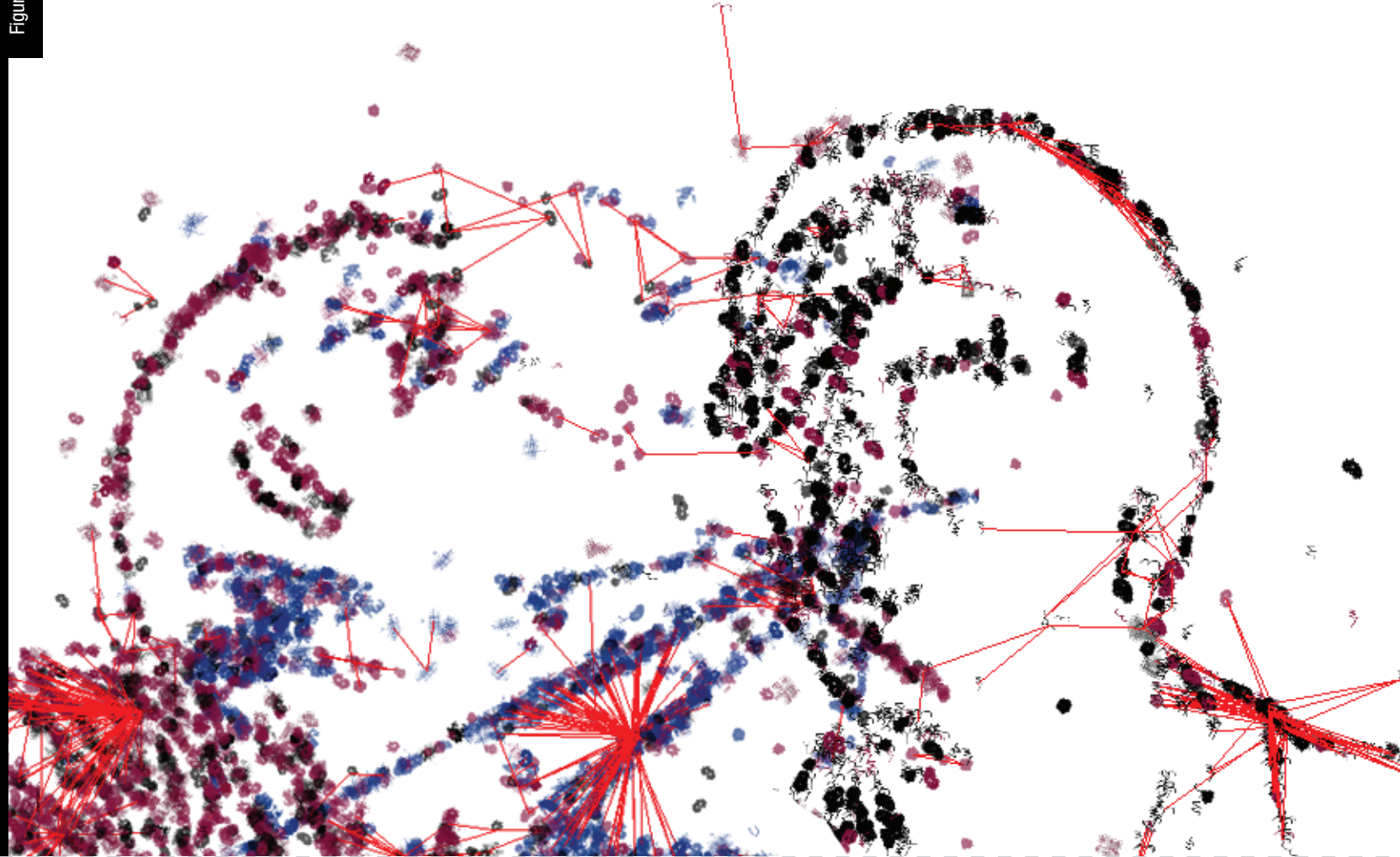
_conclu

_conclusion

> Framed by the **metaphor of the mirror**, this installation functions as a version of Perseus' enchanted shield. In the same way that he was able to use that mirror to view Medusa's reflection without being turned to stone[32], the installation has been designed as a way to indirectly confront the **'petrifying Other'**.

The 'petrifying Other' stands on the 'other' side of the mirror as a radical alterity. It represents the numinous terror of self-knowledge[33]. These are aspects of our experience which overawe when directly apprehended; somehow these experiences defy rationalisation. Such aspects include confrontations with our own mortality, and experiences of huge personal loss, such as the death of loved ones. On a larger scale, the 'petrifying Other' represents the realities of natural disaster, global pandemics, war, and the vastness of the cosmos. To some, it could represent the overwhelming pressures of social responsibility, or irrational fears of 'other' types of people, which might manifest as racism or homophobia. To others it simply represents a deep fear of introspection.

The 'petrifying Other' is that which lies outside of our frame of personal reference yet bears a direct influence on the shape of our lives. Pines (1984) states, *"the paralysis of horror, which is the response to the Medusa's head, arises from the inability to contemplate objective truth about oneself"* (p. 34). Perhaps it is the fear of looking itself, rather than the act of looking which petrifies.

Perseus' shield acts as a frame through which one can witness that which would otherwise petrify. In Ovid's *Perseus* (2001), Medusa was originally a maiden of great beauty. This represents the double nature of the symbol; the numinous is simultaneously terrible and divine. Coming to terms with frightening aspects of reality can reveal the beauty of life. Literature and art can serve to communicate aspects of reality that would otherwise be terrible if it were not for the beautiful way they were framed. Through reframing, we are able to apprehend the petrifying Other and transform the terrible into the beautiful; this enhances our experience and expands self-knowledge.

As a metaphor, the garden operates in a similar way to Perseus' shield. One's own life and death can be indirectly observed as a macrocosm of life and death in the garden. The garden becomes a frame within which one can aestheticise one's own mortality through identification with the impermanence of nature (Saito, 2010)[34].

If gazing upon Medusa's face petrifies because it represents an overwhelming terror of objective self-knowledge, then Narcissus' gaze was self-petrifying because he found Medusa's face reflected back at him[35]. Fixation on an idealised self-image represents a turning away from genuine self-reflection towards self-deceit and dissociation[36] (the self becomes simultaneously the one that desires and an unobtainable object of desire). This act of fear transforms the *'Other in the mirror'* into a *'petrifying Other'*. The perfected self-image becomes an image of the Medusa; gazing upon it petrifies[37].

Narcissus became fascinated with a self-image that was unknowable. By focusing his desire upon an insubstantial image that could do nothing but mirror his every movement, he became trapped in an endless cycle of failed dialogue[38]. By turning away from others to love himself, Narcissus mistook the self for the Other. Perhaps in confronting his own Medusian aspect he recognised the numinous beauty of his own existence, but he failed to extend this realisation beyond himself. In failing to know others, Narcissus failed to know himself. This represents the futility of seeking self-knowledge through isolated introspection. Genuine self-knowledge is not discovered as atoms of truth hidden within, but developed through interaction with others[39].

After resisting Medusa's petrifying gaze, Perseus' next act is to behead her. While this act is apparently destructive, Pegasus is born from her blood (Hesiod, 1914). *"Pegasus is the horse of the Muses and, as such, represents art and poetic inspiration"* (Pines, 1984, p. 34). Perseus' symbolic slaying of Medusa represents the destruction of his own fear of the petrifying Other. Medusa's destruction represents the death of her fearful aspect, but the birth of her creative aspect. In her death, her potential is released and her beauty finally seen[40]. Perhaps if Narcissus had found a

way to apprehend himself indirectly, he too could have conquered his own fear of self-knowledge.

In relation to this project, Medusa's destruction represents the deconstruction of personal narrative to unlock latent potential. Personal narrative as a construct of the reflected self is designed to protect an idealised self-image. However, this image is a construct of fear; it represents a petrified state of being[41]. Art, literature and other forms of active reflection provide ways to indirectly confront this fear. However, the danger exists that this process becomes narcissistic. While internal search is productive to a certain extent, at some point the search must be directed outwards.

The **metaphor of the garden as a portal**, as a developing relationship with the Other, symbolises this shift in perspective[42]. If only Narcissus had lifted his head from the pool long enough to discover the beauty inherent in his environment; he may have been able to direct his gaze away from his own reflection long enough to be saved.

Contemplating the self as an emergent being, as it is portrayed by the **metaphor of the garden**, represents a turning away from one's reflected self. This is a turning away from the idealised self-image reflected in the pool of Narcissus, to slay the Medusa.

Active reflection of the self as an emergent being reveals the petrifying Other to be an aspect of the self waiting to be transformed. Recognition of the Other as an aspect of self and the self as an aspect of the Other leads to the disintegration of illusionary boundaries and an expansion of the self into areas once thought to be alien and terrifying[43]. The area that once contained the petrifying Other is transformed from a zone of terror into a zone of unknown potential; a wonderous garden to be explored. The Medusa within, blocking our expansion into these undiscovered territories, has been transformed into the Pegasus, a winged horse waiting to fly us across this unexplored region[44].

Turning away from the illusion of an essential self to face the possibility that we no longer exist in the sense we once thought, to face the possibility that we are a kind of miraculous coming-into-being rising from the coupled and context-dependent interactions of a complex system[45], can be terrifying. Facing the possibility of this kind of empty state of potential embodies the same terror represented by a frontal encounter with the Medusa - one must look away or turn to stone. Facing this kind of realisation simultaneously dwarfs our experience of self to the point it seems to disappear, and enlarges it to the point of incomprehensibility, by connecting it to a vast unknown system[46]. This is why I propose a process of indirect apprehension through art-making, writing, or other processes encouraging active reflection.

This project represents my own movement from a state of petrifaction into a process of growth. The explication of this movement offers a method of self-cultivation through active reflection of the self as an emergent being. The metaphors used in the explication were developed through heuristic search while tending to a self-portrait undergoing transformation. The software artefacts represent the creative synthesis of this search.

32.   See pages 43-44 & 48.
33.   See pages 43-44, 47-48 & 54.
34.   See page 64.
35.   See page 48.
36.   See pages 51-52.
37.   See page 54.
38.   See pages 50 & 53.
39.   See pages 78-79.
40.   See pages 44-45.
41.   See page 56.
42.   See page 66.
43.   See pages 46-48, 78-79.
44.   See pages 44 & 54.
45.   See pages 70, 73-79.
46.   See page 78.

the**field**

This section is divided into three parts.
It has been structured to mirror the **Lexicon** section so that conceptual relationships are easier to draw out.

It describes and analyses the work of a selection of key practitioners (with reference to related creative disciplines and technologies) that influenced the development of the project theoretically, pragmatically and methodologically. Their work has been selected because it has either inspired me at a metaphorical level, or because it has inspired a technical solution to a problem in my research. This section supports the **Lexicon** section by illustrating the transactional relationship between practice and theory in the project, and by demonstrating how analysis of practical work has contributed to the development of the critical framework.

themirror

Telematic Art — **Interactive Digital Art** — **Elemental Transfers**

Paul Sermon   Kentaro Yamada   Levi van Veluw

Telepresence

According to Campanella, robotics and AI pioneer Marvin Minsky coined the word 'telepresence' in 1980 to denote:

"teleoperation systems used in remote object-manipulation applications" (2000, p. 27).

The inference is that the user's 'will' is present in two locations at once – at both the operation and the enactment site. This can refer to any technology allowing users to be simultaneously 'present' in both a real and distant virtual space.

Citing Steuer, Campanella extends this definition by claiming that the relationship between observer and observed is reciprocal[39], i.e.

"the observer is telepresent in the remote environment, and the observed environment is telepresent in in the physical space in which the observer is viewing the scene."

An example of telepresence technology (in this instance, live chroma-keying and video-conferencing gear) being put to creative use can be seen in figure 49 opposite.

39.   According to this definition my installation is not strictly telematic because the user is interacting with a representation of themselves, not communicating with someone else. However the installation uses similar technology to explore ideas related to the work of telematic artist Paul Sermon.

Figure 49. Sermon, P. (1992). *Telematic dreaming.*

Figure 50. Sermon, P. (1992). *There's no simulation like home.*

"In the bedroom the viewer can lie down on a bed onto which a live video projection is being made of another person, who is located outside the installation space on a second bed. A video image of the combined audiences together on the projection bed allow the viewers to interact in a telepresent space by touching with their eyes" (Sermon, 2010).

Paul Sermon

Sermon has experimented with telepresence since the early nineties (Sermon, 2007) to challenge notions of identity, language and physical space.

"The bodily form encapsulates our consciousness. I believe it is possible to extend our consciousness beyond it, as in a telephone conversation or email message, but we are a long way off the conception of it. The bodily form as a signifier is still necessary to identify and locate our consciousness at a distance. Therefore I am not concerned with escaping my form but rather to look back and observe it at a distance from the outside" (Sermon, 1997).

In his work, *There's no Simulation like Home* (1992), Sermon advances the idea of observing one's own from from the outside, by introducing the idea of the *Mirror Stage* (Lacan, 2001) to explore the idea that identity is not a pre-existing condition, but something coming into being *"from the place of the 'Other' (following the mirror phase, from the place of language and wider cultural codes)"* (Redman, 2000, p. 11)[48].

"Jacques Lacan suggested in his early psychoanalytical writings that the human psyche is constructed as a mirror image that we contemplate as if it is on stage in front of us. This metaphor has become significant for the present developments in new media art, as we can observe a similar process of identity construction through a digitally mirrored world in networks and installations. Artists in this field are increasingly experimenting with interactivity as an open system that embodies generative data and what I call a 'user-determined' narrative, set up as a deliberate contrast to a closed system of finite variables that default back to their original state upon leaving the piece. Likewise, the role of the audience in this context is far more complex and cannot be labelled anymore simply with 'user', although this still seems to be a popular term for the participating public. This user (or 'browser') is rapidly becoming a performer or even actor, often represented by avatars and agents within these new environments" (Sermon, 2004, para. 1).

Of the strategies described above, this project has explored:

1. practical testing of psychoanalytic theory as means to explore the idea of identity as a construction;

2. 'user-determined' narrative systems built from generated data;

3. the idea of an avatar that can be possessed or inhabited by the user;

4. the idea of consciousness bouncing between the cause and effect of user's avatar and physical body;

5. use of projection technology to achieve the above.

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48. Discovery of Sermon's connection to the **metaphor of the mirror** via telematic art marked the beginning of my investigation into large-scale interactive art installation to explore the idea of identity as narrative fiction.

Kentaro Yamada

Yamada reworks telematic ideas into his digital work *Listening Heads* (2006). In contrast to Sermon's experiments, Yamada has ingeniously applied his programming skills to design this interactive piece.

In the installation, Yamada incorporates a mirror metaphor, inviting the audience to consider themselves from the point of view of the 'other' (Lacan, 2001). He achieves this by digitally recording the facial expressions of four friends, presenting them in a format resembling a photographic portrait, and using microphones to trigger random responses from a library of pre-recorded facial expressions when somebody talks to the portrait.

"At the initial moment when we realise that "it hears me" these portraits become more of a mirror than a representation of someone else. No longer solely about the sitter, the portrait now includes us by returning our gaze. In acknowledging our presence the work reflects attention onto ourselves" (Parkinson, 2006).

Figure 51. Yamada, K. (2006). *Listening heads.*

On the surface, *Listening Heads* works as an open system of potential events, unlike hyper-linked narratives where one decision locks the user into a pre-designed outcome. However, Yamada employs a random system to select from a database of pre-recorded events to achieve this effect. There is a set number of possible outcomes which cannot permutate, or meaningfully alter the course of the narrative. In contrast, my project is designed to meaningfully respond to user input to generate unique artworks that change over time.

Yamada's Connection to the Metaphor of the Garden

"Yamada is interested in creativity in computer programming, and how creative code has opened up new possibilities for new worlds. He creates environments using computer-programming techniques, and generates a simulation of the natural environment in a digital realm. Yamada sees programming as a structure that is not the antithesis of nature, but also as a responsive environment in itself" (Yamada, 2005, para. 4).

Figure 52. Yamada, K. (2005). *Tampopo.*

Tampopo (2005) exploits programming to produce an interactive environment driven by light and sound. Interactive physics are applied to the flower nodules which are triggered by microphone input. In this case light projection is used for display and sound is the interface. This technical setup is similar to the environment I have designed. Both Tampopo and my project use the body as the primary site of interface, and projection to create a virtual environment.

Both installations also use a particle system that simulates nature using basic principles of emergent design. Particles obeying simple local rules interact to create surprise. Yamada (2005) expresses his opinion that both, *"the programming environment and the natural environment are full of conditions and variables, of predictable and non predictable patterns"*. This attitude, as Yamada successfully embodied in Tampopo, encouraged me to explore the idea of emergent design in relation to the **metaphor of the garden**.

Levi van Veluw

"His works constitute elemental transfers; modifying the face as object; combining it with other stylistic elements to create a third visual object of great visual impact. The work you see therefore is not a portrait, but an information-rich image of colour, form, texture, and content. The image contains the history of a short creative process, with the artist shifting between the entities of subject and object" (van Veluw, 2008a).

While appearances suggest that this work should be categorised under the **metaphor of the garden**, I believe van Veluw's intention to blur the boundaries between subject and object align his work with the **metaphor of the mirror**. The dramatic level of confusion achieved between subject and object through the convincing detail of the work is highly evocative of Hegel's *Master-Slave Dialectic* (1977) *and* reminiscent of the myth of Narcissus. The model (who is also the artist) seems genuinely petrified, his movements must be very restricted within the layered shell he has painstakingly applied to his upper body, face and head. It becomes difficult to tell whether the vegetation is real and the model is fabricated, the opposite is the case, or the whether the truth lies somewhere else altogether.

Figure 53. Van Veluw, L. (2008c), *Landscape III.*

I discovered van Veluw in 2008 while I was already designing avatars for the software that resembled his *Landscapes* series (see figure 54). However what struck me about his works was the fact that he had gone to the trouble of applying actual material to his own body to create the effect. Up until that point I had been concentrating on photomontage to create my designs. His work inspired me to experiment with sculpture and live plants (a reverse of his idea) to create more authentic imagery. This led me from the **metaphor of the mirror** into the **metaphor of the garden**, which also led me to discover heuristic self-search inquiry.

Figure 54. Idealog. (2008). *Idealog magazine article.*

thegarden

Photographing Mortality - **Concrete Poetry** - **Data Visualisation**

Joel-Peter Witkin   Ian Hamilton Finlay   James Frost

Joel-Peter Witkin

Superficially these works resemble van Velew's *Landscapes* (2008a, 2008b, 2008c) series, and there are also some strong conceptual similarities. Both artists have objectified the human form in an arresting manner. They have both also blurred the boundaries between portraiture and other traditional genres of painting and photography. Van Veluw mixes portraiture with landscape, Witken mixes it with still life.

In van Veluw's works, while the line between subject and object is extremely blurred, we can see that essentially they are photographs of a living man in elaborate make-up. The subjectivity of the model, although threatened, is still present. The objectification is self-imposed, adding an element of narcissism to the work.

In Witkin's examples we are confronted with thoroughly dehumanised anatomical specimens. The effect is shocking. Witkin has treated these heads as if they were objects on the same level as the fruit and vegetables he has arranged so prettily in his compositions. In relation to my project, this represents a confrontation with the petrifying Other - we are faced with our own mortality. However, Witkin has framed this encounter with the Medusa beautifully, through the lens of a camera, and with great attention

Figure 55. Witkin, J. (1992). *Still life, Marseilles*[†].

Figure 56. Witkin, J. (1984). *Harvest, Philadelphia†*.

to composition, light, mood, form and textural detail. The encounter has been made bearable through an indirect mechanism. This is an example of Perseus' mirror being put to symbolic use. These ideas should place the work into the framework of the **Metaphor of the Mirror**. However, I will now explain why I have moved it into the **Garden**.

Van Veluw's and Witkin's work form a bridge across the two sections. Van Veluw's *Landscapes* (2008a, 2008b, 2008c) remain on the side of the mirror because they do not offer a movement towards the idea of an emergent being. The images present a man who has attempted to freeze time. While the images of trees and vegetation allude to growth and transformation, they are crafted from synthetic material. For me, these images represent a narcissistic confusion between self and other.

On the other hand, Witkin's work captures a process of decay. The boundary between self and other is not confused, it has been completely obliterated. The consciousness we associate with the human heads in his arrangements has long since ceased to be. The heads remain as historical traces of this subjectivity, but there is no life left in them. This does not represent an attempt to freeze time but reveals our objective place in the unfolding of time. Humanity becomes completely synthesised with the vastness of nature. Witnessing the complete objectification of these people, who were once as vital and feeling as we are now, confronts us with the awe-inspiring realisation that we exist only in the moment. We cannot freeze time. Photographs can record moments, but cannot preserve them.

Figure 57. Konings, N. (2008). *Exploratory test.*

Witkin's aestheticisation of mortality and use of natural material influenced my decision to begin experimentation with biodegradable sculpture. I was also interested in his gritty visual style; his use of texture, and juxtaposition of the beautiful and grotesque. For me these elements combine to communicate an authentic sense of being in the world. This aesthetic allows the viewer to experience a sense of birth and death (of beauty and horror) in the same moment, a feeling of connectedness to objects, and provides a controlled encounter with the radical alterity of nature. These are all symbolic aspects of the garden as discussed in the **Lexicon** section.

I attempted to achieve similar effects in my design by developing a substrate that could:

1. develop texture with time to communicate impermanence;

2. hold a convincing human form to encourage the viewer to identify with it emotionally;

3. support the development of plant life as it decomposed (in order to juxtapose visual metaphors of birth and death through time).

Figure 58. Konings, N. (2009). *Transforming self-portrait.*

Multivalence

"[...] the concrete poet is concerned with making an object to be perceived rather than read. The visual poem is intended to be seen like a painting; the sound poem is composed to be listened to like music. Concrete poets, then, are united in their efforts to make objects or compositions of sounds from particular materials" (Solt, 1968a, para. 3).

In concrete poetry, word placement isn't determined purely by syntax; meaning can be conveyed by the juxtaposition of sounds, spaces, shapes or references, for example:

Figure 59. Hamilton Finlay, I. (1970). *Wave/Rock.*

According to Carlson, this technique generates meaning *"which can be suggestively open-ended, [it] is arrived at through metaphor - i.e., through the coupling, on a single page, of unlike terms which are brought to behave as 'multivalent' pointers"* (2006, para. 8). The idea of multivalence[49] became one of the central themes of the project and is the first reason I have classified concrete poetry within the **Metaphor of the Garden** section. Multivalence suggests interactivity; the viewer is invited to actively decipher the text. This idea became prominent while investigating Hamilton Finlay's garden *Little Sparta* (Hamilton Finlay, 1966), which is discussed soon.

My first round of experiments with concrete poetry in 2007 involved the idea of encoding lexical meaning within indexed meaning. In figure 57 for example, this was attempted by building a portrait from text that contradicted its representational meaning. The intention was to communicate the idea that identities are constructed from personal narratives which may not be accurate[50].

This was interesting, but I was still eager to find a way to *physically* engage the viewer to somehow experience identity as a function of language in a more direct manner.
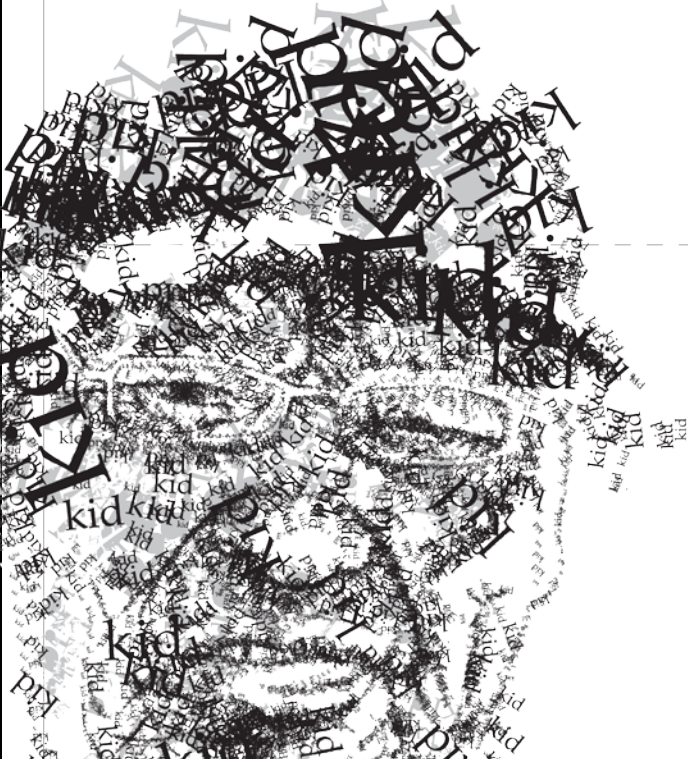

Figure 60. Konings, N. (2007). *Old boy.*

49. See page 64, under the heading, **The Garden as a Multivalent Space**.

50. See also figure 10 on page 18.

Hamilton Finlay's Little Sparta

For Hamilton Finlay, language inhabited a material dimension in the world. Carlson claims this is most fully realised by Hamilton Finlay's garden, *Little Sparta:*

"obelisks, planters, bridges and tree-column bases all carry words or other signage; and this language, in relation to the objects upon which it is inscribed and the landscape within which it is sited, functions metaphorically to conjure up an ideal and radical space, a space of the mind" (2006, para. 5)

In *Little Sparta*, the material itself contributes meaning to a poem, producing resonance between text and object that is neither one nor the other, but an enhancement of the two. As can be seen in figure 61, the material nature of such a poem means that it erodes over time. Hamilton Finlay's choice of words are enhanced by this material fact, *"The present order is the disorder of the future. Saint Just"*. His observation about impermanence[51] is multiplied by the mode of its delivery.

This idea of language as material inspired me to play with the idea that language could be *used physically* to explore the idea of identity as a construction of language.

Therefore I began experimenting with the idea of adding interactive physics to my typographic illustrations (see figure 62 below and figure 10 on page 18). By allowing viewers to explore text physically, their ability to contribute meaning to the narrative increases. In these experiments, the effect of scale was very interesting; at certain levels of zoom the text was dominant, at others the image it built was easier to recognise. This idea is advanced in the **Metaphor of the Garden** section[52], and led to the idea of a user building an avatar from text[53] in late 2007.

The idea of impermanence in *Little Sparta*, communicated by the degradation of language inscribed on organic material, inspired me to simulate decay in a virtual environment to communicate the idea of identity as a fictional construct. In *Little Sparta* erosion reveals language to be constructed from material - in my project erosion reveals material identity (the illusion of an essential self) to be constructed from language.

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51.   See pages 62-63, under the heading, **The Garden as Microcosm: Interconnectedness**; pages 71-72, under the heading, **A Reductive Physicalist View** (in relation to micro and macro levels); and page 78, in the conclusion.

52.   See figure 11 on page 18 for a diagram of the concept.

53.   The rate of erosion in stone sculptures like this is very slow, this ties the work to the ideas of impermanence, interconnectedness, and empathy with nature discussed in **The Garden as Microcosm: Interconnectedness** section on page 63.

Figure 62. Konings, N. (2007). *Installation design.*

James Frost

"No cameras or lights were used. Instead two technologies were used to capture 3D images: Geometric Informatics and Velodyne LIDAR. Geometric Informatics scanning systems produce structured light to capture 3D images at close proximity while a Velodyne Lidar system that uses multiple lasers is used to capture large environments such as landscapes." (Radiohead, 2008b).

In 2008, Radiohead premiered their music video *House of Cards* (Frost, 2008) on the website Google.com (Radiohead, 2008b).

In the making-of video (Nackashi, 2008), Frost explains how he shot the music video using LIDAR and real-time 3D scanning technology. LIDAR is a light detection and ranging technology more typically used for atmospheric research (Wandinger, 2005). The 3D scanning software is often used for taking facial measurements for medical purposes (Geometric Informatics, 2010).

The recordings were a series of data arrays locating the positions of reflective points through space and time. These were manipulated in post-production to create vaporisation effects. Because they recorded positions in 3D space, the visualisations could also

Figure 63. Radiohead. (2008c), *RA DIOHEA_D / HOU SE OF_CARDS - Google Code.*

be rotated to view at any angle. This allowed for a wider selection of compositions to be considered. Frost capitalised on the technology's sensitivity to light to distort data coordinates. He did this by waving a sheet of perspex with mirror fragments attached to it while recording. This created the visual effects of fragmentation and disintegration (Nackashi, 2008).

While the fragmented effects caused by light refraction align it with the **metaphor of the mirror**, they also suggest the idea that the boundaries of our bodies are in a constant state of flux. For me, the sense of impermanence this evokes aligns the overall effect with the **metaphor of the garden**.

I was interested in finding scanning technology similar to this to achieve the same effects. I gained approval from the Auckland School of Medicine to use their 3D scanner, but realised that this would only allow me to use data from a small number of scans, whereas I was interested in capturing and transforming live data from users in real-time. Therefore I began developing my own method with the help of a programmer.

The project has remained limited to 2D rather than the 3D representations obtained by Geometric Informatics, but I have managed to realise my goal of manipulating data points in real-time according to user input to create an interactive environment.

This has led to the innovation of a live rotoscoping technique that is able to transform video footage into manipulatable data points in real-time. The potential for this technical information to be transferred to other design projects, developed, and improved, exists. Therefore, this is an instance where my research exhibits the qualities of a problem-solving project. However, this is more a happy by-product of creative investigation than a central concern of the project.

synthesis

Boundary Detection and Movement

Michael Kontopoulos

Michael Kontopoulos

"In 'Inner Forests', a user's shadow is augmented and expanded by the gentle growth of trees and shrubs. The longer the user stands still, the more growth occurs. If the user moves, the growth disappears quickly" (Kontopoulos, 2007a).

In this interactive installation, a user stands in front of a screen that has a web-camera and projector directed at it. Software reads the image of the user's shadow via web-camera and detects its boundaries. Once the boundaries have been detected, the software then generates growths from the top sides of horizontal (or near horizontal) edges. The projector renders them onto the screen, combining them with the user's shadow to create the illusion of real growth sprouting from their body. Movement signals the software to stop generating growths and remove previously rendered growths from the screen. Therefore the user must remain very still to watch their shadow transform into a human/forest hybrid.

This installation combines the dialectical structure of the mirror metaphor (the user is interacting with an image of themselves reflected back at them) with the ideas of emergence and transformation discussed in the **Metaphor of the Garden** section.

Figure 64. Kontopoulos, M. (2007b). *Inner forests.*

This model is extremely similar to the one I had reached at the end of 2007 through my synthesis of Lacan (2001) and Bourdieu's (2000) social theories, and an extension of the ideas of concrete poetry:
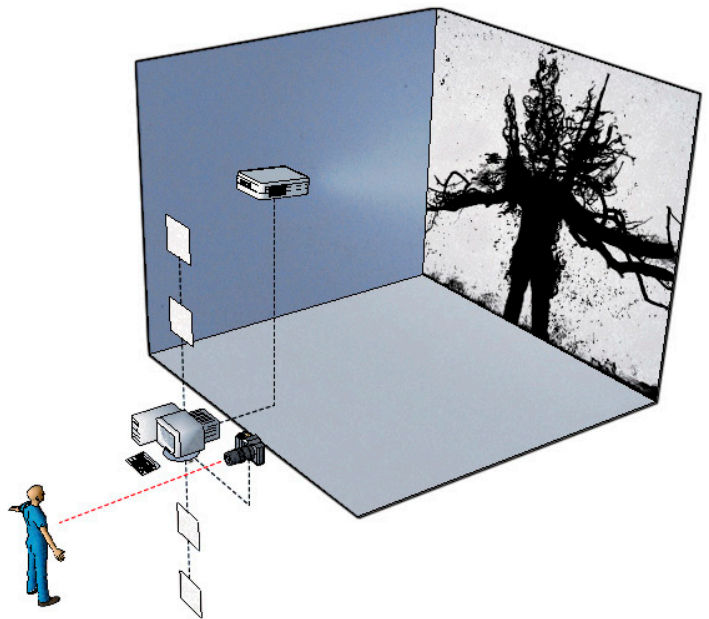

Figure 65. Konings, N. (2007). *Installation concept*.

54.   See Figure 8 on page 17.

I had also begun the process of creating a library of generative growth structures[54] and found a method to detect boundaries and attach the growths to them.
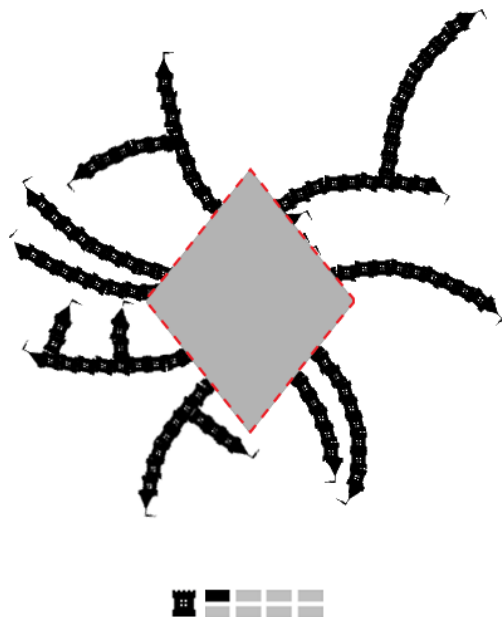

Figure 66. Konings, N., & Chambers, P. (2007). *Growth attachment prototype*.

However, what was a strength in Kontopoulos' installation would have been a weakness in mine; I had planned for the growths to attach to a moving image. After considering his work, I realised that this was an extremely difficult process. It required us to calculate the boundaries of the image every frame to track the user's movement. Furthermore, not only were the boundaries shifting every frame, the specific points on the boundaries where the growths should attach to would have to be identified somehow as well.

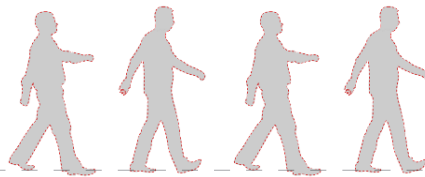Figure 67. Konings, N., (2008). *Frames in a video sequence*.

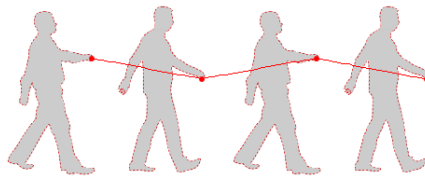Figure 68. Konings, N., (2008). *Frames with boundary detection*.

Figure 69. Konings, N., (2008). *Locating specific points on the boundary*.

Figure 67: Sequence of video frames before edge detection.

Figure 68: Basic boundary detection using a line-detection algorithm. We were able to achieve this despite it being a memory intensive process to undertake in real-time.

Figure 69: The problem occurred when we attempted to attach growths to a moving image. We didn't have the time or resources to work out how to track specific points on the body using only video footage, then move the growths to follow them in real-time.

At this point I decided to abandon the literal representation of growths to concentrate on how the behaviour of the particles building the avatars might behave over time to represent the ideas of growth and decay. This helped me to connect ideas about impermanence and emergence (which were forming in my sculptural project) to the software development, contributing to the development of the **metaphor of the garden**.

Kinect for Xbox 360

Microsoft have recently solved this problem and have just released a new game console called *Kinect for Xbox 360* which tracks body movement using a 3D sensor (Microsoft News Centre, 2010). This allows users to operate avatars without the need for a controller. It is due for release in New Zealand on November 18, 2010 (123Kinect.com, 2010).

Figure 70. Konings, N. (2008). *Software prototype.*
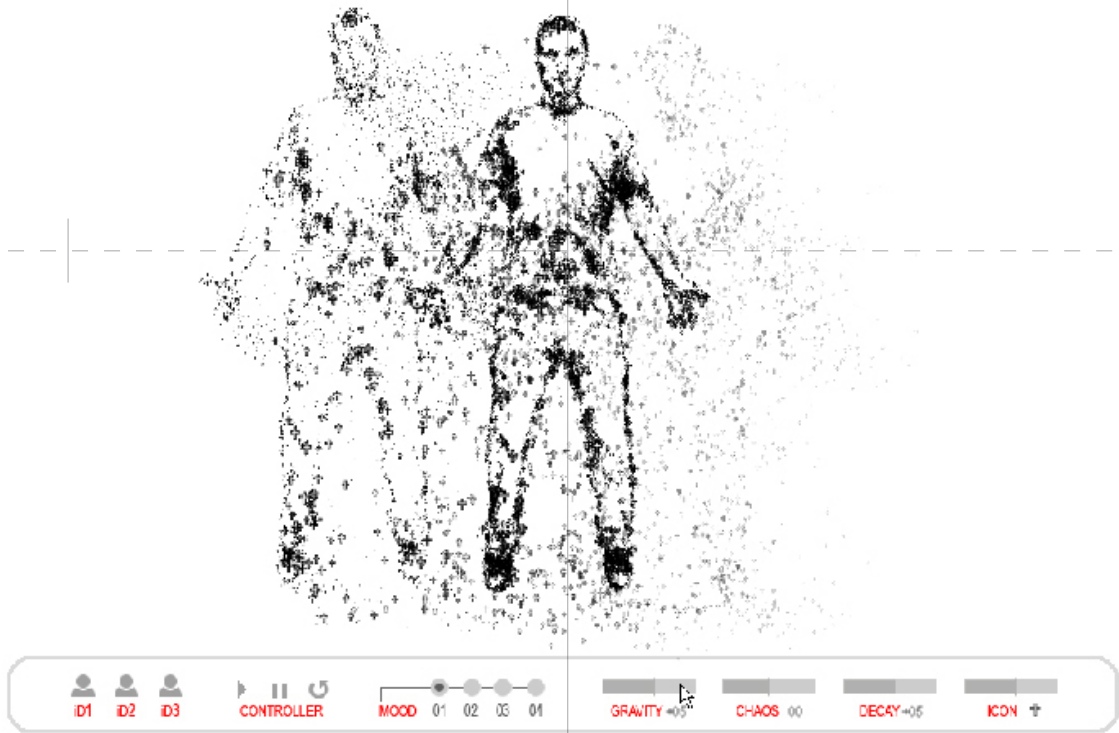
In this section, I have demonstrated how key practitioners from a diverse range of creative disciplines have contributed to the development of my critical framework. Although diverse in their practice, they are tied together through their relationships to the metaphors of the mirror and the garden.

_conclusion

Although I have classified them using this system, I have also shown that they share intimate connections across metaphors. What ties all practitioners together, in my eyes, is their shared interest in issues of impermanence and human identity.

While Sermon has been attached to the **metaphor of the mirror** for his use of Lacan's (2001)dialectical theory, he is also aligned with the **metaphor of the garden** because of his use of *"'user-determined' narrative"* (Sermon, 2004, para. 1) to continually alter the meanings of his artworks. Yamada plays with a mirror metaphor in his work *Listening Heads* (2006) to encourage self-reflection, but is also interested in creating computer simulations of nature such as *Tampopo* (2005), which allude to impermanence and multivalence. In this way he is more closely aligned to Hamilton Finlay's concrete poems than van Veluw's elemental transfers.

While van Veluw appears to freeze ambiguous meanings in time, Hamilton Finlay orchestrates the transformation of meaning through time.

Another candidate for inclusion in both fields is Witkin, whose works, *Still Life, Marseilles* (1992), and *Harvest, Philadelphia* (1984) powerfully evoke the spectre of the Medusa, plunging us into direct confrontation with our own mortality. The impermanence of the garden and the numinous terror of the mirror are combined, but are made palatable through his attention to aesthetic.

While Frost's technical experimentation with visualisations of fragmentation and flux place him squarely within the **metaphor of the garden**, Kontopoulos' incorporation of techniques and symbols from most of the other practitioners[55] places him in both fields. This makes Kontopoulos the most relevant artist in relation to this project.

55.   For example, Sermon and Yamada's technical setups and use of projectors; Hamilton Finlay's interest in impermanence and time; and van Veluw's and Witkins hybridisation of biological and botantical forms.

The similarity of his installation *Inner Forests* (2007a) to aspects of my own work is uncanny, however it is the key difference which makes it important. His installation marks the turning point in my project to discontinue the task of attaching generative growths to a user's form, in order to investigate the idea of developing a live rotoscoping system of manipulatable data points.

Although I have framed this section as a support to the **Lexicon** section, this does not mean it is less important. Recognising preoccupations I had in common with established practitioners, involved in their own creative processes, provided me with inspiration and guidance. Critical analyses of what excited me and what didn't in their work steered me towards the creation of my own personal framework. The development of this framework then led me to revisit the same practitioners with a new perspective, as well as to find new artists and designers to study. Many other practitioners were investigated; the ones discussed here are those which impacted most on the development of the project and the production of the artefacts discussed in the **Synthesis** section of the **Lexicon** (pp. 80-87). The **Lexicon** section was placed first so that I could build a rich language to describe the influence these creative practitioners had on my project.

_refle

This project has been a huge undertaking for me on a personal level. Not only have I worked full-time throughout the process; I have been continually confronted with my own fear of failure and sense of worthlessness. At many times I have considered giving up. When I have encountered successes, such as winning awards, scholarships and funding grants, I have been overwhelmed with feelings of pride, and a sense of vindication – but these feelings did not last long.

_reflections

Before long I was consumed by my fear of failure and sense of self-loathing again. This fear would soon turn something that should be immensely joyful (art and design) into something feeling like an extended criminal trial. I felt that sooner or later I would be found guilty of fraud and locked away. The idea of just giving in and walking away before anyone 'caught' me was intensely appealing.

In two weeks I will be presenting the results of this struggle in exhibition. I must admit I still feel fear. I am afraid that things will go terribly wrong (that the fabrications for the installations will not be produced in time, or to sufficient standards; that the computers running the software will fail; that I will lose my job because I have not focused enough at work, etc.). These things still cross my mind, but in the past they would have paralysed me. I would not have had the chance to experience the excitement of organising an event, and the enjoyment of sharing my ideas with other people. In the past I wouldn't have even attempted something so public. The idea of risking public humiliation would have been too great.

At first, completing this Masters degree was an exercise in regaining lost time. It was an exercise in regaining a sense of status. I felt that I had hidden away for too long and let opportunities for success slip me by. I needed to prove to myself that I was indeed someone worthy of a postgraduate degree. Completing papers was an exercise in catching up to people in my life who had earned material success and were now enjoying the benefits of enhanced status. In this way, I believe I really was a fraud.

However, in 2009 I finally reconnected to the feelings I had as young boy who loved drawing and writing. This was due to my engagement in the sculptural gardening project I have already described in great length. The processes I have described in this exegesis are genuine. I believe that through my heartfelt and total engagement in a process of heuristic self-search inquiry, I have discovered a personal approach to art-making that has helped me to access thoughts and feelings that have been distorting my perception of the world. I also believe that my experience is not an isolated one. Therefore, in this exegesis, and in the artefacts I have produced, I have tried to convey a sense of my own personal-transformation, and the methods I developed to achieve it, in the hope that these stories will be of value to others.

In the two years since I began my garden project, I have come to stop living in the past and fearing the present, and learned to start living in the present and building for the future. I have defeated my own personal Medusa and transformed her into a Pegasus. I have moved from a state of petrifaction and fear, into a state of expansion and wonder. My gaze has turned away from myself and is now directed towards exciting new horizons. Studying this degree has not only provided me with a postgraduate education, it has transformed my life.

New Directions

Now that this newly discovered process has helped me achieve a sense of positive change in my life, there are two avenues I see this research advancing down. Perhaps they both lead in the same direction. One avenue is to continue making art; this is essentially a selfish act, but it is a selfish act that might enrich the lives of others, so in fact it is the best kind of act – one that pleases me while I please others.

The other path is slightly more noble. While I have engaged wholeheartedly in heuristic self-search inquiry on an emotional level, intellectually, I have felt a certain amount of dissonance with the activity. This can already be seen in the exegesis; I have been attempting to develop my own methodology – one that values the process of self-search, and honours the importance of emotional experience, but one that does not reify the self as some kind of rare diamond to be unearthed and put on display. I am still new to methodology in practice-based research. Perhaps this kind of approach already exists and I am not aware of it. This is what I would like to find out. Therefore, I am interested in reading more literature on the topic and hopefully contributing to the wider discussion at a more informed level in the future.

New Work

In regards to further practice-based work, I particularly enjoyed the later analogue experiments playing with time and narrative. In particular, I am interested in pursuing the negated move-testing experiments on page thirty (figures 20–22) which play with the idea of layering sequences filmed at different rates into a single frame. The original experiments used projection to do this. However, I have begun investigating an alternative method, using stop-motion, to animate characters built from impermanent materials. For example, I have begun looking at methods to transfer substrates capable of sustaining plant growth onto puppet armatures. This is in order to build characters that can be animated at a traditional rate, but transform at a rate determined by the intervals between shots in relation to plant growth. Other substrate ideas include materials that decay quickly, like food material, and water soluble mixtures of sugar and glue. I have been scripting a small narrative sequence involving two tree-like characters involved in a chase cycle, which I intend to story board frame-by-frame, so that I can animate it in reverse. When the animation is played back in the opposite direction, the narrative will run forwards, but the plant growth on the characters will appear to be developing backwards.

I have also started playing with animated text built from impermanent material such as germinating seed, ants following sugar-syrup trails (see figure 35 on page 65, and figure 74 below), and coloured ice. I intend to use these experiments to develop time-based title sequences and captions for the stop-motion animation. The potential for these kinds of manipulations of time and perception are very exciting to me. Since I already built my own lightproof time-lapse studio in 2009 (see figure 19 on page 29), and now have 2 DSLR cameras especially for this purpose, I hope to begin shooting this project in 2011.
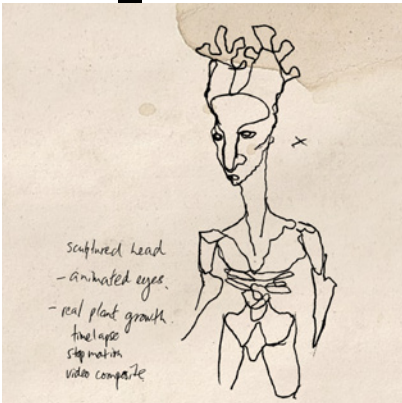

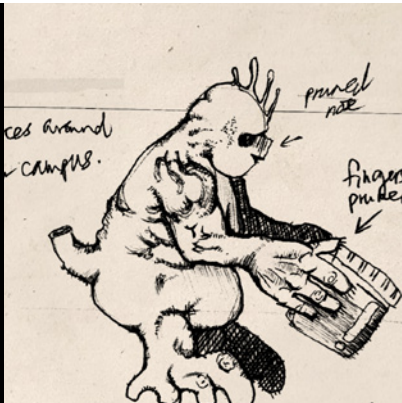Figure 71. Konings, N. (2010). *Concept sketch.*

Figure 72. Konings, N. (2010). *Concept sketch.*
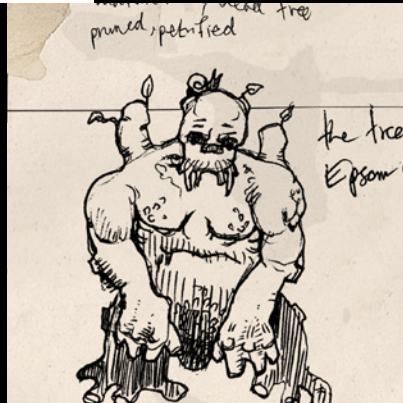

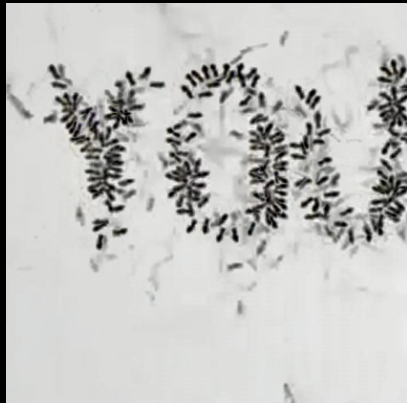Figure 73. Konings, N. (2010). *Concept sketch.*

Figure 74. Konings, N. (2010). *Impermanent type.*

Figures 71–73: Concept sketches of characters from a stop-motion animation I am planning.

Figure 74: Video still of ants collecting sugar syrup that has been shaped into letters.

Figure 75. Konings, N. (2010). *Self portrait.*

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