Please Touch : The Power of Interactive Art

By

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Abstract

This project aims to expand the potentially static experience of art from an object being witnessed to a time-based, interactive, multi-participative performance. Through the lens of Karen Barad's concept of agential-realism, Deleuze and Guattari's theory of Affect and Graham Harman's Object-Oriented-Ontology this thesis applies these theories to unpack the nature of the creation, dissemination and experience of interactive, participatory art forms. Based on the philosophy of new materialism and Chris Salter's Alien Agency, I argue that the materials used in art-making themselves are active, dynamic, and changeable, and play a role in the processes of creation and experimentation. By providing an open-ended, interactive installation, the artist is present in the decisions made by the participant. Together, the artist, the participants and the material artwork, through forward momentum and interaction of affect, engage in the act of creating the whole work of art.

Keywords: New Materialism, Agential Realism, Material-Discursive Practice, Object-Oriented-Ontology, Affect, Reflexive Practice, Intra-action, Installation, Performance.

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Dedications

This thesis is dedicated to the memory of Georges Jorisch

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1. Introduction

1.1 Introduction to Theories and Thesis Roadmap

Breaking free from a fixed, colonial, patriarchal, anthropocentric understanding of the self requires a shift in thinking about the subject and what constitutes being and life. Deconstructing hitherto accepted models of subject-object realities reorganizes stratas of existence from dualistic anthropocentrism, the relational divide between the mind of the human and the perceivable world with the human at the top of the hierarchy, to multi-faceted, multi-agential, decentralized constructions of being. In other words, in order for an ontology to be meaningful across gender, race, age and worldview, a new structure must emerge which allows for a decentralized and active understanding which can be employed by anyone as a set of principles and values. In an effort to uncover the agency within actions, the theories I will take on see *being* as a set of performances, whose delineations are the subjective aspect of inflecting meaning in our lives through these performances.

In this introduction I provide a roadmap of what is to come in this thesis document. First some background information, then an explanation of the theoretical framework, my motivation for undertaking the research, the research question and rationale, the research methodology and approach, the literature review, the practice review, the project and process, experimentation and exhibition, and finally, conclusion.the emergence of a theory, the implications of the work in a broader context, and finally the conclusion.

Throughout this thesis I will weave the theoretical framework and rationale of new materialism into my arguments. All that I will discuss will be through the new materialist lens which I will outline in the sections entitled theoretical framework, literature review and practice

review. Looking at affect theory as a means to access being, the unfolding of such matter will be viewed through two lenses, both of which fall under the philosophical framework of new

materialism. The first is Graham Harman's Object-Oriented-Ontology (OOO) and his argument that all matter has a hidden essence waiting to be uncovered, which means within this ontology there is a divide between physical matter and its imperceivable essence. This ontology can also be seen as a modern version of animism, which is the theory that every being and every object has a soul, or a life essence and can be communicated to and can communicate with each other. I will argue that OOO is the contemporary manifestation of the most agreed upon recent modern philosophical ontologies. The second is Karen Barad's agential realism theory within the new materialist ontology, which argues that all matter is all that it is because of its interaction with other matter, in the present moment. Using these conclusions as the basis for my research, this thesis is positioned to argue within this theoretical framework. The theoretical framework is expanded upon in the literature review section. There I go into detail about how I am using the theories of each author and how they play off each others' work to provide new conclusions.

Once the framework has been established I discuss my motivation for undertaking this research. Digital interactive art has existed for a much shorter amount of time than other, traditional forms of art. I believe in contributing to the discourse of this medium while engaging with contemporary philosophy through experimental art practice. Philosophy is a means through which to understand our being in the world, so within a given framework all things in life can be explained in accordance with the value system and beliefs of the framework. If I believe in a new materialist ontology, it is possible to understand art and my own practice in these terms. Through experimentation, documentation, argumentation and discourse, and reflection I can make sense of contemporary art and my role in that realm.

Following the presentation of this argument, I come to my hypothesis and research question. Based on my motivation for undertaking this research I ask more specific questions in order to use my artwork and experimental research to answer them. Questions such as what role do materials, audiences and artists each play in the creation and diffusion of artwork? Is this a fixed resolution or can it be fluid and changeable? How can we challenge the norms of

what role each is supposed to play through the act of creation and experimentation? How can the affect experienced by the artist during the process of making be carried through from the beginning of the creation of a work of art through its completion and subsequent diffusion and interaction with audiences? Are the materials of the work responsible in some way for inciting and transmitting affect to the artist and audience? By physically working through these and other questions I create a series of possibilities for change in perspectives.

At this point I discuss my chosen research methodology and approaches. Based on my theoretical framework it makes logical sense that my research approach be physical and experimental. Primarily qualitative, my methods include research as prototype, as well as critical making, visual thinking, and documentation and reflection, among others. In my discussion on research methodology I address the reasons for my approach and how it has served me, and what resulted.

The practice review is a survey of contemporary work within which I situate my thesis project. I make contrasts and comparisons to artists such as Eva Hesse, Tim Hawkinson, James Turrell, Michael Snow, Chris Salter, and others. I analyze the relationships of my work to these artists and theirs to each others' in terms of aesthetics, conceptual means, the affect of the work, and the intention. In situating my work within this particular survey I can make claim to the relevance of the contribution of my thesis project as well as indicate the sources of my inspiration.

Built upon all that leads to this point, is the emergence of a theory. Using process-documentation and the actual art installation as evidence, I answer the queries posed in my hypothesis and research questions. By incorporating the agency of the materials into the diffusion of the artwork, the participant engages not only with the present work but engages in continuing the process of creation which the artist and materials were engaged with, creating a lasting cycle of interconnectivity with artist, material agency and audience. By engaging with the interactivity of the work, the audience becomes a part of the creation process, creating a link through which the affect of artist and materials can be transmitted to the participant.

Next is a discussion of the experimentation and artwork and culminating results. In this section I demonstrate using images of film stills, digital illustrations, photo documentation, and discussion about how this work answered my hypothesis. Finally, there are the conclusions. Here I summarize my findings, reiterate questions and confirm answers, leading to a final resolution achieved through the creation and expression of this thesis project.

1.2 Theoretical Framework

For the purposes of this document, I will describe the manner in which I intend to employ the key terms I will be using. These key terms are primarily referring to philosophical propositions, so in order to provide some context I will briefly outline the key ideas and thinkers associated with them. Some of these ideas branch out and have been written about by many philosophers, so I will indicate which authors I am emphasizing and which strain of the ideas I am going to discuss.

New materialism opposes the dualism of transcendental and humanist structures. New materialism as a term was coined in the 1990's by Manuel DeLanda. New materialism argues that the mind is a by-product of the body, that the mind is created by the body so is therefore always material. This contemporary philosophy is based on scientific and technological advancements which Karen Barad discusses in her books and lectures.

Barad's concept of agential realism argues that all matter is equal, but that this matter has agency and only comes into being through the act of inter-mingling with other particles of matter. Agential realism removes the historical dualist frameworks by using quantum physics to "prove" that there is no separation possible between mind and body, or human and world for instance, because there is only matter *mattering*. So, even language, affect, memory, personality, consciousness, are physical manifestations of entanglements of particles engaging in an *intra-action*,a term coined by Karen Barad.

Agential realism is a new materialist concept and stands alongside other similar theories which also reject human-centered approaches to being and sees things as irreducible to the

sum of their parts but also not dissolvable into a greater mass - a flat ontology with each part existing as equally as the next. Object-Oriented-Ontology is a theory which treats all matter as being equal — removing anthropocentric hierarchies and levelling everything to the status of merely existing. Everything is made of the same matter and abides by the same laws of space and time, however things have different effects, purposes, properties, and superficial qualities. Graham Harman is one of the prominent thinkers of this concept and takes on other philosophers writing today to either dismantle or agree with their theories through the lens of his own ideas.

GIven that all matter exists equally, there is no divide between the internal human and the external world. All phenomena that occurs to a person on or within a body either physically, psychologically or sensorially occurs as a natural consequence of inevitable automatic external determinants which combine and shift to cause affect over and over with each new moment of perceivable experience. Thus the body is a vessel for the affect that flows through our society and through individuals. Deleuze and Guattari are authors of many philosophical theories, often breaking down and re-combining theories to create new ways of understanding the different facets of being. One of their philosophies which is still widely accepted as valid today is that of Affect. This can be understood within their concept of assemblages which Manuel deLanda writes about extensively, which is not unlike the flat ontology of Object-Oriented-Ontology, and is made up of layers of assemblages, or matter. So to understand individuality in this ontology, the subject can be seen as being constituted at the abstract point of intersection between the physicality of material objects and the inner world of consciousness. The essence of what makes a living organism different from an inanimate object is an undefinable, unidentifiable energy which is neither purely chemical or physical. Life is self-determining in that it is a force or phenomena beyond our capacity to grasp or deliberately effect or measure it. This is an idea still under debate, and can be traced back to vitalism, and which stands in opposition to new materialism. Deleuze and Guattari, Harman and DeLanda believe in the capacities of things which exist in a virtual realm and can be tapped into depending on their relative contexts. This

idea is expanded upon and differs among the four authors yet the idea of a hidden essence is stable among them. New materialism has no room for this essence because everything that *is* is in the present moment because of its action, and therefore any so-called capacity either is or is not in the moment and what is to come changes not based on a presupposed energy or vitalism but by the actions of other matter.

1.3 Motivation for undertaking the research

Two years ago, I discovered the joy of building electronic circuits. That curiosity lead to building circuits with sensors, and eventually to arduinos and physical computing. My background is in traditional visual arts, tactile mediums like paint, clay and wood. I believe that is why, even as I shifted from analog or traditional arts to digital or new media I held on to that tactile aspect of the artwork. Much of the work I do now is based in physical computing, with interaction from the participants with a tangible interface that elicits touch, and spending time 'getting to know' the piece. The works include behind-the-scenes systems of logic made in computer programs like Processing and MaxMSP, and hardware such as sensors and Arduinos. The focus of these encounters is to create new kinds of interaction, ones that are unexpected, possibly delightful or repulsive, yet engaging. I am always curious to see the different ways in which people will interpret the purpose of the object or creature and behave accordingly. I believe that each person has their own preconceived ideas of what the interactive objects are, and how they should react or behave, all based on learned experiences and their individual socio-cultural backgrounds. With these questions in mind, I now ask how can a work of art engage the participant in a more deliberate way, and how can the materials' agency and the artist's process become visible to the audience without being expressly shown in documentation or explained in writing?

Through the lens of new materialism the materials involved in art-making have agency. With this agency the processual aspect of the artwork is engaged in equally by the artist and the materials. During the diffusion of the work, this engagement could be conveyed to the

participant materially, not through explanatory panels or descriptions or even photo and video documentation. The materials are tactile. The engagement between audience and artwork could be tactile as well. By feeling the materials and interacting with the artwork the process of creation is extended through participatory exploration. Our past experiences with art are primarily visual, or audio-visual, in cases of film and performance. But when combinations of multi sensory experiences, visual, auditory, haptic, movement, and cognitive response, the body is more engaged; a more holistic and embodied experience becomes available.

Interactive, participatory art is not so new and many works have been made which do engage multiple senses and the mind and body more actively than traditional art forms. I do not see this as a passing trend, rather I see it eventually becoming the norm. As people increasingly see more of this kind of art they become accustomed to it and begin to expect new media artworks to be interactive, or to *do something*. It is not sufficient that a work be only a static visual object. This recent art form that has emerged is a medium unto itself. Whether kinetic, interactive, haptic, multi-sensorial, sound, reactive, or any combination thereof, the possibilities and the immediacy of what can be conveyed by the artist to the audience are more numerous than with traditional mediums. The element of time is a crucial factor, rather than the audience standing back and deciding how long to engage with the artwork, it is the artwork which incites the extended engagement of the participant.

1.4 Research Question and Rationale

Reprioritizing Matter

How does interaction and participation with an artwork at the level of creation as well as during its diffusion create the possibility of expanding the experience? What role do the materials play in these processes? How can the participant become more involved in this process to tap into some of the creation process rather than remaining a bystander at the hand of a creator? Will this connection allow for a more rich, inclusive and direct experience and exchange of affect between artist, artwork and audience? Below I will discuss the reasons that the philosophy of new materialism, which places agency on matter, is essential to put forth, explicate and utilize to

understand our being in and our interaction with the world. In understanding the world in this way, so too might we understand our creation of and interaction with art. If according to the theories proposed here matter has agency, then it is possible that the act of making art and the subsequent interaction with it also embodies these agential capacities. In the introduction for *New Materialisms: Ontology, Agency, and Politics*, edited by Dianna Coole and Samantha Frost, Coole and Frost argue that "Foregrounding material factors and reconfiguring our very understanding of matter are prerequisites for any plausible account of coexistence and its conditions in the 21st century" (Coole and Frost 2010, 1). As early as the first half of the 1990s, technosciencist and feminist theorist Rosie Braidotti began to write about the need to reorganize philosophy in order to dismantle the binaries of male-dominated discourse and remove the hierarchies of Eurocentric histories. She writes that "It is urgent to think about the nature and the status of thinking" (Braidotti 1993, 5) on why there is such a need to explicate philosophy in this new way. In Chris Salter's book *Alien Agency: Experimental Encounters with Art in the Making,* he proposes the idea of Ontogenetics: not what works of art *are* but how they actually come to *be.* He calls for "a different view of the world as: dynamic, temporally emergent, contingent, performative" (Salter 2015).

Humans and matter are one in the same (Coole and Frost 2010, 2). It is not humans, then matter, it is always both. Coole and Frost write that though humans are composed of matter we seem to take little notice of this, or otherwise do not seem to care. "Because traditionally we don't think of language, consciousness, subjectivity, agency, mind, soul, imagination, emotions, values, meaning as being MATTER" (Coole and Frost 2010, 1).

Our tradition of anglo-continental philosophy privileges language, discourse, culture, and values. These are values and traits common to only a few academics, scholars and others; the vast majority of people and things simply do not fit within this arrangement. Therefore it is necessary to rethink the entire approach to philosophy and replace the old notion of a human

separate from and within a material world. These anthropocentric assumptions not only wreak havoc among people by placing hierarchies on them and on different approaches to learning, but on the natural and animal world as well. The human-centered approach to living has resulted in the exploitation of all that is deemed of lesser value. There is an ontological reorientation required which shifts importance laterally and uses materiality to provide a solid foundation which is unambiguously comprehended. Matter takes on a life of its own, in a sense, when it is seen as exhibiting agency (Coole and Frost 2010, 3).

Matter is More than its Physical Material

In *Embodiment, Sexual Difference and the Nomadic Subject*, Rosi Braidotti (Braidotti 1993, 3) references Deleuze's idea to think differently, and the need to change the mode of theoretical thinking from a structured, linear style where the author is defined, then his arguments are either validated or rejected to a free and disconnected philosophy. Braidotti argues that there are so many female authors today who take on the role of "dutiful daughter" (Braidotti 1993, 3) and accept the lineage of male philosophers and the role philosophy plays as a master discourse. Only now do we realize, or have the capacity to vocalize, the misguided picture we had of what it is to think and be. Legitimizing feminist theory as philosophy makes the distinction between the oppressive male-dominated and Eurocentric history of philosophy. Braidotti advocates for a separation of the "activity of thinking from the institution of philosophy" (Braidotti 1993, 5). Ways of doing this include *embodied subjectivity* - taking responsibility for one's agency, *transdisciplinarity* - using multiple fields of study to understand the other and being able to view the world in new, more objective ways, and "Deleuze's deterritorialization and becoming-nomad of ideas" (Braidotti 1993, 5). As well as mixing modes such as theoretical with poetic or lyrical writing to move in another direction than the rigid formats that we have come to accept for so long. Practicing philosophy as a form of conceptual creativity which we see in philosophies like OOO, and in particular Ian Bogost's idea of Carpentry (Bogost 2012, 91) as a way of enacting philosophy, diminishes the need for discursive practice which places emphasis on language,

writing and argumentation, and to use Karen Barad's term, seeing philosophy, and living matter, as a 'material-discursive' practice (Barad 2009), which presents the idea that discourse can be achieved through material engagement, because everything is always already material.

Agential Realism argues that matter has agency and only comes into being through the act of inter-mingling with other particles of matter. This begs for the dissolution of the historical dualist frameworks by using laws from quantum physics to demonstrate that there is no separation possible between mind and body, or human and world for instance, because there is only matter *mattering*. So, even language, affect, memory, personality, consciousness, are physical manifestations of entanglements of particles engaging in, to use Barad's term, an *intra-action* (Barad 2009).

The idea that the object of the subject's mirrored image is by nature separate because there has to be a difference between object and reflection is put into question when you consider that the mirror image is nothing but the refraction of light and its interaction with geometric shapes; it is not in and of itself another being. It is important to highlight that knowing is a fundamentally material action, or to use Deleuze's term, *the folding* of the material possibilities of agency, an ebb and flow of cutting apart and mending together. It is not knowing from afar, there is not a separation or distance. We decide what matters, what is included and what is left outside the cut of importance. "Instead of there being a separation of subject and object, there is an entanglement of subject and object, which is called the *phenomenon"* (Barad 2009). The two are separate yet to exist they must co-exist and co-constitute each other through the act of being itself. Barad refers to the term *phenomenon* to describe any such intermingling between anything; objects and thoughts, people and nature, writing and memory, molecules, and everything in between. It is by the *act* of the two or more things meeting which constitutes their existence.

Art Practice as Already Material-Discursive

The materiality of artistic practice is a bio-sensual performance. This performance is the agency and materiality from the point of view of making; art-making is not the descriptions that depict it after the fact, it is not the images which are used to represent it, or even the experience of it once it has been created. Rather, it is the act of coming into being that is what constitutes the art. It is this creation, moment after moment that is relevant. Chris Salter describes this process of making as not just a discursive practice, but actually enacting the world it proposes (Salter 2015). In this sense, art-making is a form of knowledge production, it is creating the future, so to speak. According to the new materialist framework, the materials used in art-making themselves are active, dynamic, and changeable. So the materials themselves play a role in the creation and experimentation of the invention. The materials are actants, *intra-acting* at the level of matter with the artist creator — removing the overarching human agency the artist once possessed and opening up the process to a give and take between the act of creation and the agents involved.

Salter describes this phenomenon in a question he poses during a lecture given in Berlin. He asks “How is it that artists/researchers organize the conditions for experimental performative assemblages to form and catalyze other ways of knowing and being in the world that side-step all of these old philosophical dichotomies between subject and object, human and non-human, mind and body, knowing and experience. And how can this matter actually come together to exert powerful affects on our bodies and soul?” (Salter 2015) The artist brings together materials and together the artist and materials unify during the making process, eliminating the separation between them or the idea that the artist is merely using materials to reach a goal. As much as the artist enacts upon the materials and moves them, shapes them, generates new forms and ideas with them, so too do the materials enact upon the artist. The artist is continuously reacting to the affects manifesting within themselves in relation to the materials and how the process is unfolding. Throughout the course of my thesis research, I recorded video and photo documentation of the making process. Often it was experimental,

visceral, physical, thought-provoking, and emotional. The documentation is used as a tool for reflection and to better understand the experimental making process and the affect it creates.

1.5 Research Methodology and Approach

A qualitative and experimental approach is best suited for my project. The Research Methodology I have chosen to use for my project is qualitative, with methods including research as prototype, iterative design, documentation and reflective practice, material-discursive reflection, visual thinking, critical making, and experimentation. The approach is studio-based experimental research. It is a triangulation of multiple methods based on the new materialist ontology. I will discuss how I chose my methods, followed, in the Project and Process chapter of this thesis, by a summary of my actions, and subsequent conclusions drawn from the research.

Visualizing Research A Guide to the Research Process in Art and Design by Carole Gray and Julian Malins provides a good, in-depth account of the types of methods and methodologies available to arts practitioners. (Gray and Malins 2004). They associate ontologies and epistemologies with methodologies (Gray and Malins 2004, 37). The ontologies and epistemologies are positivism, post-positivism, critical theory, and constructivism, each with corresponding descriptions of the realities that comprise them and their appropriate research methodologies. The methodologies proposed for positivism and constructivism are experimental/manipulative and hermeneutic/dialectic, respectively.

However, given that the ontology I am proposing is not yet common practice, I will need to investigate multiple combinations of the ones already existing, supplementing with other methods from different practices more akin to the new materialist framework. Experimental-manipulative research involves a separation between the idea and the outcome by providing a hypothesis at the outset then using physical experiments to confirm or refute it, this realist ontology does not lend itself to the kind of direct, unfiltered knowledge generated by the act of visually reflecting on process. Hermeneutic-dialectic methods will be useful for putting the research into comprehensible formats, as well as supplementing other methods by acting as a

separate means of documentation through which to reflect, as long as the reflection is done very quickly after the process to not lose the sentiment of the moment. I have used this method on my thesis blog when reflecting on documentation footage of my process. It has been useful to maintain a discursive blog-diary, in addition to video and photo documentation, to keep detailed accounts of what took place so that at the end of the project I can use the writing to bring together a consensus on whether or not my hypothesis succeeded.

For my purposes I will need to use aspects of both of those methodologies and others as a triangulation of methods. Having research in multiple contexts and forms allows for more robust and dynamic objective perspectives. Experimentation and manipulation happens with material exploration, however this method provides a hypothesis at the outset, which acts as a barrier, preventing the present moment from being, in fact, present and contributing to the overall construction of the experiment. Documentation and reflexive research provide insight into the causal relationships presented in the process of making. It is difficult to reflect in the moment, so providing video recorded documentation allows me to relive the moment and conjure up the emotions, thoughts, issues, resolutions that were experienced during the process, which ultimately is the work. The materials play a role in those decisions, so using them as merely a tool to execute a hypothesis is not sufficient.

This method is what Gray and Malins refer to as reflective practice. It is “how professionals think in action” (Gray and Malins 2004, 39) It is the result of fearing the loss of creativity by speaking or writing about it. It is a “reflection-in-action” or visual thinking and relies on improvisation, emotion, affect, response, and adjustment. It is a conversation one reflects upon while engaging with the materiality of a situation. I have also acted as the *practitioner as researcher*, to borrow Gray and Malins’ term, wherein the researcher identifies problems raised in practice and responds to them through practice. The practitioner as researcher generates research material and participates in the creative process. They are a self-observer through reflections on their own actions while in the act, as well as through discussion. In addition to

these methods I have used *critical making* as a research tool, a term that Matt Ratto coined in 2008. According to Ratto, “critical making is an elision of two typically disconnected modes of engagement in the world—‘critical thinking, ’ often considered as abstract, explicit, linguistically based, internal and cognitively individualistic; and ‘making, ’ typically understood as material, tacit, embodied, external and community oriented.” (Gray and Malins 2008, 41) It is the intersection between conceptual, discursive oriented thinking and making in the material and physical realm.

2. Literature and Practice Review

Literature Review

Introduction

How does affect theory fit into the recent shift in philosophy of what reality is? Starting at Quentin Meillassoux’s correlationism, I will discuss the ways these contemporary theorists have changed the way we interpret affect; for Meillassoux it’s about the relation of the mind to the world, the inescapable vantage point through which to analyze the world from within your own human mind (Harman 2007).

In Gilles Deleuze’s theory of Individuation wherein a person is a discrete thing, distinct from other people and although shifts of *territorialization* occur, the changes result in affected and affecting individual entities (Deleuze 1978).

Karen Barad’s theory of agential realism stipulates that all things, down to the smallest level are only in existence through their action with other things, and that together they co-constitute themselves, this is the point at which things really start to cover new territory in philosophy. She argues that “Matter feels, converses, suffers, desires, yearns and remembers” (Barad 2009, Lecture transcript).

In Object-Oriented-Ontology, to Graham Harman there exists a background, wherein the hidden essence within all things is what makes change possible, that if everything is only in existence because of an interaction then why would there be change (Harman 2008)?

Levi Bryant uses the term 'plasticity', to demonstrate that change would be possible, we only have to "conceive of things as plastic, as fields of capacities and powers that can be creatively actualized in a variety of ways under different interactions" (Bryant 2016, 39). This use of plasticity resolves Harman's critique of barad's theory of agential realism.

Finally I will look at John Shotter's take on agential realism in terms of cognition and affect. Through these discussions I hope to determine whether this new ontology will sustain or reject Deleuze's theory of affect and what the implications of those outcomes may be. Subsequently I use the argument I form through this discussion as the basis for my research inquiry and theoretical framework.

Correlationism and Individuation

In After Finitude, Quentin Meillassoux defines correlation as the idea according to which we only ever have access to the correlation between thinking and being, and never to either term considered apart from the other. This theory can be applied to any system of being, such as thought and body apart from the world, or between language and being, or power and knowledge. Regardless of the circumstance, it remains that there is a separation between being and subjectivity or language or power and *yet* they cannot be thought of as disconnected from each other (Harman 2007).

For Meillassoux, the theory of correlationism has been the central tenet of modern philosophy, whose origins lay in the writing of Immanuel Kant. Kant argued that it is not possible to know reality as it is in itself, separate from us, but only how it appears to us. If the mind has the active role of structuring our reality for us to know, then we are unable to determine what is a construct of appearances created by our mind and what is the perception of things as they truly are in and of themselves. This is because we cannot conceive of perception outside of the

construction of our minds, nor take on a third-person perspective to take an objective look at things. It is impossible to conceive of an object as an absolute, we are unable to distinguish between the reality of the object in itself as compared to the reality of the object provided to us by our subjective access to it (Harman 2007).

Meillassoux rejects correlationism through discovery of how to break free from the correlationist cycle. He posits that if we can make claims about the existence of cosmic life prior to life as we know it, then perhaps it is possible to come up with a way of thinking about being in-itself as apart from our minds, since at one time that state existed (Meillassoux, Brassier and Badiou 2015). If reality is an interactive construction consisting of an observer and what is being observed, and these are two interdependent entities of this system, then objectivity is merely an illusion provided by the observer, independently of whom the observed could still exist. This logic implies that perception is reliant on the means of a linkage between observer and observed (Giannetti 2017). We will later see how this notion is expanded upon with Karen Barad's example of the mirror reflection of the self.

For Gilles Deleuze, this linkage consists of bodies, or people, as being discrete entities, distinct from the world, but also from one another, who shift and interact with each other, effecting changes or *differing*. Yet within that system, which he refers to as *individuation*, after the changes occur, the bodies do not become autonomous actors on a stage or an empty, passive background. Instead, the individuals remain bound to the underlying background through which they've constituted themselves, and the process can continue to develop infinitely (Deleuze 1978).

For this process to occur, Deleuze puts forth the theory of *assemblages*, which consists of three states of being, *territorialization*, *deterritorialization*, and *re-territorialization*. The process of territorialization is comprised of links and connections between bodies, not only humans but actions, reactions, forms of expression, acts and statements. Deterritorialization is when these links come apart and recede into the background, whereas reterritorialization is the process of newly formed connections being made — thus the cycle of assemblages (Bryant 2016).

Although the emphasis is on different aspects of being, such as a passive observer versus an individual *becoming*, or actualizing themselves, both Meillassoux and Deleuze's theories are grounded in the idea that there is a separation between individual and background, being and world (Harman 2008).

Barad's Theory of Agential Realism

While those theories may suffice to explicate the state of being in the world through the eyes of a person, the correlationist approach has been criticized as anthropocentric and inaccurate. Enter Object-Oriented-Ontology. But just before I get there, I want to start with Karen Barad's theory of Agential Realism. It can be said to fit within the realm of Speculative Realism which is based on Meillassoux's rejection of correlationism and as well as Graham Harman's theory of Object-Oriented-Ontology, another form of realism as well as new materialism.

Realism, as expressed by Manuel DeLanda, is the view that the world exists independently of the mind (Harman 2008). Realism deals more with the world, and less with our human-centered access to the world. However, in *Meeting the Universe Halfway,* Barad's realism is "Not about representations of an independent reality, but about the real consequences, interventions, creative possibilities, and responsibilities of *intra*-acting within and as part of the world" (Barad 2009). She speaks of entanglement; of things as being not autonomous but the act of two things *mutually co-constituting* each other.

What appears to us as physical substance is really just, as she puts it "a congealing of agencies" (Barad 2003). In contrast to Deleuze's theory of becoming, rather than passing from one state or thing to another over and over, to Barad, becoming is an unending dynamic amalgamation of matter interacting together in the present moment.

In the same way, she questions Deleuze's idea of individuation because she does not see the world as a static system of interrelating objects, rather as an active state of things which through their actions become distinct things, with boundaries and individuality, that those possibilities did not pre-exist one another, but were created out of the *intra-action* of co-mingling

entities. This process is referred to as *performance*, and Barad privileges this understanding of the world over the static *being*. In this way she relates to OOO by not wanting to make a separation between humans and things, stating that “everything co-constitutes everything else” (Barad 2003), abolishing any kind of hierarchy.

For Barad, ontology becomes a performance of phenomena where matter is produced and generated as much as it is productive and generative. Within this concept of performativity, there are all kinds of material beings *intra-acting* and modifying one another. She uses the term *intra-action* over interaction because the interaction supposes pre-existing entities, whereas *intra-action* is the moment in which the entities arise. She believes in an ontology where a performance is just an *intra-action* among related components, and phenomenon would be the unit of intra-acting components produced in a performance. These agential units are constantly in action, there is no thing prior to the performance, and the result of the intra-acting of materials is the production of real qualities in things. For instance, when something is burned, it goes through a chemical change where the molecules themselves, through their contact and engagement with each other, manifest something new — atoms making or breaking bonds with each other. It was not one acting on the other, but the acting together which made the change possible (Bryant 2016).

OOO According to Harman and Bryant

Graham Harman, although in agreement with the setting of Barad’s philosophy, disagrees with her on a few key points. The individual is at the core of his philosophy, and as such he rejects the idea of removing the *thing in itself* that we have seen in Deleuze’s individuation, because it “strips the individuals of cryptic character, by making them nothing more than what they accessibly are here and now we deprive them of any unexpressed reservoir that might lead to future change” (Harman 2016). He is an advocate for Object-Oriented-Ontology, meaning he sees all things, beings, occurrences and states on an equal plane — each individual unit is equal to the next, regardless of their make-up.

However, unlike some of his contemporaries, he believes in the idea that things have an undiscoverable hidden potential that remains withdrawn from full expression in the world. He views the lack of individuality in Barad's theory as a flaw in her ontology, and in stripping the matter of its untapped potential removes the possibility for something new to occur because everything is already all that it can be. He claims that in doing so, Barad reduces things to their *effect* within a particular context, creating a world in which nothing can be more than its current relation with everything else, thereby making change impossible (Harman 2016).

His theory of *duo-mining* is an example of his disaccord with Barad's take on reality. He sees most philosophies as doing one of two things, either taking a reductionist view on the expression of a thing by describing what it is made of, or by viewing it through its outward effect on the world. In either case, it ignores the inner-reality which to Harman, makes such effects possible. Barad's ontology is a bit like Heidegger's idea of a bundle of qualities, where, as an example, there is no such thing as *moon*, only its qualities, such as round, white, luminous, and that these particular qualities appear together so often, that it is given a nickname and considered as such for the time being (Harman 2016). Deleuze had a similar thought to this about the effect of artwork. He liked to think of art as a bundle of affects waiting to be augmented, tampered with, rearranged, tapped into and experienced (Deleuze 1980). The latter requires a pre-existing object however, or a fundamental state waiting to be discovered, which is more aligned with Harman's philosophy.

In contrast to Harman's ontology, Levi Bryant sides with Barad about the nature of matter. Although essentially similar to Barad's *intra-actions*, he uses his own term to describe the processes of performance and phenomena. He claims that beings and phenomena are plastic (Bryant 2016). This idea of *plasticity* entails *being* as characterized by the ability to be fundamentally fluid in form, quality and capacity; powers that can be creatively actualized in myriad ways in different contexts. He agrees with Barad's notion of ongoing agency and that subjects emerge from a field of possibilities. However, for Bryant, the way in which we actualize phenomena involves a dimension of implicit choice.

Take his example of the old man who walks with a funny gait. The man's walk is the result of a life at sea as a worker on a barge. He shifted his stance and altered his movements to remain steady in resistance to the crashing waves rocking the boat. Bryant describes this phenomenon "as if the waves had been made flesh, though this is not quite accurate insofar as his particular way of walking and standing results neither from the waves nor his body, but rather from the collaboration of the two. It is the intra-action of the muscles and bones of his body, the waves, and the shifting surface of boats and barges that produced this phenomenon or unique way of standing and walking." (Bryant 2016) The man's gait was changed by being in his environment. Had he lived a life as a bus driver, for instance, it is almost certain he would not have acquired the funny gait. We all enter into endless processes of decision making which ultimately change the course of the outcome of our lives and has an impact on our physical bodies.

Harman and Bryant both agree with Barad's new philosophy of agential realism, and advocate Object-Oriented-Ontology. However, they share fundamental differences in the manifestation and subsequent existence of matter, being, and perception. It is unclear whether these differences are reconcilable within a unified theory. To make the case of whether or not these differences may exist in harmony I will now examine the manifestation of affect through the lens of both Harman and Bryant's agential realism. The affect to which I will be referring is based on Brian Massumi's interpretation of Deleuze's theory of affect and specifically from Deleuze's lecture at the Cours Vincennes on Spinoza's concept of affect. I think that by applying the theories to practical examples, it may shed light on the potential flaws of either Harman or Bryant's take on agential realism.

Affect in an Agential Realist World

At this point, I will elaborate on what Deleuze's notion of affect consists of to contextualize affect through Harman's Object-Oriented-Ontology. What is called affect or feeling, such as pain, or love is non-representational. There is the idea of hurting or of being in love, but the feelings

themselves do not represent anything in and of themselves. Based on the notion that our lives are a succession of ideas that follow one after the other, one idea replaces another, looking out the window, a new idea, the phone rings, a new idea (Deleuze 1978). “Spinoza employs the term ‘automaton’: we are, he says, spiritual automata, that is to say it is less we who have the ideas than the ideas which are affirmed in us” (Deleuze 1978). The ideas affirmed in us are the result of our interaction with the world, and since we are always interacting with the world, by the very fact of being alive, we are always manifesting affect - moment after moment, one after another, endlessly. But the affect we experience is a manifestation of the outside world within our bodies. The affect exists in another form - as the thing being observed - and is then transferred through our senses to be perceived as affection (Deleuze 1978).

It is the passage from one state to another. So a pre-existing body is presumed, which is either affected or does the affecting. Whether it is a body, a mind or an inanimate object, there exists here a pre-existing potential to be affected. When something is affected in a positive way, the power to act is increased. When it is affected negatively, the power to act is decreased. The example Deleuze gives is when someone says “I have such a headache I can’t even read anymore” it is the affected state of the eyes being tired or some other physical reaction now preventing the body from continuing the same course of action (Deleuze 1978).

However, he points out that we are “spiritual automata”, and that within each of us is the entire line of ideas one after another along which we either diminish or increase our affect, this is his definition of what it means to exist (Deleuze 1978). Affection is a state of a body as it is after it has been subject to the action of another body. For Deleuze, to be affected in a particular way presupposes the individual upon which the affect can be affected and only then can the outcome exist as a response to the affect. If, as in Barad’s theory, there was no individual or pre-existing being, there would be no possible reaction, and her ontology would not be reconciled in this context of affect theory.

Affect Through the Lens of Agential Realism

So, in order to maintain Barad's theory of performance and phenomenon does this mean we have to reject Deleuze's affect? I do not think so. John Shotter has written about psychology in relation to Barad's agential realism, and through this understanding we can see how it is possible for Affect theory to have a place there. Not that there is a pre-existing essence, but that in all things *intra-acting* and becoming phenomena there are *somethings* occurring somewhere else than within the subjects or players themselves — occurring within the greater flow of activity within which the players are acting. Emotions can also be viewed as relational performances. It can be said that we *do* emotions rather than feel them, we enact them, or live them rather than have them done *to* us (Barad 2003).

Shotter suggests that what we usually name the inner world of our consciousness can, because of the performative expressions we grant it, be directly related to the material, outside world (Shotter 2014). No longer is it the case that an inner emotion is one thing and its expression another, rather what we see going on is a partial performance — you are engaged in doing the emotion (Shotter 2014).

Conclusion

Although I am more drawn towards Barad's theory, I am still not convinced that in expressing affect either of the theories adequately summarizes our current state of being. I like the idea of imagining things on their quantum level; all these tiny units dancing and mingling, creating my reality and that my being is the happenstance result of those agential *intra-actions*. However, I believe it is a more direct, and realistic take on existence because to be fair, our only perception is accessed through the present moment, therefore to explain it any other way is metaphysically not possible.

However, I think there is still something unresolved in Barad's ontology about memory and personality that Deleuze and Harman caught on to. If we require these to be affected in a particular way and if everything is only in existence in the moment of its performance, then where do these broader notions that span time and evade placement reside?

In conclusion, I take new materialism to be a valid way way of perceiving life and being. By positioning current philosophers' ontologies next to one another I have provided a landscape which illustrates the way reality is a construction based on logic and argumentation. There is no one philosophy or ontology which is *right,* there is only what fits in the moment. By comparing these theorists to one another and using affect theory as a concrete means to explore them, I am positioning this thesis within the lens that I have constructed with the framing of this literature review.

2.2 Practice Review

Introduction

This practice review is centred around four themes; the emotional and interactive qualities of the sculptural object controller i.e. *sculpture-bot*, the material agency of the work and its visual output, the affect emitting coloured light fields, and the immersive environment. My project can be considered as a collection of these variables which together create the total experience. The artists and works I am reviewing have inspired my work and my process. Parts of each have been borrowed and appropriated, whether in terms of its aesthetic, the affect it produces, the materiality, or the intention. Together in this review I will make reference to a number of artists and explain in what capacity their work has inspired my own, and how they fit together or what makes them different.

Emotion and Interaction with Sculptural Objects: a Give and Take Between Artist, Artwork, and Participant

The works come to life to express the emotions of the artist while reflecting the emotions of the viewer as well as the affect created by the material itself, thereby imbuing affect in the viewer through contagion. This phenomenon can be witnessed in the works of Eva Hesse and Tim Hawkinson. My sculpture-bots are made from found materials and basic electronics, and covered in silicone. The silicone creates an alien-like skin which is squishy and looks surreal,

which seems to make people curious and want to touch it. Much like Hawkinson's *Emoter* the basic electronics and DIY approach to circuit building and sensor making gives the work a homemade aesthetic, while maintaining a functional or machinic quality. Although the electronics in my sculpture-bots are not completely visible, wires are visible beneath the skin's surface which look like veins and provide a clue about the guts of the sculpture.

The work of Eva Hesse modestly proposes an anthropomorphic vulnerability, mimicking visceral organic matter in muted earth tones. Her work, though non-objective, takes on a vividly life-like ephemerality. Varying in size, materials, and juxtapositions, the pieces of organ-shaped or flesh-like materials play with the imagination, conjuring up invisible psychological and spiritual qualities which seem to have come from another world. Scratchy or smooth textures in latex, fibres, and plastics invite interaction, though doing so is not expressly solicited by the artist. The work seems to take a vitalist approach to being. Her sculptures' lifeless bodies contain and exude an energy so implicit they affirm with no uncertainty the existence of a soul, or some ethereal life-energy. Hesse's own bodily performances can be felt in some of her sculptural works. The textures and materials seem to suggest gestures or movements enacted upon them. It is these qualities of ambiguous agency and vitalist energy that play off each other, creating a dynamism which harkens to be experienced, which I find fascinating and have attempted to incorporate in my sculpture-bots. The visceral aesthetic of the silicone skin, the body-like shape of the sculpture-bot and the tactility of being on wheels all provide emotional connections to the work through reminiscence of human qualities. This corporeality is abstract yet inspires affect by its anthropomorphism, the weight of its parts hanging in gravity like bodies or flesh. Unlike this amorphously shaped creature, the electronics inside are of a different nature. They are necessarily organized and deliberately constructed to resemble veins; a trait found in both humans and animals.

Fig. 1. Eva Hesse, *Unfinished, Untitled, or Not Yet*

Fig. 2. Eva Hesse, *Repetition 19 III*

Tim Hawkinson's *Emoter* operates in a completely different way, yet aims to generate emotions in the viewers, so the effect is quite similar despite using opposing strategies. The work features a portrait of Hawkinson's facial features, in 19 parts, each connected to a motor. The motors move according to the input signals generated by the blank, modulating screen of a

small analog TV. The lights signal YES and the darks signal NO, turning the motors on or off at random. The way the motors shift, parts of the face move to create some real and some unknown emotions that are in a constant flux of relatable or unrecognizable emotional expressions. At times a genuine emotion can be interpreted, at which point, the emotion may be felt by the viewer through mimesis. There is the entry point which is the recognition of human emotion, but this relatability gets scrambled from the random input signals and creates a different sensation in the viewer - possible uneasiness, curiosity, delight, or any other confused feeling. Using just simple electronics in the right way, one can create complex ranges of emotion with simple on and off switches. My sensors are not much more complicated than those found in *Emoter*, and although the functionality is basic, they produce large scale effects which can produce an array of affects. When asked about *Emoter* in an interview with PBS' art21, Hawkinson described his process as a kind of chain link to generating affect through activated matter. He said "Then I started thinking about imagery and the face and how any kind of input into the face - no matter how irrational or unpatterned- would still create something we can decipher, look at, and read and get some sort of message from" (art21.org 2016). Because of the randomness of the motions controlling the expressions, the face takes on a life of its own, interacting with the viewers in affective exchanges. The sculpture-bots I have made will blink LED's in response to being touched, sort of alluding to a life of their own through abstract signals. The sculpture-bots become an important feature of the installation because the participants must work together with them to create the visuals and effectively interact with the environment. It is not a viewer interacting with a sculpture or a screen, it is participation and collaboration with the robotic creature.

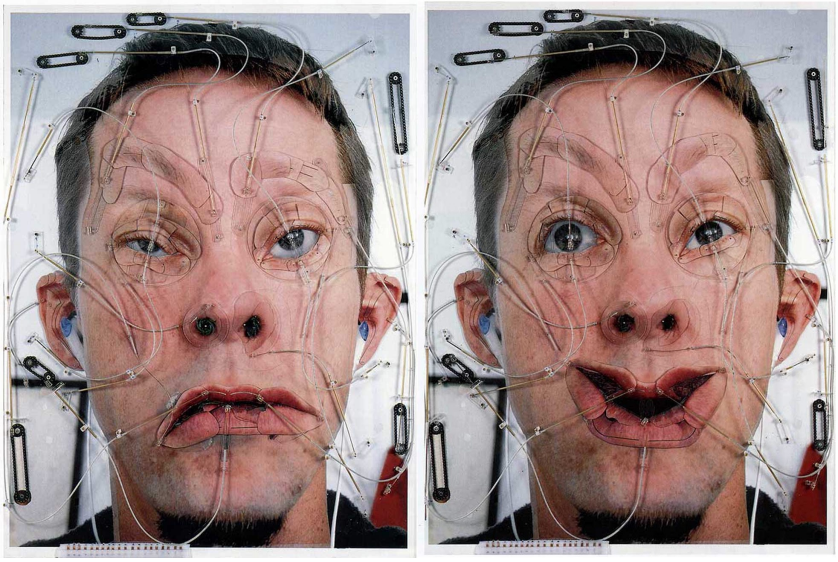

Fig. 3. Tim Hawkinson, *Emoter*

OOO as an Alternative to an Anthropocentric Lifestyle

Graham Harman's concept of vicarious causation explains how objects do not interact the same way humans do, through conceptual realization. But they do interact in their own ways. In *Ontography*, Ian Bogost writes " In short, all things equally exist, yet they do not exist equally" (Bogost 2012). We could decide to do nothing because we think about how we can never truly know the other things that are not us. But what conclusion Bogost makes is that instead we can make ethical conclusions about why we do things. He gave an example he calls an "ethics of kittens" whereby when you think, for example that you do not want to eat animals- you are not doing so for the sake of the animal, but for the way *you* feel about eating animals. So you could try to imagine what it would be like for that kitten that would not want to be eaten — even if it's an intuitive survival instinct.

In the chapter "Carpentry" in *Ontography,* Bogost provides the example of Tableau Machine. Bogost makes the claim that this project is a step towards delivering people out of their anthropocentric tendencies (Bogost 2012). The Tableau Machine was to be an alien presence inserted into a family's home as a non-human intelligent thing. It interpreted its environment in its own way, and its output was abstract and completely unlike how a person

would express what they saw. After the experiment ended, the family perceived the interactive art-bot with some emotion, as a thing of value, to be respected for its own way of doing things and being in the world.

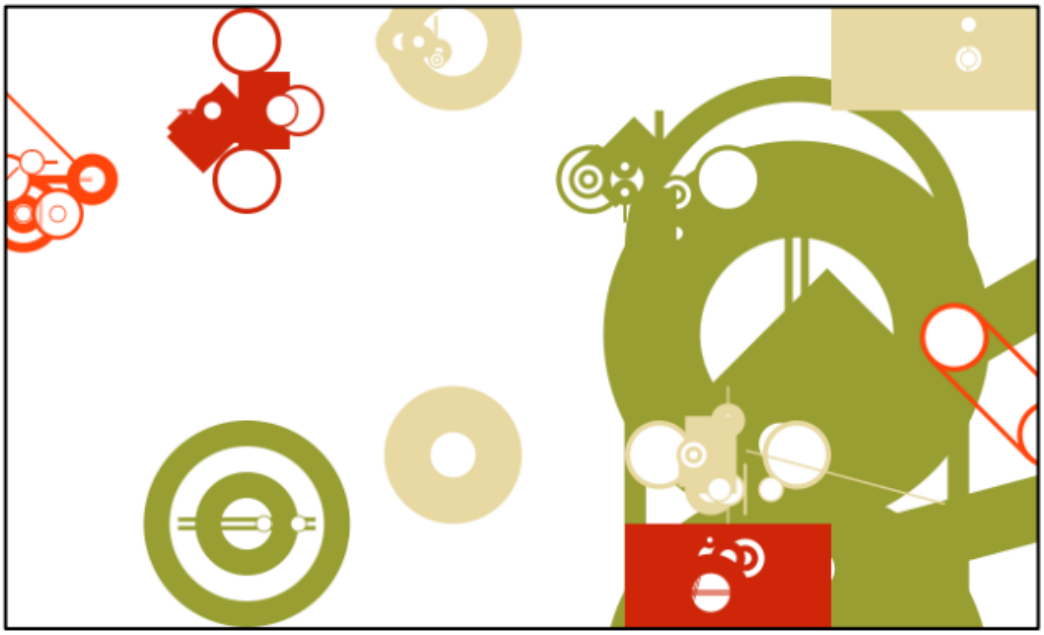

Fig. 4. Mario Romero, Zachary Pousman, Michael Mateas, *Tableau Machine* (detail)

The Tableau Machine is programmed to produce generative output on its own, however in my case the sculpture-bots are programmed to require the participation of people for the non-objective images to appear, which are going to be different every time it is used because the colour fade sequence changes and so does the person. The Tableau Machine was programmed with what the artists refer to as the *grammar,* so a kind of visual language parameter within which the images are generated. The difference between what the Tableau Machine's images are depicting and what my sculpture-bots are depicting in the visuals is based on the grammar, but also on the type of interaction it has with humans. The Tableau Machine is passively watching, it is discreet with its observation and uses visual references to create the artworks. In both cases, the artwork continuously constitutes pMy sculpture-bots are active, they move around, they are haptic and require touch input to create the artwork output, and are immediate

- whereas the Tableau Machine records data over time and then at a certain point outputs the visual representation.

Affect Emitting Light: Using Colour-Fields and Light to Generate Affect

The colour and light aspect of my work involves geometric shapes producing colourfields which envelop the viewer and engulfs the environment in bright coloured light. This is a powerful gesture which elicits physical reactions from anyone seeing the light within the environment. The light is coloured with neon and unnaturally bright or saturated colours to enhance their effect and completely immerse the space in coloured light, whether neon yellows, magentas, reds or paler hues of pinks and violets. The shift from one total colour field to another also has a somewhat disorienting effect because of how drastically the mood of the room changes, depending on the shifts and combinations of colour. Of course there will be times when the participants do not create total colourfields with the sculpture-bots, but do create weaving elliptical patterns of fading colour across the walls. The colour palette I put together works well regardless of whether it is a single colour or is fading from one colour to the next. The intention is to get people to want to remain in the space, so there will be places to sit to make it comfortable for anyone wishing to stay and chill in the colourfields.

Olafur Eliasson's epic installation *Weather Project,* installed at the Tate London, mesmerized gallery visitors, challenging the role of light, and subverting space and perception. The half sphere light source, a giant golden blazing sun, sits beneath a mirrored ceiling creating the impression of a complete sphere, mimicking our earthly sun and inspiring awe among the crowds. People would come in and gaze up at themselves while laying on the floor, sometimes, for hours. It provided the mood and environment for a meditative ambience where the spectators gave themselves to the environment. It is almost as though one's consciousness expands as the limits between the embodied self and the affect in the room become blurred and melt away. The warm colour filling the room caused an effect of deceleration in people's actions

- allowing them to mellow in the expanse of the environment.

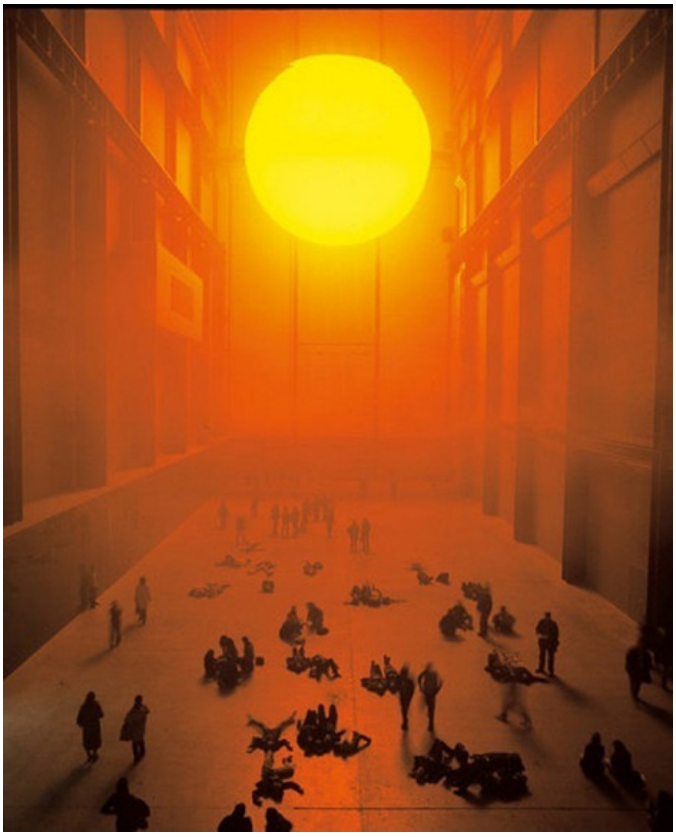

Fig. 5. Olafur Eliasson, *Weather Project*

Eliasson uses perception to entice the senses, however Michael Snow's new colour field series *The Viewing of Six New Works* demands a veritable optical performance of the viewer. With each moving colour-blocked projection contained in individual rooms, upon entering, the brightly lit wall beckons to come in and engulfs the viewer in the perceptual experience. The object, as Snow refers to it, says "look here and look there" rotating and contorting into new shapes of performing colour (Snow 2016). The light transmitting geometry presents the endless possibilities of potential perceptions, evading definition, yet performing all possible positions, real or imagined. Snow refers to his work as ephemeral, where even something static is in flux because of the constant movement of our perception. From implied perception to contrived, Snow's colourful projections guide the viewer on an affective visual journey, leaving them contemplative and perhaps with tired eyes, due to the intense focus and ocular shifting required

to keep up with the performative activity.

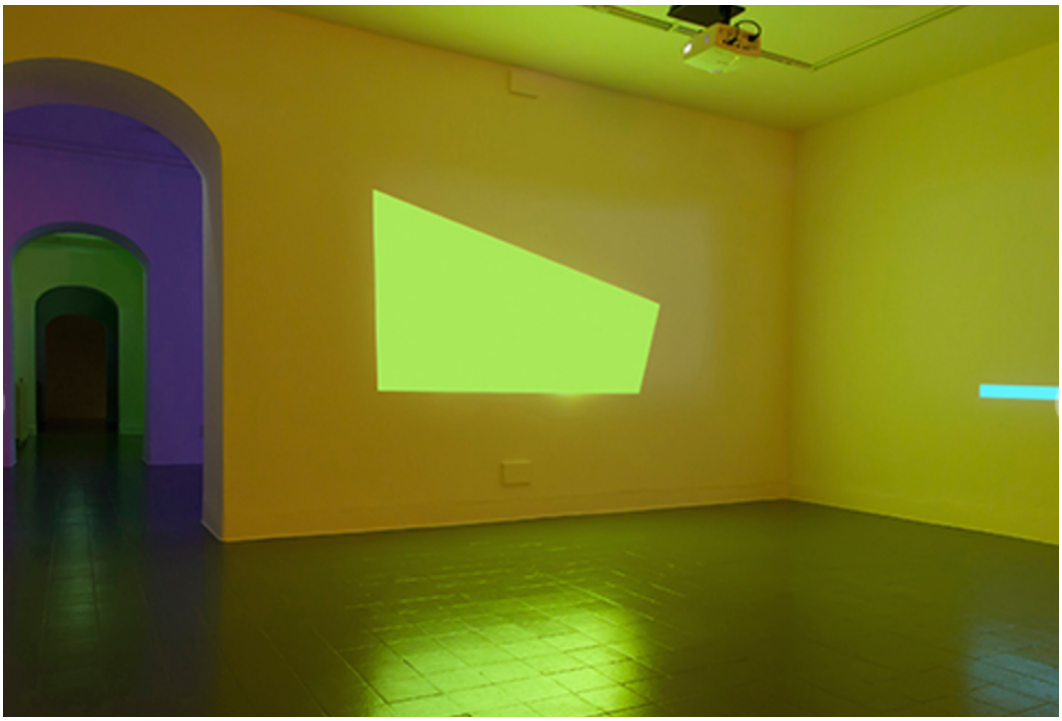

Fig. 6. Michael Snow, *The Viewing of Six New Works*

With a completely different focus, but with equal material qualities, James Turrell's *Ganzfeld* refers to the German word for loss of depth perception, as in a total whiteout. The fully immersive, unmodulated fields of colour take over the room, eliminating walls, floors, edges, any familiar architectural cue. The space manifests an almost religious mood, provoking quiet contemplation in the viewers, much like reactions caused by Eva Hesse's otherworldly sculptures and by *Weather Project*. Turrell's works are a celebration of the materiality of light and the optical, sensorial, and emotional effects of luminance. He likens the experience to a "reflexive vision" where the viewer sees themselves seeing (Snow 2016). The experience is reminiscent of the celestial events of the natural world, bringing the viewer to the tangible

intersection between our senses functioning and the active natural expanse.

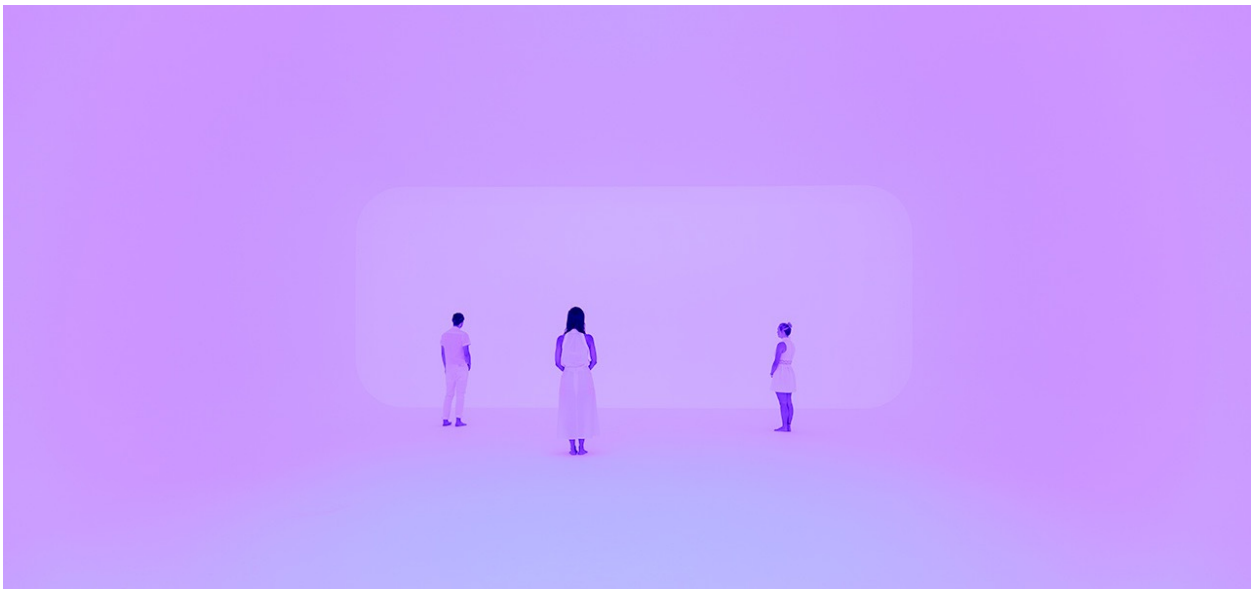

Fig. 7. James Turrell, *Ganzfeld*

Turrell's work *Aten Reign,* "The installation fills the museum's central void with shifting natural and artificial light and intense, modulating colour, creating a dynamic perceptual experience that exposes the materiality of light. Turrell proposes an entirely new encounter with the building, drawing attention away from the boundaries of the built environment toward the interior and fashioning what he described as 'an architecture of space created with light" (guggenheim.org 2017). Inside the Guggenheim, Turrell's installation of intense light filled the space, reclaiming the architecture built with artificial light. Much like the work of Eliasson, the crowd was in awe and looked skyward as if some higher power were shining the neon, shifting light down towards them in an act of omniscience. The emanating coloured lights filled the space, reorganizing the structure of the environment, drawing awareness to the soft space within the walls of the museum rather than to the rigid outer layers. The simplicity of the work is stunning and the colours chosen are just right to create the kind of mood that makes people want to sit and stare.

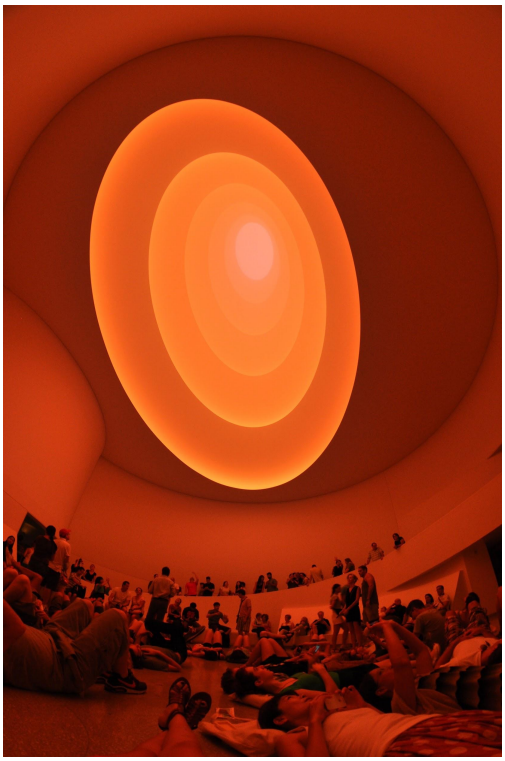

Fig. 8. James Turrell, *Aten Reign*

Environments: From Hand-Drawn and 2D Projection to Interactive, 3D, and Immersive

The participant is encapsulated in the world created by the artist. The participant is removed from their previous reality and can experience the inner realm of another human, or animal, or other being. It is maybe the closest we can get to actually being inside someone else's imagination. The artwork I've created takes on a life of its own, at times, relying on input from the environment or the participants to change the course of its performance.

The space, the environment, the immersion into a different kind of space, one who's sole purpose is to interact with people as an artwork.

Ed Pien's work *In a Realm of Others,* is a fantastic world created within glassine paper structures, incarnated from the imagination of the artist as a mechanism for dealing with emotions of fear and uncertainty which he remembers feeling intensely as a child. The winding paper pathways lead to surprise encounters with ghouls and demons, figures and ghosts, and natural flora and fauna. Disorienting at times, yet intriguing and exciting, the otherworldly atmosphere provides mostly static projected images, wherein the viewer's own shadow begins

to interfere with projections and take part in the narrative. Breaching the ghostly beings at the edge of their world and being transported to the other side, the environment gives the impression that one's own inner ghost is now a part of his world; it has become entwined and immersed in an alternate imagining of reality.

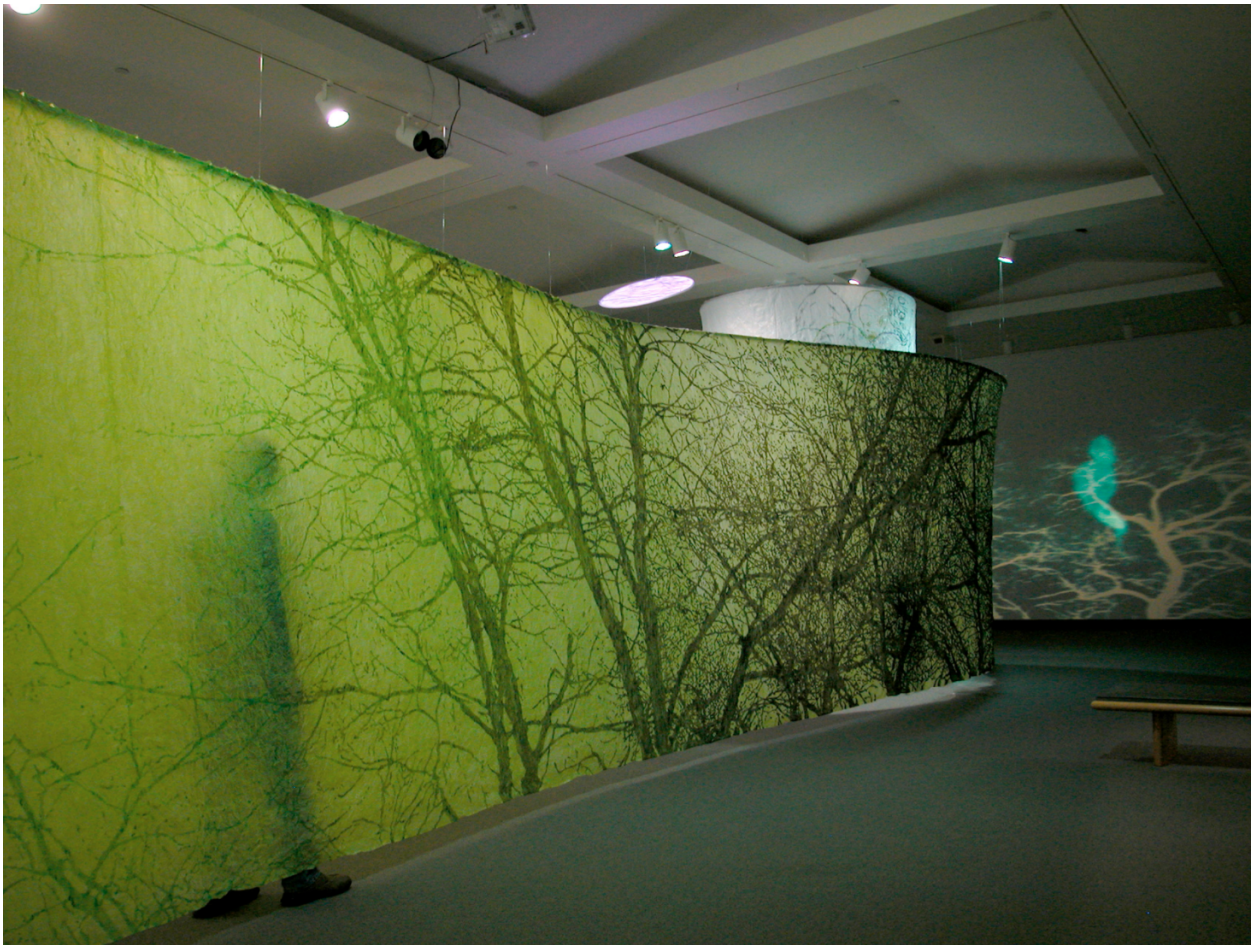

Fig. 9. Ed Pien, *In a Realm of Others*

Yayoi Kusama's *Infinity Mirror Room - Love Forever* is a Kaleidoscopic dream world of endlessly reflecting flashing coloured lights. Into portals through which the viewers may peer, the environment activates, interacts before them, revealing a palpable energy. The concept is simple, and Kusama has said that her work is inspired by her own hallucinations and dreams - as a result, the expansive, unrestricted imagination of the artist comes to life. An alternative environment which effectively makes one's imagination soar. *Pixel Forest* by Pipilotti Rist is a mesmerizing envelopment of sensual, vibrantly polychromatic, kaleidoscope of projections of

the natural world, fusing the world of the everyday with the “technological sublime” (Newly Swissed 2017*).* “Her works bring viewers into unexpected, all-consuming encounters with the textures, forms, and functions of the living universe around us.” (Newly Swissed 2017)

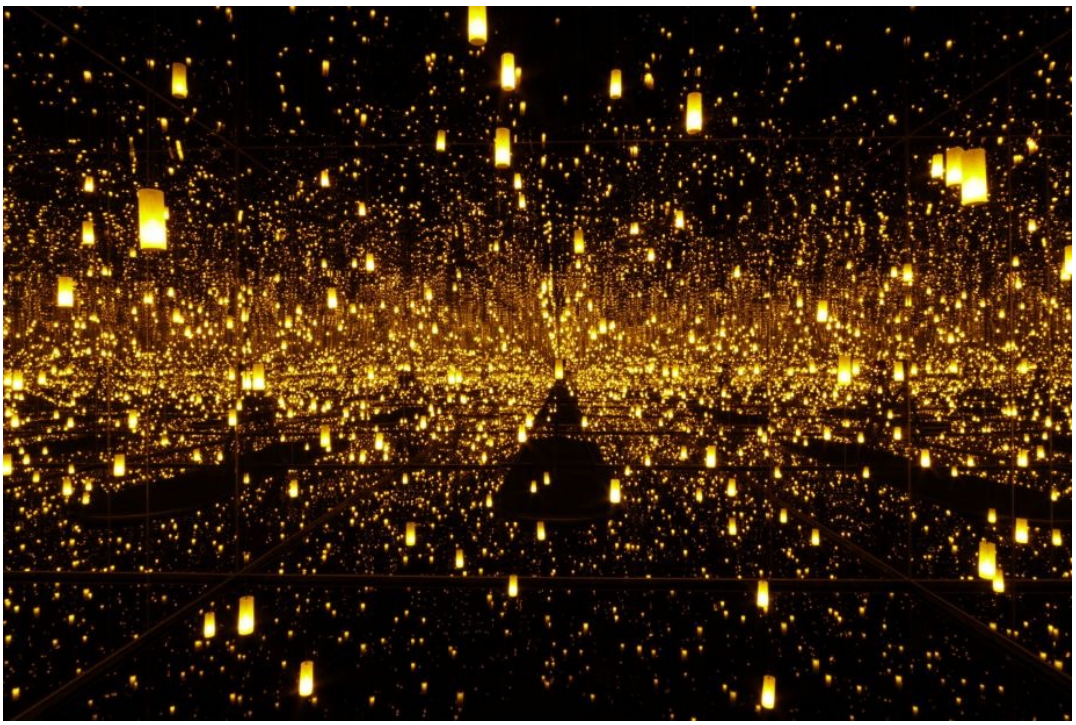

Fig. 10. Yayoi Kusama, *Infinity Mirror Room - Love Forever*

Fig. 11. Pipilotti Rist, *Pixel Forest* (detail)

teamLab's *The Universe and Art: Princess Kaguya, Leonardo da Vinci, teamLab* is moving visuals in a fully immersive, continuously changing, shifting, reacting, reorienting, narrative-driven environment. The viewer is free to walk around, surrounded by projections on all surfaces of the room. The beautifully designed visual graphics projected onto the space creates and interactive environment; the birds fly towards the people in the room but will sometimes crash into them if they do not move, and the flowing swaths of light tend to gravitate towards a central axis to where the individuals are located. If the group comes together, the light beams will centre around the group but it will have more difficulty locating people if they are scattered. TeamLab created another work called *Light Ball Orchestra* which is a room filled with brightly coloured large air-filled balls which change colour and make sound when you pick them up. This is reminiscent of my sculpture-bots' reactions to being touched, as the LEDs under their skin light up as a sign of life.

Fig. 12. teamLab, *Light Ball Orchestra*

Chris Salter's *N-Polytope: Behaviours in Light and Sound After Iannis Xenakis* (2012) is a light and sound installation inspired by composer Iannis Xenakis' 1960s works *Polytopes*. poly meaning many, topos meaning space. It is a performance-installation as a commemoration to

Xenakis' work, but also underscores the instability of our own place in history. Made up of cutting-edge lighting system of 150 10 watt LEDs, lasers, 50 tiny speakers and sound engineering, sensors, a network of aircraft cables, and custom machine learning software. The lights flicker in and out, laser beams bounce off small, and strategically place mirrors to refract the light. In addition to the visuals, the network of speakers has each speaker playing low-fidelity electronic sounds, which creates buzzing symphonies emanating like swarms of cicadas. In the room, there are sofas and cushions which allow viewers to sit or lay for the performance, allowing the spectacle to wash over them. Salter refers to the work as a "re-imagining of Xenakis' *Polytopes"* (Salter 2017) .

Fig. 13. Chris Salter, *N-Polytope Behaviours in Light and Sound After Iannis Xenakis*

It has two modes for presentation; a 15 minute long performance and a continuously evolving mode which can play indefinitely. A network of sensors runs data through machine learning software, generating a forever mutable, reactive, and changeable adaptation. "The agent's [this is what he calls the active parts of the assemblage] actions thus influence not only the state of the environment in the present but also can affect the environment's state in the future." (Salter

2017) The actions of the agents are not completely controlled by humans, but because of sensors, also being controlled by the environment. He describes the performance as “material actions or behaviours of technoscientifically orchestrated things, transient objects and processes.” (Salter 2015).

The analysis of the previous works of contemporary art serves to situate my work within a broader field of research and creation. My work borrows from many different sources, and together culminates in something unique yet somehow strangely familiar. Building upon the aesthetics of some artists’ work and the themes of others I can relate my work to existing, acknowledged work, affording it greater relevance while contributing to the progress of the body of research in this field.

3. Project and Process

3.1 Experimentation and Exhibition

Prototype

The first prototype for this thesis project was an installation entitled *Into the Ephemeral World of Affect* which consisted of two small bulbous sculptural controllers and two projections of walls of changing colour. The sculptures controlled the projections, as you squeezed them, the walls of colour changed. The shape and feel of the sculptures was based on Existenz, a sci-fi film by David Cronenberg (1999). The film had a futuristic setting where the Existenz was a game controller made of human flesh and bone which plugged into your body and transported you to another world (Cronenberg 1999). This inspired my desire to make an installation which allowed the participant to have some control over the sensations emitted by the game, or artwork in my case, and end up interpreting the outcomes as they arose.

Fig.14 Installation view of *Into the Ephemeral World of Affect*

Fig. 15 Sculpture controllers from *Into the Ephemeral World of Affect*

First Sculpture-Bot

During this experimentation phase, working from the ideas derived from the prototype and feedback on it from my peers, I kept an online blog-style journal where I would reflect on the experimental process. The journalling allowed me to work through the thought-process during the creation phase as a reflection on what transpired. As I made the physical part of the project, it was important for me to think about the theories I was working with in the document. This gave the experimentation some limitations and parameters so I could eventually derive meaning from it. It also guided how the experimentation was allowing me to manifest those theories physically and explore them tangibly through process-performance. The following image (Fig. 16) is of the first sculpture-bot, taken from an excerpt from the blog.

The process of making the first sculpture-bot was labor-intensive because I decided to cast the abstract shape I sculpted in silicone. The mould-making process was straight forward, but a silicone pour of this size was tricky even for the highly skilled technicians available to assist me. So it ended up being an experimentation in materials. As I worked, I filmed my

process so I could revisit it afterwards, with a different frame of mind perhaps, and try to understand what my artwork was doing, how it was implicated in the process, how it was shaped by guiding my work on it. I wanted to discover the function of the materials in the process, how they contributed to my decision-making. This dialogue is not easily transcribed into written language, as is the case with a lot of art - art itself is a language and there are certain nuances which simply evade translation.

So, working intuitively, there was a give and take between my intuition, the materials, the ideas I had in mind at the outset, and the theories and ideas I was working with at the time. This is the case for so many artists, this is a popular method of creating experimental research in the form of art. The challenge is to extract knowledge from such endeavours. It did not happen for me right away, or after each session of art-making or revisiting the documentation. But altogether, after months of working through it, something began to emerge - which is the basis of this thesis. I often project my work into thinking about the final product. How will it look, feel, behave, how will audiences respond to it? So in addition to the give and take of what is happening in the present moment, and looking back on the past through documentation, there is that projection into the future - the prediction of an end goal perhaps. My interaction with the audience then becomes present for me while making. Although they are unknown to me and it is only an idea about how it will unfold, that aspect of the life of the work is present in the creation phase. It began to open a dialogue between myself and the future audience of the work. How would I relay something to them through the materials I was working with? Now that the work is in its dissemination phase, ready to be interacted with, it is the turn of the audience to enter into the dialogue with the materials, and respond to what I put into them. This act creates the full circle, where the work can actually be considered complete.

Fig. 16 Sculpture-bot in the round, after being removed from mould, with embedded sensors

Second Sculpture-Bot and Installation

I took a very different approach with the second sculpture-bot. Although I used similar materials, the process was not the same. I considered using the same mould as the first one to make the second one so they would be identical, but I wanted them to have their own unique look and shape, their own creature characteristics. I think this will give the audience more room to play, they may want to interact with both whereas if the two looked identical I think they may assume they were copies of each other rather than individual creatures. Around the same time as I was making the second sculpture-bot I was doing tests with installation and setup to see the effect the program would have in a large, dark space and how people would react to it. Just as in the

first prototype, the coloured light filled the space, emanating a glow that washed over my classmates and engulfed the room in the mood it created.

The source of the light comes from the colours projected onto the walls, which change based on the sensor input from the sculpture-bots. Each sculpture-bot is embedded with force-resistive sensors, the first has 8, the second has 12. When pressed, the sensor triggers an LED beneath the sensor to light up, signalling to the user that something is happening, so to keep pressing it, or look for other spots where there are sensors to press. The longer the sensor is pressed, the more the colour fades. The projection is programmed to have an ellipse be drawn on the screen over and over, but the sculpture-bot can move the position of the ellipse anywhere on the screen, similar to the movements of a mouse and cursor. This movement coupled with the ability to change the colours on screen allow a kind of abstract drawing to occur. The participant can make shapes, traces, change colours, create fades, or cover the entire screen in a solid colour. Arriving at the place where the participant has the control I've described was important. It is important also that the output from this control be immersive, so engulf the user on all sides or be bright enough that it overpowers any walls or the floor where there are no projections.

There was much experimentation that took place to arrive at the final solution of the movement of the sculpture-bots. The first idea was to use an accelerometer, using the x, y, z coordinates mapped to the screen area. This seemed overly complicated, so the second idea was to use an actual bluetooth mouse, attached to the bottom of the sculpture-bot - as long as it was on wheels. This seemed like a fool-proof plan, however it did not work as smoothly as anticipated. The wheels were not of good enough quality to support the weight of the sculpture-bots, so the movement of the mouse was compromised. As it is, the movement made with the sculpture-bots will not be the same as a hand directly over a mouse because you cannot see the orientation of the mouse, so it is more difficult to control, therefore requires a more sensitive reaction. So, thinking it was not the right solution I did tests with generative designs, where the circle drew by itself and the only input the user had was to change the colour. Although this

solution gave the program itself more agency, it felt like the participant might be bored or not know what to do because the colour fades are somewhat gradual so they may not realize that they had any control at all. Following that I tested an IR sensing camera with an IR emitter, but again it had too many variables. The distance had to be just right, and similar to a wii controller or a Kinect you have to be at the perfect angle or the connection between the emitter and the camera will be lost, and the control will be interrupted. So I decided to give the mouse another try and get better wheels. This ended up being the right solution. I attached super heavy duty ball bearings to the bottoms of the sculpture-bots, ball bearings which can basically roll on any surface, and withstand a huge amount of weight. It seemed at times that I was wasting my time trying out different solutions, but that is what is involved in experimental creative research. You get an idea, you try it out and you keep trying until you find the right solution. Of course you can't keep going forever when you have deadlines to meet, so you have to know when to move on to the next possible solution.

Fig. 17 Sculpture-bot one and two next to projections

I chose the colour palette of the program intuitively. Coming from a visual arts background I always had an affinity for colour. I chose the colours so that they would be complimentary and most of the combinations would be aesthetically pleasing. Of course it cannot please everyone, but then I also chose very bright or vibrant colours which emanate a rich and powerful coloured light. The program written on processing is quite simple, because early on I made the commitment to keep things as simple as possible. I wanted to be able to make something that worked well and would not break, so I thought I should keep it simple and if I get it working perfectly early on I can always add features or make it more complex. The aesthetic of the ellipse is lighthearted, playful, beautiful, and engaging. See screen captures in appendix of designs that I made using the program; the colours are beautiful and the abstract designs look like they could be made into large oil paintings. It is not like using a basic paint or drawing program, because the fade which occurs is active, it is more like a game, like a give and take between the fade happening and your own decisions of where and how to move the ellipse. The more you get to know the program, the more complex and beautiful designs you are able to make with it. Appendix A contains a video capture of myself playing with the program.

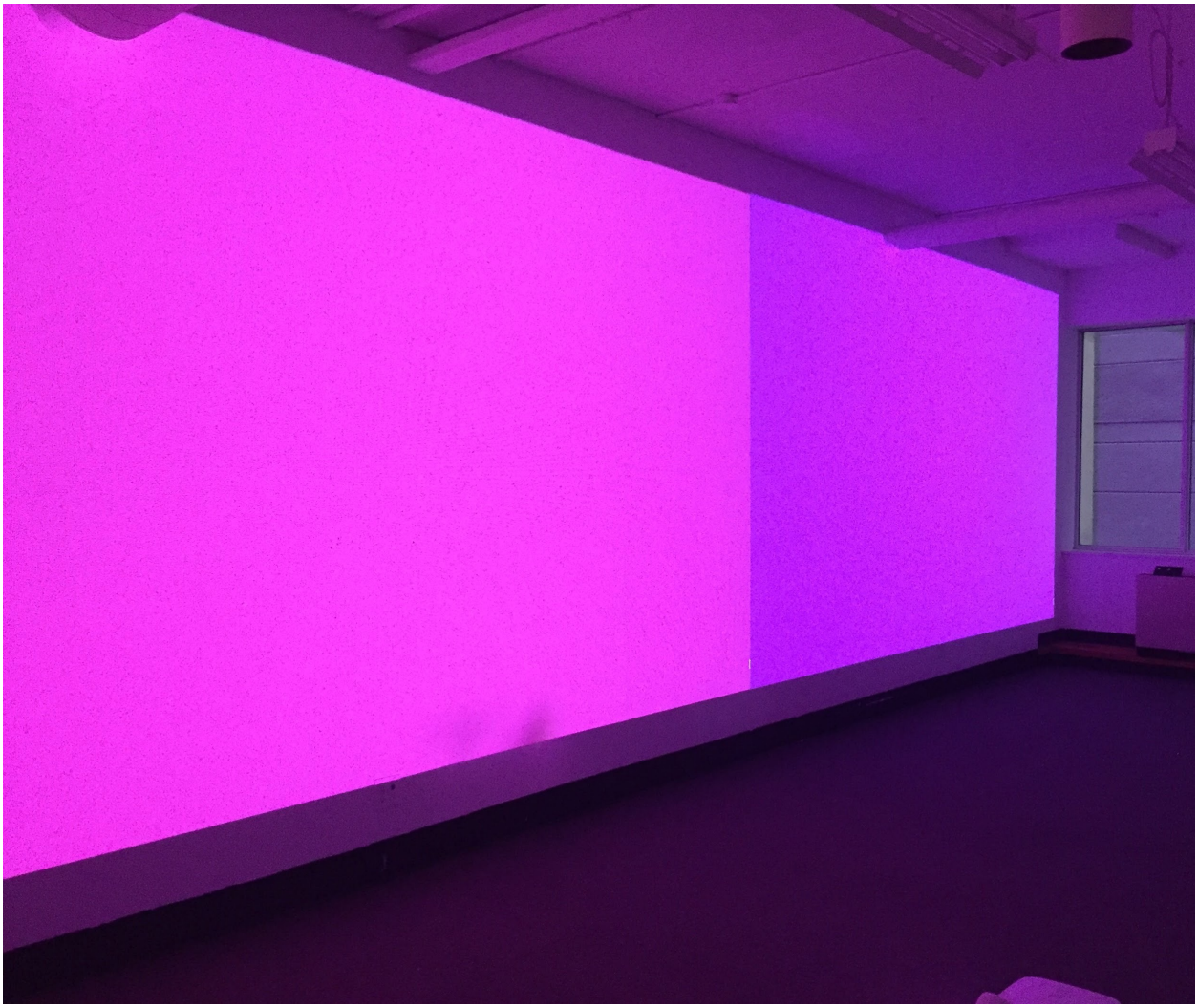

Fig. 18 Image taken from installation test

Exhibition and Structure

A concern from the outset was the space constraints of installing my project at our allotted exhibition location at 49 McCaul. How could I build a structure in 4 days which was the right size, was sturdy and allowed rear-projection? The solution I came up with is quite simple, using aluminum pipes and connectors, I was able to construct a cube shaped structure and using stage fabric made for rear-projection I covered the walls of the structure with the cream coloured fabric. Using this solution I created an 8 x 8 x 8 foot cubic space. Still quite tiny, but given the constraints I was under, this was the largest the structure could be. Within the space there is a

small table upon which the sculpture-bots are placed, and cushions around the table for people to sit on while they interact with the sculpture-bots. Originally, the sculpture-bots were going to be placed directly on the floor, but for accessibility reasons it was important to have them higher up.

Fig. 19 Sculpture-bot one and two

While building the sculpture-bots, the structure and refining the programming of the visuals, it was often challenging to stay focused on the philosophical lenses through which I was considering my project. Sometimes there were moments that felt purely physical, without any inkling of poetic or artistic rhythm to them. I think those were the moments however, when the project moved forward to the next stage, it was those clashes between my body and the materials and the constraints of the reality of my surroundings which gave rise to solutions. Through the physicality of experimenting, making and reflecting I engaged with the philosophical

creation of what Ian Bogost refers to as Carpentry (Bogost 2012). This is the link to my blog for further reading and video documentation :http://jaz.format.com/jazmineyerburythesis

3.2 The Emergence of a Theory

I started from a very vague notion of affect theory and just kept digging deeper, reading more and trying to get to what I was looking for, without actually knowing. All the while making sure the project was in alignment with what I was reading and writing about. I began to read more contemporary philosophers and part of what they emphasize is the importance of de-privileging of academic writing as a means to communicate philosophy. The authors themselves, namely Bogost, Bryant and Harman, are adamant about the need to make things accessible, and I found their writing to be far more accessible and relatable and therefore immersive. These are the authors I have written about in the literature review who have inspired my work. In keeping my art practice aligned with their theories, I was able to work through them physically in my experimentation and process. I kept visualizing the theories coming alive in a tangible way. This clarified certain ideas, highlighted what was not working, and allowed me to grasp some of the ideas in new materialism more effectively.

A problem that arose was how to engage the audience to solicit interaction in the first place? Museum goers are so used to the “look but don’t touch” mentality of traditional galleries and museums that it is difficult to break these habits without expressly telling people that they are supposed to touch, that they should touch the work for it to be completed. However there are some ways of providing cues to engage participation. Such as moving parts, sensor reaction from proximity, sound and/or lights, and myriad other tricks to incite interaction. My work incites touch using light and generative visuals. Motion sensors detect when someone is coming near and triggers the lights in the sculpture-bots to switch on, indicating a sign of life and a reaction of curiosity to the person’s presence, signalling that it is making contact. Once touched, the sculpture-bots light up at the point of contact, but only where there are pressure sensors. This

provides cues to the participants that it should be touched and that it will interact if touched in certain places. I wanted to avoid putting up a sign telling users how to interact with the work because I think the art should speak for itself, art is a language that is capable of conveying more than words can and this aspect of the artwork should be harnessed and put to use for the intended purpose.

Another problem which arose was the transmission of affect by means of programming. Transferring affect through haptic interaction is a one-to-one connection because the act of making and putting my hands on the sculpture-bots, shaping them, testing them, these gestures are similar to the gestures that the participants enact upon them during the dissemination phase of the artwork's life. The materials speak of the creator and the participants hear them, there is dialogue between the act of making and the present interaction. By contrast, programming is a predominantly static experience, sometimes frustrating, yet creative, and involves typing at a computer for many consecutive hours. Those types of experiences are not easily conveyed in the one-to-one transferences of affect the way that physical materials can. For example, the programming involved in my project requires lots of behind the scenes operations that should go mostly unnoticed by the participant. The output of the program is like a digital drawing requiring movement and gestures from the participant for it to be initialized. It is this interplay between my creation of the interaction made with the sensors, the program and ensuing computer graphics, and the gestures of the participants which completes the artwork and creates the circuitous dialogue between all parties. Although the dialogue is not a direct back and forth as is the engagement with the physical materials, the dialogue is facilitated by the program itself.

The connection begins when the participant makes contact with the sculpture-bot and notices the sensors light up when they are touched, and that this touch also makes the environment begin to fade to a new colour. The sensors transmit that touch via data information sent to the micro-controller which relays the information wirelessly via bluetooth to the computer where the program triggers the visuals to change colour. The participant then sees the changes being made and this will generate affect within them. The participant is partially responsible for

creating that affect, yet the program is responsible for what the affect comes to be, and the artist, myself, is responsible for creating the possibility for that exchange to take place.

3.3 Implications of the theory on peers and the broader context

Deleuze and Guattari expanded their perspectives on being and the world into every potential aspect of life because of their ability to perceive things at the level of critical theory. The role of critical theory is to break things down to the sum of their parts and look at the ways in which things like culture, politics, psychology, and ideology encounter each other, and what those encounters manifest. The ontology they weaved together with their theories are completely sound for two reasons. The first is that they left no stone unturned, nothing was inconceivable or beyond analysis. Every aspect of being could be looked at through the frameworks they created. The second is because they produced knowledge about human interaction in a way that was completely new but seemed obvious that it should be understood in such ways. Entire movements of literature, psychology, art were formed around these radically new, yet deeply sound characterizing summaries.

Movements in art reflect socio-political, scientific, and philosophical changes in society. For example, impressionism revolted against previous modes of perception about colour and light. Their work reflected changes caused by the industrial revolution and the socio-political unrest in France and Europe. New knowledge was being produced about what people were capable of perceiving. Impressionism distinguished between and recorded changes in weather, temperature, and daylight by representing a scene which was supposedly the same again and again. What resulted was a different manifestation of a determinate location represented through the capacities of human perception.

Movements in philosophy also reflect on the changes in the current socio-political climate. Much of the philosophy being written and discussed as early the beginning of the 1980s was in alignment with the movement of postmodernism. The pervasive infiltration of tech into

every aspect of our lives has also been a factor in the promulgation of postmodern thinking and writing. Karen Barad, for example, uses new knowledge about the way we perceive matter as recorded in quantum mechanics experiments involving the large Hadron Collider to create new dynamic readings of the relevance of being. The experiment is based on Heisenberg's uncertainty principle that everything which can be observed is fundamentally made inaccurate by the act of observing it. The interference of measuring alters the state of the thing being observed because it is no longer only the thing but someone's perception and interpretation of the thing, which was Niels Bohr's theory. The experiment Barad bases her ontology on is also based on Bohr's theory that it is not the act of observing something which makes it inaccurate but that things are already indeterminate, they do not have the accurate boundaries which are created by measuring (Barad 2009).

Neils Bohr's theory relates back to Descartes' theory that "I think, therefore I am" and his theory of Rationalism; that everything exists through the act of having a thought about it. It does not need to be said that he made numerous contributions to math and science along with philosophical upheaval of former modes of perception, and our capacity to have agency in our interactions with the world. Descartes' ontology remained the most believable and productive means of understanding being and our world for centuries and is credited as being the building blocks for modern philosophy. However, today, with modern technology, we have the tools to see more and to see it more clearly. What the Heisenberg experiment set out to determine was how perception is measured, and if it is indeed possible to measure and detect a thing without affecting it. The results were that a particle that is passed through an opening has an equal chance of passing through the top opening as it does the bottom opening. However, to measure the results, rather than looking directly at the particle as it passed through the opening, they perceived the excess energy produced by the act of the particle's movement and could tell which opening the particle had passed through. The excess energy could only be perceived after the particle passed through the opening (Barad 2009). So, like Schrodinger's cat, until the moment the results are discovered, the particle could have gone through either of the two

openings. By perceiving the result after the act, the act becomes determined. But until that moment, it cannot be known one way or another. However, because during the present moment the particle is unadulterated, the resulting measurable excess of energy is a completely accurate recording of the actual event. It is only possible to have such a true account of this act when combining the past and present into one double-layered perception of time. By experiencing the present moment's version of the past, the past is perceivable in its true form.

So, what does this tell us? How does Karen Barad use this scientific discovery to describe existence? I believe that this is the foundation of her theory of material-discursive practice. A thing can only exist as physical matter in the present moment. Describing a thing is an inactive way of perceiving it. Using physical acts to perceive other physical acts is a point of view which takes us closer to perceiving things on their timeline, and in a direct way, rather than pretending that the description of a thing is an accurate understanding of it. New materialism is the perfect framework through which to explain Barad's theories because it asserts that matter is all that we can perceive, and even by the fact that we have the capacity to perceive is proof of physical matter existing to allow imagination and thought. Because if there was no matter, then there would be no way of perceiving matter. So at a very basic level all life and even intangible aspects of life, such as thinking, feeling and memory are first and foremost the result of matter existing and intra-acting through time.

Any and all classifications and hierarchies of the things we perceive are the result of our ability to perceive them, therefore matter is above all else the foundation of our being in the universe. If that is the case, then we need to follow in the prolific footsteps of Deleuze and Guattari and apply this theory to all other cultural and social aspects of life. There are many philosophers today who are doing just that, philosophers such as Graham Harman, Slavoj Zizek, Karen Barad, Quentin Meillassoux, Manuel DeLanda, to name a few. They do differ on many ideas, but fundamentally the ontology of matter being the foundation of existence is used. Through writing and discussion they relay the knowledge they have created. Within the scope of this project, I have not done the research needed to know each and every aspect of being that

has been interpreted by each philosopher or how they all relate to one another or differ from each other. So to say that there has not been an account made of the creation, existence and dissemination of contemporary art through the lens of new materialism would potentially be inaccurate. However, there are at least two philosophers working today who have done just that. Both Ian Bogost and Chris Salter have taken these active potentials and viewed the modes of perceiving art through this framework.

Both Bogost and Salter advocate putting the claims of Object-Oriented-Ontology and material-discursive practice into action. Through experimentation and production they are able to perceive the act of producing knowledge as a physical encounter. It is not by reflecting on a completed work of art that one is able to engage with the material possibilities of art in action. Rather the creation of an artwork is where it is active. So in experiencing the creation in the present, the past also comes alive and has an affect on the rest of the unfolding of the artwork. This kind of active engagement with understanding the nature of art is only possible while the work is in its production phase.

Once an artwork is considered a finished and complete product, it becomes lifeless, a relic, it loses its capacity to be a useful tool to navigate the way we interpret matter. Affect is produced when a person sees a static, completed work of art. The affect is manifest within the physicality of the individual body, but also derives from the material around them which is causing the reaction. So, completed or not, or regardless what is being looked at or not, affect will be manifest in us as the result of matter encountering other matter. For example, you look at a painting and you think to yourself that it is beautiful, you feel joy, using the label, the generic description of a feeling to describe the sensation. The painting manifests its affect through paint and brushstrokes enacted upon it by the artist. The person interprets that matter through cognitive functions, which are also fundamentally matter. In this next example you walk over to another painting, this time when you look at it you feel a different sensation, one which is perhaps not so readily recognizable as joy, but something new or strange or subtle - not so much a feeling, but more of a realization of being a person looking at a painting. Maybe the

affect experienced is not only a direct interpretation of that second painting, but of that painting with the experience of the first painting still lingering within you, creating a layering effect and mixing the resulting affective sensations. We so readily accept affect as a constant, unstoppable part of daily experience that we may not do as much to contribute or be responsible for our agency in what goes on as we could. For example, seeing a film or animation seems to have a more real world quality, a video represents life more accurately than a still image. This is so because we do not see an image, then, following that experience joy as a result, like a transaction of sorts. That is not how our sense of perception operates; all the seeing, feeling and acknowledging what is being seen and felt happens simultaneously. As this happens it changes and shifts at the same rate as everything else, through the passing of time. How then could a still image be held accountable for such active physical states of being? Would thinking of an image, or having someone describe it to you not be as sufficient to produce the same affect in you as seeing the image firsthand? The problem with the image-viewer scenario is that it is a false representation of what is actually, physically going on. The moment moves forward, and so does the image. Except, the image lies and claims to be the same as it was the moment before and the moments before that. But, as we saw with the example of the Impressionists, even something which is thought to be the same has its own properties and characteristics which renders it potential to exist in an infinite number ways, as the result of its intra-action on the level of matter, impossible to ignore.

So why then, with all of that in mind, would we be satisfied to consider a still image of a completed artwork to be an accurate depiction of our perception relationship to experiencing art? It is simply no longer sufficient. I consider Chris Salter's experimental art about growing and fostering muscles in the lab as a mode of artistic creation and production - however there is still a missing ingredient. He addresses the materiality of art-making by using brand new science tools and methods to measure and perceive imperceivable matter (Salter 2015). But what is missing, in my opinion, is what separates it from being just a science experiment, how can it be considered art? The materials are themselves active and responsive, but only know so

because he conducted an experiment then showed the completed results. How could he have better served potential audiences? The way some interactive or net-art is a cumulative, passing, organized structure which exists to collect and house the active data which is the result of user participation and contribution. Maybe the results of the documented changes in Salter's experiments could be published online and made available for the purpose of inciting contributions from others - which could eventually lead to the experiment taking on a completely different form. It seemed as though his experiment was finished doing all that it was going to do.

Salter's work *N-Polytope* : *Behaviours in Light and Sound After Iannis Xenakis* (2012) however is a good example of art being intended to be experienced through the lens of Object-Oriented-Ontology and material-discursive practice. The work was generative, performative, interactive, productive, and time-based. Those qualities are what make the work relatable as a means to produce knowledge. Maybe in this case the knowledge produced was ambiguous and not totally useful or practical yet, however the art was allowed to have and do and be in some ways the same agency that we expect ourselves to have in the world. By allowing the work to claim its agency it is able to enter into a productive performative discussion with the audience-participants. This exchange creates value in all aspects contributing to its experience and its existence. It is not merely a sculpture on display, it engages the active perception and exchange between the artist creator, its material performativity and its relation to the audience. Thereby exerting its material agency and its capacity to dynamically move through life the same way we experience our own trajectories.

Combining qualities of the N-Polytope with the scientific knowledge about perceiving the past through the present as outlined in the Hadron Collider experiment I described earlier, I intend to make art which has the capacity to be and do those things. It sounds almost whimsical to say that all that the artist enacted unto the artwork can be perceived, a work such as N-Polytope or my thesis project, and it begs the question of how that is different when perceiving a painting or sculpture? The difference is in the execution of the dissemination experience. In providing an open-ended interactive installation, as is the case with my work here, the artist is

present in the decisions made by the participant. Both they and the material artwork together through forward momentum and interaction of affect engage in the act of creating the whole work of art, as far as the audience-participant decides to take it. Without the participation of all three parties, the artwork could not exert its full potential.

4. Conclusion

4.1 Summary of Research Findings

Through my experimental studio-based research I question the roles of artists, artworks, materials, and audiences; essentially, the process of art-making and dissemination. In challenging the static, anthropocentric modes of art-making and presentation I present an alternative through experimental, interactive art which is not fixed, but rather changeable, extendable, continuous, and participatory. Diminishing the hierarchy of artist over materials and audience, bringing all three to the same level I create the possibility for a collaborative process of experimental art making which is in a constant state of flux, and is open-ended, requiring audience participation to make the work come alive.

As a concrete example of how the roles of artist, materials and audience can be subverted and extended, I used affect transmission as a way to understand the trajectory of the art-making process. I questioned how affect experienced by the artist can be carried through the process to then be interpreted through the material performance and eventually by the audience participants. The purpose of this question was to determine the role materials play in this process, what responsibility they may have in carrying, rearranging and reconfiguring affect through their performative agency.

How did my research methods lead to answering these questions? I believe that by creating tangible interactive interfaces in my installation and digital sculptures I open up the possibilities for audiences to behave in new ways to the art they are encountering. People come already packed with their own assumptions based on learned experiences and different socio-cultural backgrounds, but with the work I present they are prompted to ask “how should I interact?”. This cut in their expectations brings them into the present moment allowing them to

enter into a dialogue with the artwork in order to create an expanded lifespan of the artist's initial intention through material interaction.

By allowing these and other dialogues to be prompted through the interaction my project elicits, the artwork takes on the role of Bogost's Carpentry by being a physical consideration of the purpose of interactive art, where digital art is headed, and what are the roles of audiences and materials in this shift. Do we just let time pass to wake up one day to find that art has become all digital and interactive art is the norm? Or do we engage in this discussion and participate in the relevance of this shift on our cultural interactions? Art can be about an infinite number of subjects and themes, and the trajectory of this project is art about art - when it uses itself to question these topics it is creating new knowledge about art itself.

People interacting with the sculpture-bots had a variety of reactions and behaviours. Often people had expectations about what the art object should be or do, and particularly what a *digital* art object should be or do. People are so used to dealing with sophisticated interactive devices that provide immediate solutions to their every query, rendering them reliant on a certain type of interaction with digital devices. What my installation does is to subvert that interaction, to point out the non subordinate nature of these digital objects. In doing so, I put the emphasis of interaction back on the gesture, the haptic, and the emotional and affective experiences possible when engaging with digital art objects. It was quite satisfying to watch some individuals engage with the sculpture-bots and learn how to interact them, and take the time and patience to get to know how they work rather than assuming they will work for them in the way they expect.

In order to address these issues further, it would be possible to take into account the provenance of the materials used to create the sculpture-bots. By highlighting the source of the materials and labour, and environmental costs involved in providing the materials needed to build these art objects the role of artist and artwork are challenged on a humanist level, shedding light on the potentially troubling trajectory of raw materials into commodities that we often take for granted.

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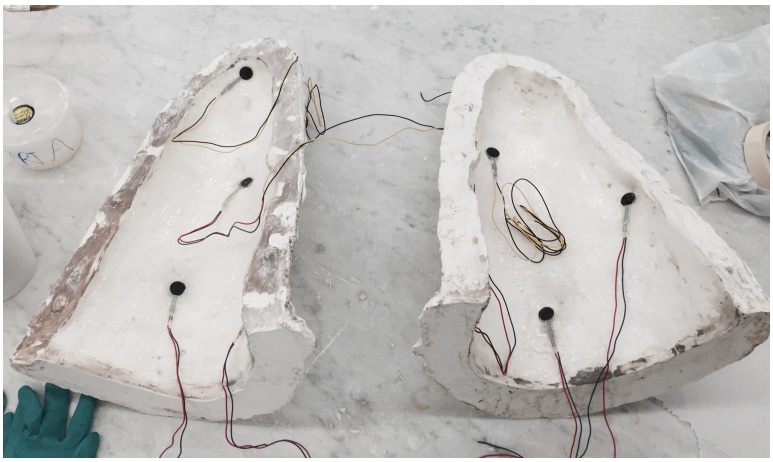
Appendix A

Process Documentation: First sculpture-bot



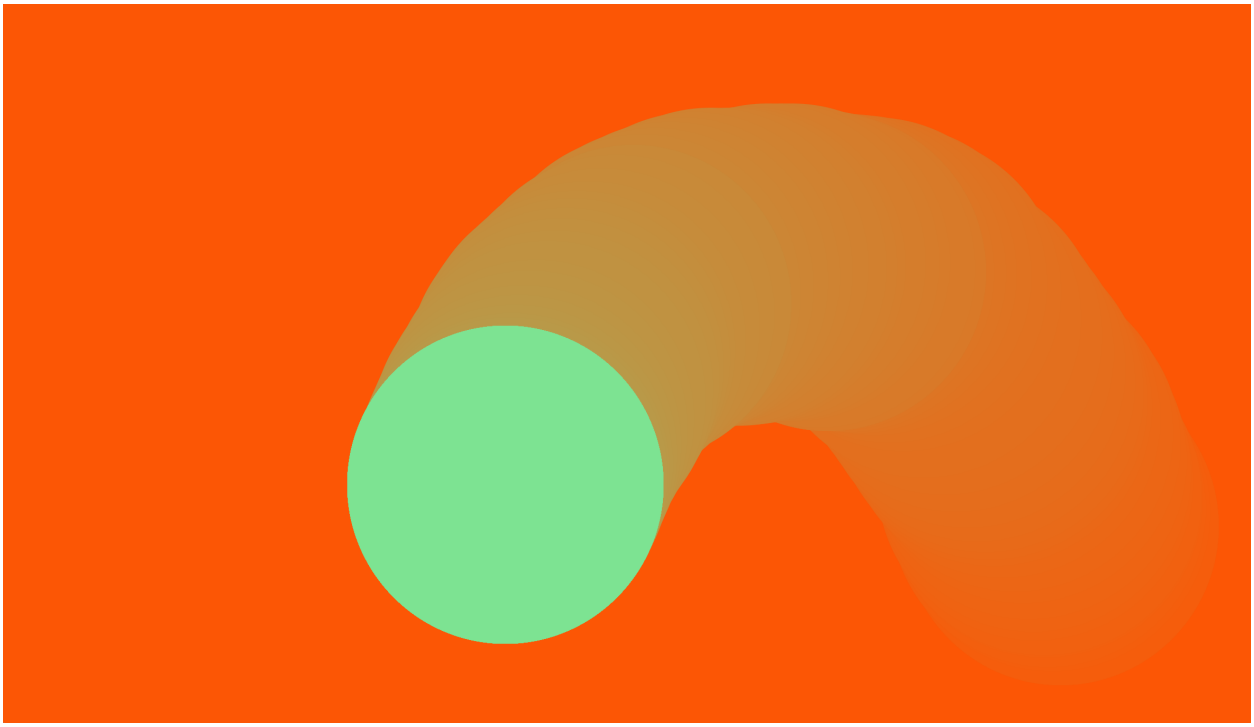
Embedding sensors into the mould

Opening the mould from first sculpture-bot

Inner structure from documentation of first sculpture-bot

Screen capture taken from program

Screen capture taken from program



Screen capture taken from program