The Fourth Kingdom: Art and Agency in Plastic

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ABSTRACT

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It is all around us: in the oceans, in the land, in our homes and in our hearts – and now it can even support life. So why is it that this crucial component of modern society is also one of its main antagonists? And, more importantly, what are we going to do with all that plastic?

This thesis will examine the work of artists who deal critically with plastic both as a medium and as a cultural artifact. The proliferation and accumulation of plastic transpires everywhere, even in the realm of art production and in the space of the gallery. I will discuss how artists are using this material to demonstrate significant challenges to common beliefs about the status of the natural in relation to human, particularly within the framework of vitalist and post-human contemporary philosophies.

At the level of cultural discourse, plastic is perceived as nearly antithetical to nature. On the other hand, beyond some basic intuition that there is a nature and that it can be identified, firmly establishing the actual referent for this concept is difficult. With a dominant ideology of ecology positioned in defence of the natural, the shared cultural enemy of the environmentally aware is plastic, a new artificial adversary. However, if we approach these categories critically – the natural, the artificial – the obvious distinction between them becomes less certain.

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TABLE OF CONTENTS

List of Figures

INTRODUCTION

> Animal, vegetable, or mineral? I hadn't thought of that before. Maybe this little thimble belongs to a kingdom all its own. The fourth kingdom. The kingdom of plastic.
> -*The Kingdom of Plastics*, General Electric, 1945, film.

It is all around us: in the oceans, in the land, in our homes and in our hearts[1] – and now it can even support life. So why is it that this crucial component of modern society is also one of its main antagonists? And, more importantly, what *are* we going to do with all that plastic?

Plastic exists as a significant node in a network of cultural, economic, environmental and political interests. It takes on many roles: domestic servant, caretaker, medical support, kitchen aid, industrial worker. Its affordability, adaptability and availability makes it an ideal medium for artists, especially those working with large installations. The material is pervasive, yet the cultural sentiment towards it is ambivalent at best. The hostility towards plastic seems to stem largely from its role in disturbing and displacing the natural environment with its ever-more conspicuous presence. If there is one thing plastic definitely is not, it is not natural – at least according to popular opinion as expressed in Anglo-American media. In fact, plastic is nearly synonymous with the term "artificial," anecdotally apparent in the derogatory use of the term "plastic" to describe someone who is fake or overly invested in materialism. As plastic compounds proliferate and appear in increasingly discomforting quantities and locations, its disruptive presence is causing a strong animosity among many being that the lives and well being of humans and their kin necessitate the

1 "Plastic heart gives dad Matthew Green a new lease of life" *BBC Health*, August 2, 2013, accessed May 16, 2015, http://www.bbc.com/news/health-14363731 and Eric Zettler, "The 'Plastisphere:' A New Marine Ecosystem," *The Ocean Blog,* July 30, 2013, accessed May 16 2015, http://ocean.si.edu/blog/plastisphere-new-marine-ecosystem.

preservation of the environmental order as it has been for the last 20 000 years.[2] Through the resulting antagonism, plastic is almost an antithesis to nature – if not metaphysically, then conceptually, on the level of cultural discourse.

With a dominant ideology of ecology positioned in defence of the natural, the shared cultural enemy of the environmentally aware is this new artificial adversary. However, if we approach these categories critically – the natural, the artificial – the obvious distinction between them becomes less certain. There are many inconsistencies and assumptions underlying our sorting of materials into one of these groups of things or the other. The project I am undertaking in this thesis will look particularly at artists whose work complicates the separation of human byproducts from the environment and whose work features plastic as the main character[3]. By playing with ecologically poignant themes and assumptions, the artists that follow demonstrate significant challenges to common beliefs about plastic and about the status of the natural in relation to the human more broadly.

The concept of the natural is rife with historical significance and is central to the attitudes and behaviours currently promoted within the ecologically-conscious global community. However, beyond some basic intuition that there is a nature and that it can be identified, firmly establishing the actual referent for this concept is difficult. As it is invoked by environmental groups, particularly among those practicing some variety of deep ecology,

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2 "Plastic chemical found in nearly 500 foods sold in US," *RT.com,* February 28th, 2014, Accessed May 16, 2015.

3 Please also note that very recent research by Heather Davis, dealing with similar themes to my own, came to my attention only after the writing of this thesis was complete and so, regrettably, I have been unable to engage fully with it here. Such an engagement would likely be fruitful, however, since the conclusions of our respective analyses differ in meaningful ways. While Davis is interested in plastic as it disrupts an ethics of land through its sudden proliferation and long life, I come to an opposing conclusion, which is that plastic can be used to demonstrate the continuity of human life and production with "natural" systems. The precise nature of our radically different conclusions may be a topic worth discussing in subsequent work on this topic. See: Heather Davis, "Plastic: Accumulation without Metabolism" in *Placing the Golden Spike* (Milwaukee: INOVA, 2015) and "Life and Death in the Anthropocene: A Short History of Plastic," in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, edited by Heather Davis and Etienne Turpin. (London: Open Humanities Press, 2015). Davis is also in the process of writing a manuscript.

the easiest identification of nature seems to involve all of that which is not of a human origin.[4] Nature defined as the non-human is a common theme, even within the history of science. As philosophy of science scholar Gregor Schiemann argues in his essay, "Contexts of Nature according to Aristotle and Descartes," two of the most prominent and defining historical philosophies of nature have the specific characteristic of being defined negatively against that which is most closely identified with human activity. For Aristotle, *techne* (technology, art) – the tools and technologies by which the human exercises mastery over the world – are a separate object of study from *physis* (nature). Descartes, on the other hand, maintains a more traditionally dualist conception of nature, relegating the totality of the material world to the confines of mechanical "nature," while the transcendent subject exceeds these bounds through her rationality, as the seat of knowledge. In each case, nature is "characterized by a contradistinction to the non-natural: Aristotle separates nature and technology; Descartes opposes nature to thinking".[5]

This negative relationship of the natural to a more concretely and positively defined *non-natural* category is typical, and can be seen expressed in popular culture along similar lines as those pointed to in Schiemann's analysis: generally most clearly articulated in binary relation to an opposing term. Notably, the identification of human activity with thought or rationality creates the highly contested nature/culture split. This distinction is not altogether different from the natural/unnatural or nature/technology structure, and is also predicated on a dichotomous system of inclusion and exclusion, which sees the "human" on one pole of the opposition[6]. Whether the opposed term is some variant of the materially non-natural, such as

4 For further discussion of this theme, see Stephen Vogel, "Environmental Philosophy after the End of Nature," *Environmental Ethics* 24:1 (2002): 23-39. "Nature is that which is identical to what is not us," pg. 24.

5 Gregor Schiemann, "Contexts of Nature according to Aristotle and Descartes," *Logic and Philosophy of the Sciences* 5 (2007), 66.

6 It is important to note that the term nature is inherently vague and applied in the support and denunciation of

the manmade, the artificial or the synthetic, or instead given weight in opposition to a transcendent or non-material entity such as thought or culture, nature is the impenetrable backdrop upon which the image of the human is developed.[7]

These views about nature do not, of course, go unchallenged. The last 30 years have seen a significant output of literature taking a critical perspective on the concept of nature, especially in relation to culture. This can be seen within the field of anthropology in edited volumes such as *Uncommon Ground: Toward Reinventing Nature,*[8] and in contemporary philosophy in flat ontologies of the New Materialist or Posthuman varieties.[9] A central argument shared throughout the majority of this literature is that nature is nothing more than a discursive construct. Broadly speaking, this statement is meant to indicate that *any* particular understanding of nature, whatever that may be, is not based on a given reality about the world. Rather, "nature" is always merely a normative conceptual/linguistic structure, with no concrete grounding or referent; "ideas of nature never exist outside a cultural context."[10] In his influential essay, *The Trouble with Wilderness,* for example, William Cronon emphasizes the importance of taking a critical approach to the conceptual division of human production from the environment. Cronon is especially interested in the concept of the wilderness as that which defines the natural environment, claiming that "if we set too high a

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many political and ethical theories. The range of claims made regarding the origin and significance of "nature" is vast and varied. It seems that often, depending on the argument, nature can take on just about any convenient meaning, from an identification with the land to an identification of appropriate attitudes and behaviours. The analysis of nature as the non-human simplifies many of the nuances that the term contains and narrows in on one area of debate about its meaning. For the purposes of my argument in this paper, I have attempted to most clearly identify the kind of "nature" typically alluded to by predominant ecological theories.

7 An interesting exception to this generalization is the association of nature with essence or regularity, which sees nature as inherently harmonious and stable. In this case, the unnatural is that which is aberrant, disruptive or irregular. This presents its own set of problematic issues and associations, and further points to the ambiguity of the term "natural".

8 William Cronon, ed, *Uncommon Ground: Toward Reinventing Nature* (New York, London: W.W. Norton & Company, 1995).

9 R. Dolphijn and Iris van der Tuin, *New Materialism: Interviews and Cartographies* (Michegan: Open Humanities Press, 2012).

10 Cronon, *Uncommon Ground*, 35.

stock on wilderness, too many other corners of the earth become less than natural and too many people become less than human."[11]

Throughout my thesis I will be following insights found throughout various contemporary philosophies that are being categorized as a part of a "nonhuman" turn in scholarship in the last 15 years.[12] These philosophies cover a range of disciplines and theories, but are united around a shared interest in decentering the human from the ontologies and descriptive strategies employed in understanding the world. As outlined by Richard Grusin in his recent edited volume on the subject, an interest in decentering the human can be traced back at least to Romanticism, and begins to find more formal and systematic expression in the work of Deleuze in the mid/late twentieth century. From there, sociologist Bruno Latour's actor-network theory and the philosophies that sprang from it, like Graham Harman's object oriented ontology (ooo), have continued to challenge the predominance of the human in contemporary western philosophies and methodologies. The nonhuman turn also includes animal studies, as in the work of Donna Haraway, affect theory, assemblage theory, and more[13]. As I will argue later in this thesis, I would also consider much of the work being done in experimental biotechnology labs and by bioartists to contribute significantly to this area of scholarship.

Considering the centrality of the human for understanding and defining the natural, there is a clear utility in exploring the potential of the nonhuman turn to destabilize contemporary categories of the natural and artificial. Furthermore, this lens provides an opportunity for extended critique of the assumption of human exceptionalism that underlies the aforementioned category distinctions. On the other hand, an analysis of plastic itself

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11 William Cronon, "The Trouble with Wilderness: Or, Getting Back to the Wrong Nature," *Environmental History* 1:1 (January 1996), 85, accessed May 16, 2015, *http://www.williamcronon.net/writing/Trouble_with_Wilderness_Main.html*

12 Richard Grusin, ed., "The Nonhuman Turn" (Minnesota: University of Minnesota Press, 2015).

13 Grusin, viii.

provides many opportunities to extend and expand on the themes and problematics which are most clearly articulated by nonhuman theorists. As a material, plastic confuses traditional oppositional understandings of nature and supports new speculative philosophical insights. Throughout my thesis I will locate and challenge instances of human exceptionalism that connect back to the identification of human production with the non-natural, especially as these relate to the effects of time and the apparent immortality of our creations. I will argue that discourse about the eternal persistence of non-biodegradable plastic supports an imagined landscape wherein the human presence remains forever. This projected reality supports a desire for immortality and the belief in the integrity of human-made objects. The analysis that follows will present significant problems for this vision of the future and make efforts to demonstrate the fragility of the reigning Anthropocene.[14] Humans may be directly connected to an irreversible shift in the look and feel of the planet earth, but those changes may ultimately cause the already short (geologically speaking) reign of the Anthropocene to meet a quick demise, at which point our creations will persist without our investment of significance in them and eventually the possibility of even recognizing our presence will fade away.

From the literature surrounding the nonhuman turn, I will be drawing particularly on insights taken the fields of New Materialism, vitalism and object oriented ontology. These movements share an interest in developing some variety of "flat ontology" that contributes to the overall project of this thesis. This "flat" brand of ontological thought seeks to disassemble hierarchies of being implicit within our current understandings of the world, as these hierarchies almost inevitably culminate with the exceptional positioning of the human in relation to the rest of the world. While this exceptionalism often does not result in a

14 The Anthropocene is a term gaining popularity as the description of a new geological age characterized by the wide-spread effects of human beings on the planet's biological makeup and, more significantly, its geological formations.

celebration of humanity in environmentalist circles, which instead tend to view human activity with suspicion or hostility, there remains a refusal to view the human (and furthermore, other cultural and non-material assemblages) as continuous with the world of "nature". Taking up this project in my analysis, I seek to add my voice to those who challenge what Timothy Ingold has described as "the facile identification of the environment – or at least its non-human component – with nature."[15]

For guidance, I will be looking to artists and artworks that have been responding to the abundance of plastic in the environment by using the material as both subject matter and as medium. By taking plastic as their focal point, the artworks create an opportunity for a critical analysis of the applications, permutations and interpretations of both plastic and its associated cultural baggage. Throughout this thesis I will be placing the work of contemporary artists who are dealing critically with plastic into conversation with the theories I outlined above, challenging the interpretation and reception of plastic and also the centrality of the human in the contemporary mythos of our relationship with the planet we inhabit. By reexamining the given separation of the human from the natural, the artworks and interpretive work that follows thereby call into question both the narratives surrounding popular environmental concerns and the vision of humanity's fundamentally privileged place in the world.

The artists that follow are certainly not the first artists to use plastic as a medium, nor are they representative of the myriad artists working in that medium today. Plastic was quickly assimilated into the worlds of art and design from the early days of its production, although originally it often served an imitative function. It was originally primarily employed as an inexpensive substitute or alternative to more traditional materials, as in the case of

15 Tim Ingold, "Hunting and Gathering as Ways of Perceiving the Environment," in *Redefining Nature* (Oxford: Berg. 1996), 117.

acrylic paint. The use of various plastic compounds in a way that explicitly drew on the unique expressive qualities and potentials of this material was rare in the art world outside of industrial design until later in the twentieth-century. The mid 1960s are associated with an increased output of artists dealing with plastic, though they were met with significant criticism from art critics, who complained that the ideas being explored through plastic in the 60s were already "worked out first in more traditional methods."[16] In 1968, the Museum of Contemporary Crafts in New York held an exhibition entitled *PLASTIC as Plastic* dealing very specifically with the challenges and possibilities of working with plastic in art. As explained in the exhibition catalogue: "More than ever before there is a need for collaborative effort among people involved creatively with science, industry and design, so that the special knowledge and talents of all these fields can be used to fully realize the visual possibilities of plastic materials and the objects made from them."[17] This exhibition featured objects made from many different kinds of plastics, with a host of different applications and purposes. Included in the exhibit were objects as diverse as a washing-machine agitator, a circuit board, and a more abstract sculptural work featuring paint tubes suspended in a polyester cube (figures 1, 2 and 3).

The *PLASTIC as Plastic* exhibition is typical of the 1960's attitude towards plastics and other modern materials in Western countries: optimistic, futuristic, and somewhat utopic; focused on the new possibilities and advantages of applying plastic in industrial contexts. Many of the artists working in plastic during the 60s and 70s participated in this ethos, with groups like Ant Farm creating massive plastic inflatables for use in architectural performances in the early 70s. N.E. Thing Co., a Vancouver based collaboration active in the

16 Meikle, 232.

17 *PLASTIC as Plastic* (New York: Museum of Contemporary Crafts, 1968), catalog of the exhibition."Plastic as Plastic" held at the Museum of Contemporary Crafts in New York City from November 23, 1968 through January 12, 1969, 3.

late 60s and 70s, likewise employed plastic towards large-scale installations, seen for example in Baxter's *Bagged Place*, a fully functioning apartment unit whose contents were entirely bagged in plastic.[18] The work of these artists from only 40 years ago, while sharing the emphasis on large-scale plastic production that will be seen in several of the artists to be discussed later in this thesis, contrasts notably in the perception of the effects of this material when used in such abundance. Unlike the generally ecologically-conscious and critical contemporary uses of plastic, these older practices saw the material as full of futuristic potential.

Les Levine was also a significant figure in the development of an aesthetic of plastic within the gallery space, and was featured in the *PLASTIC as Plastic* exhibition mentioned above. In the late 60s, this Toronto-based artist set up huge installations of plastic materials in order to create "environmental places."[19] Levine, otherwise known as "Plastic Man," dealt with the specific qualities of plastic as an opportunity for creating novel artistic experiences, making use of inflatables and large acrylic sheets to create interactive and immersive experiences that focused on space and texture.[20] In installations like "Star Machine", the unique design potential of plastic was combined with a then-innovative approach to making art for the gallery space: one that focused on large, temporary alterations to the environment that were relatively easy and inexpensive to produce and manipulate (figure 4). Taking insight from the *Plastic as Plastic* exhibition and artists like Levine, I would like to apply the "plastic as plastic" qualification to the kinds of artwork I will be addressing throughout this paper. Rather than being incidental to the form or creation of the artworks in question, plastic will play a central role to both the making of the artworks themselves and to my own

18 Adam Lauder, "N.E. Thing Co. Ltd. And the Institutional Politics of Information," *Topia 29* (Spring 2013): 27.
19 Meikle, 238
20 "Plastic Man Meets Plastic Man," *New York Times* February 10, 1969, 44.

interpretive gestures and will thus constitute a meaningful part of the full understanding of the work and its cultural context.

This approach will often operate implicitly within my thesis, which will be carried out along three broad thematics: mythology, ontology and life. The first section of my thesis will deal with the dominant mythology of plastic in post-industrial western nations. This is not to indicate that I will be talking about plastic only as a set of false beliefs or fanciful stories, but that I will treat the cultural narratives surrounding plastic as important indicators of a set of understandings that constitute a shared interpretation of the world. Following the methods popular in discourse analysis, I will look especially to items of popular culture, such as news articles intended for mass consumption, for insight regarding the ways in which we typically understand ourselves and our environment. In order to elaborate on the specific mythology of plastic that dominates the media, I will examine Ramin Bahrani's short film *Plastic Bag*. Illustrated in this film is the mythology of eternal plastic in the form of an immortal (and sentient) grocery bag whose voice is narrated by Werner Herzog as it travels through various terrifying landscapes created by industrialization. By analysing the narrative in this film and the relationship of the human-centric voice-over to the material realities being communicated visually, I will construct, critique, and propose alternatives for the predominantly anthropocentric perception of the world of objects, especially the belief in the fundamental non-belonging of the things we create in relation to other ecological networks.

This will lead to the second section of this paper, which will focus on the accumulation of plastic in the environment and in the gallery space. I will be addressing the surprising abundance of artworks that focus on the accumulation and display of rescued plastic objects and I will argue for the articulation of a particular critical intuition in contemporary art, one which brings attention back to the continued life of trash and

disposable objects after they have been discarded. I will narrow my focus into the work of Portia Munson in order to deal specifically with the ontological assumptions that accompany a mythology of plastic. Building on the insights of contemporary philosophers and art theorists, I will explore the agency of plastic objects and continue to develop a theory of equal relations that challenges the markers of artificiality in contrast to the natural.

The third section of this paper will elaborate on the life of plastic and the agency of objects by dealing with the integration of plastic into the traditional category of the biosphere. This will involve an analysis of the shared theoretical interests between my project and the very active world of contemporary bio-art. The focus of my analysis will be on two artworks that bring new life to plastic objects: the first, Pelling Lab's *Semi-Living lego minifigs*, is a direct intersection of plastic and bio-art, as tiny LEGO men have been given a synthesized organic skin only capable of life in the laboratory; the second, Maurizo Montalti's "Continuous Bodies: The Ephemeral Icon", shows an iconic plastic chair being slowly decomposed by fungi. Here object theory and the posthuman will be brought into conversation with decay and the semi-living, as concerns about the ontological status of different objects contends with a traditionally hierarchical taxonomy: of life, organic matter and the non-living. In this section I will continue to examine the complex environmental interactions between traditionally "natural" objects and ecologies and those more recent creations of a human origin. I am interested in using the self-reflective instrumental methodology of bio-artists, drawing on their strategy of employing new technologies in order to evaluate the meanings and definitions of those same technologies. Especially when put in conversation with posthumanism, bioart presents new opportunities to blur and/or redraw the conceptual lines that separate the human from the environment.

Navigating this terrain offers unique challenges for me as a scholar and for the art and

artists I will be referencing throughout my analysis. I do not want to simply present plastic as a menace, as an inconvenient byproduct or as reclaimed garbage. These narratives are too familiar and do not go far enough in examining the assumptions that underlie our attitudes toward technological and cultural production. However, I also do not want to make any ethical claims on behalf of plastic, which unarguably plays a significant role in disrupting ecosystems on a global scale. Instead, I aim merely to draw out the ways in which a small group of artists and works problematize common understandings of this material and its ability to integrate with the environment. Furthermore, a critical look at the conceptual structures underlying an understanding of plastic as *artificial* and as *immortal* reveals the inordinately overstated position of self-importance held by humans in contemporary western belief systems, broadly speaking. This applies both to the ontological commitments required for plastic to exist as such an other to "natural" ecologies, and in the limitations of the current temporal and spatial imagination for defining objects beyond their adherence to a system of taxonomy that only recognizes individual identities of a certain size, class and duration.

I: MYTHOLOGY

> Like the fabled Proteus, celluloid appears in a thousand forms.
> Advertising circular, 1878[21]

For an investigation of the mythology of the plastic bag that adheres to what I would describe as a standard storyline for plastic in post-industrial western society, I introduce Ramin Bahrani's short film, "Plastic Bag." In this film, the viewer follows the life of a melancholy plastic bag in search of its creator (figure 5). The live action sequences feature only the voice of Werner Herzog, who articulates the inner dialogue of the meandering piece

21 Meikle, 11.

of forgotten plastic.[22] The story follows our protagonist, the plastic bag, who after being caught in a dump for an unknown amount of time, emerges into a conspicuously unpeopled landscape. While the infrastructure of human society remains almost perfectly intact in the film, nobody is to be found occupying the seemingly abandoned spaces (figure 6). There is a punchline delivered in the very last line of the script, when, after a long journey into the North Pacific Gyre, Herzog's bag laments, "I wish you had created me so that I could die."

In this film we see playfully enacted the popular mythology of the plastic bag: an eternal menace, outliving the notably absent population of humans and continuing to litter the terrain endlessly. Furthermore, we see a post-human landscape, where the objects we have created continue to exist and carry on creating meaningful relationships without human beings to give them meaning and purpose. Beyond the narrative devices of Herzog's voice-over, the film presents a world where interactions between the objects we leave behind function effortlessly, indifferent to the obfuscating categorical separation of the man-made from the natural. The monologue of the bag, searching always for its human maker, is a self-indulgent myth, a dramatic overlay of the dream of human importance, when what we are in fact faced with in the film is a world that persists despite our lack of presence in it. Further emphasizing the importance of the human in this narrative is the apparent indestructibility of our creations, seen in the immortalized plastic bag blowing across the landscape for what might be forever. Plastic seems to contain a hope of immortality for the finite human, an opportunity to transcend the limitations of our short lifespans and continue affecting change long after our species has surrendered the world to its other inhabitants.[23]

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22 *Plastic Bag,* Film, Directed by Ramin Bahrani, 2009 (VVS Films, 2010), DVD.

23 For a further example of popular culture's representation of plastic as immortal, see comic superhero plastic man, who existed for thousands of years in small pieces at the bottom of the atlantic ocean: ""Plastic Man survived for 3000 years as little more than crumbs scattered around the Atlantic. If that doesn't give you an idea of the level of power he hides behind that doofy smile of his, then you're brain dead." -Batman, JLA (Justice League of America) 1:76.

In this section I will be dealing with the cultural narrative surrounding industrial production, especially as it constitutes a shared mythology of plastic and disposability. The stories that define the west as a culture since the industrial revolution are often overtly connected to the creation and distribution of goods. Secular creation myths are mechanical, and the objects that a large amount of the global population most frequently interacts with have been brought to them, in some capacity, by a laboratory. In this sense, the scientific community acts as something of a new priestly caste; those who reveal our truths for us through prescribed ritual practice and material transmutation. Meanwhile, the creative visual output of our species currently consists on the grandest scale in advertisement and industrial design. By probing mass-distributed media that propagate and disseminate scientific research and popular knowledge, a particular ecological ideology is revealed – one which maintains a hidden belief in the stable ideal of a harmonious natural environment that is intruded upon by humanity.

I consider myself to be conducting an analysis of plastic and its post-industrial western cultural meaning on the level of mythology. That is, I am speaking generally with reference to popular culture and implicit, widely held normative beliefs. These beliefs necessarily lack a structured argumentation or explicit systematicity, yet they nevertheless govern the behaviour and attitudes of those who hold them. They are communicated through the stories we tell about ourselves, and examining these stories critically can reveal assumptions and presuppositions that determine us as social subjects. In the same way that the study of the trials and tribulations of the Epic of Gilgamesh give insight into the concerns and ethical life of ancient Mesopotamians; in the same way that the genealogy outlined by Hesiod's Theogony formed the background of Greek consciousness and gave them a sense of their place in the world; our own myths and narratives shape how we interact with and

understand our world. The level on which I am conducting my analysis of the natural and the artificial is not in how these concepts are used in a practical way among engineers or designers, nor by those who specialize in the natural sciences. For those faced with the logistical and technical demands of a world full of clutter and variety, for whom material properties are more important than cultural associations, waste products are easily reduced to their chemical makeup or seen as causal mechanisms in the environment. But those responsible for more popular understandings about plastic and nature are governed by a different set of latent beliefs and practices: ones that that lead, for example, to both increasingly aggressive "green" marketing, and to dramatic headlines such as "Ebola Outbreak Shows the Dark Side of Mother Nature."[24] Somehow, as members of the target audience for such statements, we imagine that we recognize what is meant by "Mother Nature" in this headline. It is certainly evocative of some familiar thing – but what?[25] In contrast to this understanding of the world, which relies on an implicit hierarchical ontology that places the human and human creation apart from other things and networks, I will look to systems of thought that seek to disrupt or undermine that narrative through a more "flat" ontology: systems of thought that see the human as just another actor in a rich tapestry of movement and agency.

With that in mind, I would like to look more closely at Bahrani's *Plastic Bag*, paying special attention to the existence and significance of the Herzog-narration, especially as

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24 Julie Gerberding, "Ebola Outbreak Shows the Dark Side of Mother Nature" *Forbes,* October 18, 2014, accessed May 16, 2015, http://www.forbes.com/sites/matthewherper/2014/10/18/ebola-outbreak-shows-the-dark-side-of-mother-nature/.

25 The emphasis that I am placing on narrative structure and cultural discourse may seem to put me at odds in some ways with the object theories that I am drawing on. How can a focus on language, cultural norms or discursive conventions be reconciled with a desire to return to the life or agency of things in the world? In fact, this is a common difficulty when theorizing about objects as they exist outside of their subjective/human context. Bill Brown's influential essay "Thing theory," *Critical Inquiry* 28:1 (2001) is entirely steeped in concerns of this kind and Jane Bennett addresses this problem almost immediately in the preface for her book, *Vibrant Matter: A Political Ecology of Things* (North Carolina: Duke University Press, 2010), ix.

contrasted with the live-action sequences that it accompanies. The film can be said to be operating on two levels. On the first there is the stark materiality of things: a plastic bag, the wind, a tree, an abandoned house; on the second there is the textual, the narrative: a cultural context that frames these objects through a system of contingent symbolic meanings and beliefs. It is in this latter area that the mythological setting is established. From Herzog, we hear a profoundly human-oriented narrative that carries a capitalist consumer ethic: the plastic bag describes its first breath as it is filled with other objects in the grocery store (figure 7). Forgoing its history of manufacture and distribution, the plastic bag only becomes a meaningful object in the context of the consumer's experiential treatment of the bag. This kind of a narrative may call to mind the work of anthropologist and theorist Arjun Appadurai, who writes about the social life of objects and the construction of the commodity identity in capitalist societies[26]. Aligning with the ideology of consumer culture, Herzog articulates the identity of the bag almost exclusively in terms of its direct interaction with humans as it searches endlessly for its "creator". This creator-figure is none other than the consumer: the lady who used the bag to bring home her groceries. The limitation of the bag's consciousness directly mirrors our own in its ignorance of its origin in industrial processing. Our ability to understand and relate to objects often follows the same narrative outlined in the film: purchase – use – disposal. The bag in the film, on the textual level, is fully a commodity object in the culturally-specific way that Appadurai alludes to in his introduction to *The social life of things: Commodities in cultural perspective.* Beyond the devices of exchange and valuation, the bag no longer has a meaningful identity for us except as litter. As the story moves forward, the bag continues to exist and must attempt to create meaning for itself long after its explicit usefulness has been exhausted. Should we be surprised that, on this textual,

26 Arjun Appadurai, "Introduction: commodities and the politics of value," *The social life of things: Commodities in cultural perspective* (London: Cambridge University Press, 1986).

mythological level, the bag continues to mourn its lost purpose?

Plastic objects, such as the protagonist from above, might well suffer from a diminished sense of importance and value even when they are actively being used. This may be, in part, due to plastic's secondary status as a derivative material. Furthermore, as a product of mass production, it lacks the rarity and uniqueness of objects and materials we typically value.[27] A flippant attitude towards household objects is common, as mass produced products can be damaged, discarded and cheaply replaced later (likely with a better model). These practices contribute to the economic system we have in the west now, which relies on heavy consumerism and a perception of objects as disposable in order to sustain a constant cycle of manufacture and purchase. In addition, plastic suffers from a diminished reputation because it is placed in the category of "artificiality" in contrast to the natural. Whereas the natural world maintains an opaque and mystical character, human production is framed as intruding upon that natural order. The identification of plastic as "synthetic" marks it as a product of human intervention and as such it seems to open a third space, being neither human nor natural. In the tiered system implied by our taxonomic ontological commitments, plastic is neither a privileged human object, nor a part of the sacred natural order. Plastic is the bottom of the barrel, or more likely, plastic actually IS the barrel: practical, disposable and forgettable.

Following the *Plastic Bag* narrative, our protagonist continues on its post-human journey across a depopulated landscape. Eventually, it encounters a collection of prophets in the form of tattered bags clinging to a chain-link fence (figure 8). They tell tales of paradise, of a world beneath the water where plastic is free. Our protagonist decides that it will go to

27 "That leaves just two elements - silver and gold. Both are scarce but not impossibly rare. Both also have a relatively low melting point, and are therefore easy to turn into coins, ingots or jewellery. Silver tarnishes - it reacts with minute amounts of sulphur in the air. That's why we place particular value on gold." For more on this subject, see Justin Rowlatt, "Why do we value Gold?" *BBC News Magazine,* December, 2013, accessed May 16, 2015, http://www.bbc.com/news/magazine-25255957.

this place. The viewer may recognize the described location as an allusion to the Great Pacific Garbage Patch: a swirling collection of plastic debris that has accumulated in the Pacific Ocean at the junction of several ocean currents known as the North Pacific Gyre. In the film we are eventually shown the fictionalized gyre, where a population of plastic bags mingle with jellyfish and other aquatic life, riding the currents (figure 9). This representation of the Garbage Patch is not an accurate depiction of the actual material situation at the gyre; the "island of plastic debris" popularly reported by the media is actually composed mostly of nearly microscopic objects. The film presents the viewer with a commonly-held yet misunderstood assumption about the material state of the plastic gyre. Manifest visually, it confirms the suspicions of those who read about the island of plastic larger than Mexico.

It is no great surprise that plastic is thoroughly associated with the non-natural as it is popularly conceived. It is a distinct product of human activity, a primary vehicle for contemporary cultural design and expression, and generally taken to be unassimilable within the currently established ecological networks. Plastic is a very recent addition to the world of material things on planet earth. The first commercially viable plastic compound was created somewhat inadvertently in 1869 by a gentleman named John Wesley Hyatt. He was attempting to create a coating for billiard balls that could substitute for ivory, the original material billiard balls were made of, which was increasingly more difficult to obtain.[28] Considering the notable demand – and expense – for ivory at this time, Hyatt's ivory-imitation *celluloid* was well received and sold in the form of combs, piano keys, and other previously horn or shell-based products. Subsequent to this early development in plastic, many other novel materials were created which are all now considered to be plastics. Importantly though, our current use of the umbrella term "plastic" functions much as the

28 Jeffrey L. Meikle, *American Plastic: A Cultural History* (New Jersey: Rutgers University Press, 1996).

characterization of certain materials as “metals”. Plastics are far from being a single sort of thing or specific chemical compound, but are broadly rather any organic polymer or moldable organic solid. The kinds of materials that were developed after Hyatt's celluloid – bakelite, polyester and nylon for example – each had their own unique set of properties and methods of production. The simple reduction of the range of materials developed synthetically by chemists in the 19th and 20th centuries to the generalized heading of “plastic” is a historical reconstruction of a far more nuanced history.[29]

The current set of beliefs and attitudes about plastic have changed significantly from the early days of its production. From heady optimism in the early-mid twentieth century, to the more familiar suspicion and disavowal that plastic products are faced with today, an increasing focus on the negative environmental impact of this organic polymer has turned its celebrity into notoriety. At the very earliest stages of plastic production, before a vocabulary for non-natural design materials existed, it was mostly integrated into consumers' lives through its imitative potential: as an alternative for a more expensive material, like ivory or oil paint.[30] Following a more wide-spread popularization through its use in the distribution of modern technologies like radios and telephones, plastic received a more enthusiastic reception. After a successful primary integration into the average American's home, early plastic producers were praised for creating hitherto unknown substances and playing with the structure of reality itself: “the Chemist is a creator at whose magic touch the very structure of molecules becomes plastic.”[31]

This sense of wonder and optimism was especially conspicuous after the Second World War in an atmosphere that, in many developed nations and especially in America,

29 Both Stephen Fenichel's *Plastic: The Making of a Synthetic Century* (New York: Harper Collins Publishers, 1996) and Miekle's *American Plastic* are excellent and highly readable sources of background information on the development and reception of plastic.
30 Meikle, 14.
31 Meikle, 70.

prioritized convenience and easy living. For example, in a 1945 educational segment on plastic released by General Electric, the significance of plastic development was comically dramatized (figure 10)[32]. The title of the program, *The Kingdom of Plastics*, refers to Linnean taxonomic conventions, where all classifiable material things belong to one of three kingdoms: animal, vegetable or mineral[33]. Yes as the film points out, Carl Linnaeus, the 18th century Swedish botanist and geologist responsible for many such modern taxonomic conventions, could not have foreseen the need for his system to account for a material that was not developed until nearly a century after his death. And so, for the small group of inquisitive children playing a guessing game in *The Fourth Kingdom*, modern materials create a puzzle: where does a plastic thimble belong in the context of their game, "Animal, Vegetable, Mineral"[34]? A helpful father figure, who also happens to be an engineer, is asked to intervene. After some thought, he responds to the children's inquiry: "maybe this little thimble belongs in a kingdom all of its own. The Fourth Kingdom. The Kingdom of Plastics."

It is only in the last thirty years that the reputation of plastic has begun to seriously fall off as its tremendous impact on the environment and human health has become obvious to researchers. In most cases, this impact seems uncontroversially negative; plastic invades ecosystems and contributes to huge landfills, occupying and displacing the life that was there before it, while the BPA (bisphenol A) that is common to most plastics has been linked to negative effects on the brains and behavior of infants and children. Yet despite our low opinion of plastic, its ubiquity has only increased: it continues to be manufactured and proliferates in abundance, while we generally maintain our inability to regard it as anything

32 "The Kingdom of Plastics," video film, 1945, General Electric and Handy Jam Organization.

33 Linnaeus, Carolus. *Systema naturae per regna tria naturae secundum classes, ordines, genera, species,...* vol. 1, impensis Georg Emanuel Beer, 1788.

34 Animal, Vegetable, Mineral, was a popular variant of 20 Questions played in the mid-twentieth century. The game spawned a television show of the same name from 1952-1959, which featured scientists and art historians who were asked to identify different objects from various museums.

other than cheap and disposable. An increasingly sensitive and environmentally conscious population has lead to efforts to decrease the environmental impact of plastic, though the strategies employed are not always carried out with foresight. Measures such as the recent ban on plastic bags in California continue to be widely debated as effective curbs to environmental damage, in large part because the use of paper bags in their stead likely has a more detrimental effect on the environment according to the parameters used to justify banning plastic.[35] The operating assumption of those who choose paper over plastic seems to come down to a tactile association: rough, brown paper just seems more natural than colourful, glossy plastic; therefore it must be better. Although there must be more effective solutions to the plastic problem, the perception of the material as unambiguously bad leads to easy-sounding but dubious eliminative strategies.

In Bahrani's film, the textual narrative aligns noticeably with this rhetoric of otherness – both the otherness of a non-ecologically integrated plastic and the otherness of the human to regular natural processes through the achievement of immortality through their creations. The closing scene in *Plastic Bag* shows our protagonist after a long journey out to the gyre, ultimately trapped among coral and rocks for some time and contemplating its existence. His final words express collective human fears about eternity and also about the persistence of our creations: “Did my maker exist, or had I created her in my mind? Why were my moments of joy so brief? And yet, like a fool, I still have hope that I will meet her again, and if I do I will tell her just one thing: I wish you had created me so that I could die.” While this message supports the hubristic pretensions of eternity held by humanity, it is not actually supported by the material reality of the plastic bag, for although plastic is not considered to be biodegradable in the general sense of the term, it is photodegradable – which means that it is

35 Similar debates occur whenever these bans take place. For an outline of the talking points, see Jane McGrath “Which is More Environmentally Friendly: Paper or Plastic?” *How Stuff Works,* August 20, 2008, accessed May 16, 2015, http://science.howstuffworks.com/environmental/green-science/paper-plastic.htm.

decomposed by sunlight. While perhaps buried under heaps of other materials in the dump, plastic lacks a fair chance at decomposition, in the ocean it would quickly break down. What is left after photodegration are very minute chemicals such as BPA and PS oligomer. These pieces can end up in the guts of animals, wash up on shorelines, or sink to the bottom of the ocean – but in any case often end up distributed across and within the biological ecosystem.

The profound existential desire for death, expressed by the plastic bag, resonates tellingly with humanity's earliest documented struggle with mortality and existence in the Epic of Gilgamesh. In the final lines of the original epic, after Gilgamesh has failed to achieve the immortality he long sought, he praises the enduring presence of his city, Uruk, and its walls.[36] Gilgamesh takes comfort and pride in the seeming timelessness and invulnerability of the walls his people have created in tribute to the gods. In acknowledging his personal mortality, he projects instead an immortal quality onto the works of man. Similarly, in *Plastic Bag*, our own mortality is foregrounded by the apparent endurance of our objects, which will carry our presence into untold futures. We may not live forever but our creations, apparently, will. Underscored here is both the perceived temporal longevity of objects whose existence exceeds our own life spans, and the tendency of humans to marvel at the glory and significance of their own creations. Gilgamesh taking solace in the walls of Uruk may seem especially meaningless to us thousands of years later, when those walls might at best be an interesting archeological site or tourist destination and the religious beliefs and rituals that once enlivened the city have long since passed. Beneath its anthropocentric narrative, the filmic reality of *Plastic Bag* opens up a parallel realization, as its vision of a future without the human poses serious problems for the Anthropocene. In a future without humans, without active cultural systems overlaying mythical narrative and significance on the

36 Andrew George, ed, *The epic of Gilgamesh: the Babylonian epic poem and other texts in Akkadian and Sumerian* (London: Penguin, 2002), on the 11th tablet. I say the "original" epic as the 12th tablet is typically not considered to be in the same continuity as the rest of the storyline.

objects in the world, what becomes of those objects? How can we claim any epistemological or metaphysical dominion over our creations in a posthuman landscape? Are they divested of meaning, or do their internal systems and interactions constitute an alternate set of meanings that contain an autonomous and legitimate form of agency?

II: ONTOLOGY

> The fourth beast shall be the fourth kingdom upon earth, which shall be diverse from all kingdoms, and shall devour the whole earth, and shall tread it down, and break it in pieces.
> -Daniel 7:23 (King James Bible)

In the last century and a half, plastic has colonized every corner of the globe: from the ocean sea beds, to the arctic ice; from the most intimate spots in our homes to vast sprawling waste disposal sites. Plastic is synthesized at an overwhelming volume, continuously, and the rate of production has only been increasing throughout the last 80 years of its history of mass popularity and distribution. The increase is significant: from 1.5 million tons in 1950 to around 260 million tons in 2007.[37] The amount of plastic waste in parts of the antarctic ocean has tripled in the last decade,[38] and fully 94 percent of seabirds examined in the north sea had ingested some form of plastic that remained within their bodies permanently.[39] Because the process of decomposition often does not fully degrade plastic compounds, but rather breaks them down into very small particles, plastic is moving up the food chain through the creatures that consume it, and often ends up on our plates and in our own guts. The tremendous rate at which plastic is manufactured, combined with a dismal rate of recovery and recycling – only

37 Charles Moore, "Plastic Pollution," *Encyclopaedia Britannica*, accessed May 16, 2015, http://www.britannica.com/EBchecked/topic/1589019/plastic-pollution
38 Marquita K Hill, *Understanding Environmental Pollution* (Cambridge: Cambridge University Press, 2010), 257.
39 Ljubomir Jeftic, Seba Sheavly, and Ellik Adler, *Marine Litter: A Global Challenge* (Nairobi: United Nations Environment Programme, 2009), 114.

6 percent of total waste in 2012, for example[40] – amounts to significant deposits of plastic throughout the environment. While anti-littering campaigns have done a fairly good job of keeping the staggering quantity of this disposal out of the public eye in developed nations, plastic is not disappearing as conveniently as it may feel to those discarding it. Aside from the obvious land-based sites of accumulation, 80 percent of plastic currently found in the ocean also originates on land.[41]

Given how recently plastics have entered the world of material things, the effects of this material accumulating are unforeseeable. Further, given how much of it is accumulating, our path forward as a species is as ever towards the treacherous and unknown. The scale of our activity has been so significant in recent history that ecological systems are responding dramatically on a global scale. Annually, millions of seabirds and many thousands of marine animals die due to plastics in their environment.[42] The presence of plastic is also likely contributing to the rapid acidification of the ocean, a phenomenon linked previously to the largest extinction event in the history of life on earth.[43]As for the capitalist economic system, it is continuing on more or less unaffected by these changes. Its apparent detachment from delicate material imbalances in all but a superficial way means that it continues indifferently to spew forth a perpetual unbroken chain of hydrocarbons. It is difficult to predict how long such oblivious production will be able to continue. Meanwhile our species is slowly, in an uncollected way, coming to terms with its effects: digesting the data collected by our industrious scientific appendages. We are, in fact, finding that some of our production has not been digesting, that decay has been slow to act on much of our waste, leaving heaps of the

40 "Plastics," *United States Environmental Protection Agency,* accessed May 16, 2015. http://www.epa.gov/osw/conserve/materials/plastics.htm
41 Hill, 327.
42 Ljubomir, 114.
43 Mary Beth Griggs, "Ocean Acidification Caused the Largest Mass Extinction Event Ever: and Acidification is on the Rise Again," *Popular Science*, April 10, 2015, accessed May 16, 2015, http://www.popsci.com/ocean-acidification-caused-largest-mass-extinction-ever.

stuff to accumulate. The piles of debris that remain unprocessed by the usual cycles of decomposition are increasingly harder to ignore, and although our consumption remains unaffected by this stark reality, our cultural systems are responding. Marketing campaigns are responding, media hysteria is responding and art is responding.

As though directly reflecting the inability of current organic processes to eliminate the influx of trash, artists have begun to mirror the new material reality on our planet. Through the trials of representation that are often the burden of the artist, mountains of garbage have begun to appear in our sacred, white-walled art institutions. While romantic sentiments about the grandeur and impenetrability of nature still abound in art, plastic litters even this ideal constructed terrain through acrylics, polymers, and sheer deliberate accumulation. This latter phenomenon is notable, as countless artists choose to respond to plastic accumulation through the accumulation of plastics. Sometimes the accumulation is only semiotic: represented in photographs or paintings. Other times, it is quite literal. A sampling of artists using plastics, especially in massive installations and creative re-appropriations might include Enrica Borghi, Gayle Chong Kwan, Arunkumar H G, and Melanie Smith, among others (figures 11-14).[44] Although each of these artists creates different kinds of spaces and with differing intent, in each case, the basic methodology is the same: First, a period of plastic accumulation, followed by intentional and pointed manipulation and distribution, and finally the display of these objects in institutional gallery spaces. The objects displayed are curated according to varying aesthetic and conceptual messages – Chong Kwan, for example, choosing to create dreamy ephemeral cityscapes with all-white recovered plastic – but in each case plastic is the medium, one that exists in such abundance and variety that such selective decisions are possible. The abundance of trash in our environment seems to call out for

44 See also: John Dahlson, Jérôme Fortin.

representation, leading to a broad practice of meditation on this aspect of material culture.

Artists' imaginations have also been captivated by one of the most popular media representations of plastic as a pollutant: that which occurs in reports on the North Pacific Gyre. For example, at the Anchorage museum in Alaska, a group exhibition on the gyre in 2014 featured the work of 26 artists. Entitled *Gyre: The Plastic Ocean,* it dealt with the theme of global garbage distribution in the oceans, its effects, and possible strategies for repurposing the materials through artistic practice[45]. The exhibition included the photographic work of Edward Burtynsky, whose pieces feature large-scale images of massive piles of garbage and debris. These photographs bear witness to the terrifying material realities created entirely by the presence of human waste in the environment. Many of the artists in the exhibition used their artworks to evoke a similar sentiment, assembling found objects from the beach or ocean into large sculptures or artistic arrangements meant to elicit shock or contemplation regarding the magnitude of plastic waste in the environment.

One piece of note from the *Gyre* exhibition, which seems to respond directly to my analysis of Bahrani's *Platsic Bag*, is Diana Cohen's *Postconsumer Mandala* (figure 15). The work features a rectangular arrangement of plastic bags, laid flat, overlapping and haphazardly checkered, calling to mind both a lovingly crafted quilt and a barrage of neon signage on a busy downtown street. The description that accompanies the piece calls attention to the artist's commentary on the low value of plastic and her role in disrupting the logic of consumption:

> By using plastic bags as her primary medium, Dianna Cohen halts the usual cycle of production, distribution and disposal and calls upon viewers to reevaluate the aesthetic potential of such a common object. Dianna believes there are few objects more representative of contemporary First World culture than the plastic shopping bag, but because we see and use so many bags in the

45 "Gyre: The Plastic Ocean – Exhibit Overview," *Anchorage Museum Website*, accessed May 16, 2015, https://www.anchoragemuseum.org/exhibits/gyre-the-plastic-ocean/exhibit-overview/

> course of a day, we're not likely to pay them much attention before we discard or recycle them.[46]

Cohen's critical engagement with the plastic bag involves repurposing it and giving it new life, making it worthy of attention and aesthetic consideration through art. But as we shall see, plastic doesn't always require the artist to intervene in order to generate new life, and this blurring between the natural (life) and the artificial (plastic) exerts a strain on the ontological assumptions by which we have so long separated plastic off from both nature and ourselves, stigmatizing it as an inassimilable Other.

The theme of new plastic life is apparent in the work of artist Portia Munson, especially her 1996 installation *Garden*. In her installations, Munson creates strange new environments that directly parody the saturation and ubiquity of plastic (figures 16, 17, 18). In *Garden*, Munson has assembled an array of mass-produced objects that mimic what is commonly understood as the natural through the use of floral themes. The installation is composed of an overwhelming number of inexpensive plastic objects that have been rescued from the trash. Above, on the ceiling, a suspension of a collection of floral-patterned dresses creates a garden in the sky, while the arrangement of countless other floral objects creates a garden basically everywhere else. The entire room is completely blocked with absurd decorative bouquets and overlaid with plastic flowers, creating a surprisingly attractive space from its mismatched assemblage of prints. The viewer is completely immersed in flowers, and the sensory overload creates a blur of colourful blotches that readily recalls impressionist garden. The allusion to the natural through the mimetic abilities of plastic blurs the line between a beautiful landscape and the seemingly endless reproduction of mismatched plastic objects, leaving the viewer to contemplate the artificiality of the display.

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46 "Gyre: The Plastic Ocean – Image Gallery," *Anchorage Museum Website*, accessed May 16, 2015, https://www.anchoragemuseum.org/exhibits/gyre-the-plastic-ocean/image-gallery/

More than just a celebratory statement, *Garden* is disquieting in its occupation of two spaces of cultural meaning – the natural and the artificial. Abundant garlands of invasive plastic flowers recreate the same environments that their discarded brothers and sisters threaten to overtake. The assemblage of discarded articles, each with their own lost history of sentimental meanings and forgotten worth, form a new cultural tapestry of significations and a spatial network of relations that amounts to more than the sum of its printed parts. The products of invisible international labour intended for a short life on a shelf, these objects momentarily occupy a place of privileged attention, and are offered the dignity of serious contemplation. In a way this has terrifying potential for us, as the things we create go on to have a life of their own, or to support their own life.

For an exciting – or perhaps chilling – example of plastic supporting its own life, we can turn again to the North Pacific Gyre, where scientists have made an alarming discovery. Recent studies focussing on microorganisms living in the garbage patch have discovered entire ecosystems subsisting off of plastic debris. The life that is being sustained by plastic has been dubbed the plastisphere. Included in that food chain are new kinds of organisms, living on and presumably decomposing their plastic hosts. This may sound ominous to the human observer, but it is a truly remarkable example of the constant adaptation of mutable ecological networks[47]. While the news articles covering the plastisphere are noticeably charged with moralistic overtones – describing the marine ecosystems as toxic or even diabolical[48] – the organisms involved are of course not sinister in any way, and are rather

47 For an excellent read on current work being done on the plastisphere, be sure to read: Erin Biba, "The Garbage Eaters," *Newsweek,* April 9, 2014, accessed April 15th 2014, http://www.newsweek.com/2014/04/18/garbage-eaters-248109.html.

48 "Bits of plastics floating in the ocean have become home to glowing microbes that appear to diabolically lure fish into eating them," from John Roach "Glowing Bugs May Lure Fish in the Plastisphere," *NBC News*, February 25, 2014, accessed May 16, 2015, http://www.nbcnews.com/science/environment/glowing-bugs-may-lure-fish-plastisphere-n38446. Also, "In some oceanic areas the plastic is so thick that organisms have begun evolving there, as if it were a new, toxic, ecosystem," from Peter Stoett, "Will the Great Lakes Enter the Plastisphere?" *thestar.com*, August 2, 2014, accessed May 16, 2015,

demonstrating an ability to adapt to an ever-changing network of relations. Contrary to what out mythologies might tell us about the exceptional otherness of human production, the things we produce are able to be repurposed and integrated into non-human ecosystems fairly quickly given the right circumstances.

The threat plastic poses serious problems for our traditional taxonomic systems is thus considerable. Discursively, plastic is presented as eternal – a troubling proposition for finite beings. Ontologically, it slips through standard biological and geological categories. Art theorists Amanda Boetzkes and Andrew Pendakis grapple with some of these problematics in their collaborative essay "Visions of Eternity: Plastics and the Ontology of Oil". Boetzkes and Pendakis are, in fact, some of the only art historians formally analyzing plastic as a substance with philosophical implications, making their essay especially interesting in the context of this thesis. In *Visions of Eternity*, the authors think through the philosophical implications of plastic as a relatively novel substance, especially in terms of its relationship with oil. Boetzkes and Pendakis describe oil as a new *arche* or "first cause," drawing on Presocratic thought to characterize oil as a causal ontological substance: "oil is that which generated, extends into, and proliferates as the multitude of plastic beings."[49] Further, the authors assert that oil is *hypervisible*, always seen in the aesthetic packaging of plastic objects but not recognized for what it is within and underneath the colourful performance.[50] This analysis seems to operate primarily in the domain of the global economy; oil as the material substratum that underlies the majority of financial transactions, as the fuel of the economic machine on both a literal and an allegorical level. "Visions of Eternity" is helpful for my analysis as it addresses some of the most troubling aspects of oil-based plastic production, found in both the temporal investment and in the temporal limitations of the material: "oil is

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http://www.thestar.com/opinion/commentary/2014/08/02/will_the_great_lakes_enter_the_plastisphere.html.

49 Boetzkes and Pendakis.

50 Ibid.

very literally time materialized as sediment."[51] . I think there is room to extend the emphasis these authors place on temporality and material transactions and to place plastic in a networked practice, that incorporates artistic intention, the global economy, and the long history of petroleum formation.

The colourful plastic objects we most frequently interact with are the result of enormous efforts of industrial extraction and refining. This process alone invests plastic products with significant value in terms of the intensive time and labour they require. Even more dramatically, however, the petroleum being extracted from deep in the earth contains the condensed and pressurized organic remains of millennia of past planetary life. Millions of years ago, after the dead bodies of a great many mostly microscopic organic creatures settled onto the seabed throughout the long early stages of life on this planet, they were subject to enormous heat and pressure and eventually formed the dark hydrocarbon sludge we seek out and jealously guard today. As Boetzkes and Pendakis point out: "oil is not just time: it is the energy made possible by eons of fossilized death."[52] Oil and its plastic products are historical, composed of many ancient creatures left to decompose in the deep, warm womb of the earth where they slowly became the mercurial substance we burn away carelessly today. However, even as the material formation of crude oil extends into the outer limits of our temporal imagination, it is critically finite as a resource precisely due to this tremendous investment of time and organic life. In this analysis, oil and its plastic derivative is both the *arche* – the primary substance that fuels the economy – and signals the end of nature as its slowly invades otherwise pristine ecosystems.

Returning to Portia Munson's *Garden* with the above perspective adds another layer to the interpretation of the piece as a morbid mimicry of a lush ecosystem. Is this a new spring

51 Ibid.
52 Ibid.

for the long-forgotten remains of our prelapsarian forbearers, or a memorial for their sacrifice to the great economic machine? Perhaps it is a temple of worship to the long-dead gods, whose ancient lives form the spiritual and material basis for a new cultural mythology in plastic. But then, it must also be asked – how do the objects in question carry these meanings in themselves? To what degree are these historical perspectives overlaid on a world indifferent to our emotive and sentimental attachments, indifferent to cultural constructions and ethical turmoil? Boetzkes and Pendakis contribute to the engaging narrative arc for the life of plastic and grant it a generous theorization within the greater intellectual context of our species' cultural production. Their description of the temporal investments of plastic and their pointing to the limitations of previous philosophical systems in accounting for its existence is valuable. However, some of the most interesting implications of their work can be opened to a greater extent by also exploring neo-vitalist philosophies that work to reimagine the life of objects and their networked relations.

In order to explore Portia Munson's *Garden* through a lens that reframes plastic objects as actants, I will turn to the work of contemporary philosophers who are applying speculative thought to an analysis of things in the world. By taking seriously theorization regarding the integrity and autonomy of non-human objects, plastic can be reimagined as an actant, intruding laterally in various material and cultural networks. The area of contemporary thought I will be drawing on falls broadly under the category of speculative realism. More specifically, I will be addressing the work of neo-vitalist philosopher Jane Bennett, and the new ontology of Levi Bryant. Both of these thinkers can be considered *object oriented ontologists*, a term coined by Graham Harman. The basic project of object oriented ontology (ooo) is the development of a so-called “flat” ontology that does not understand objects in the world to exist in a hierarchy which privileges certain kinds of products (the human, the

natural, the beautiful). This includes a turning a critical eye towards one of the most fundamental distinctions traditionally made in these scenarios – between subject and object. The self-proclaimed project of Levi Bryant's book, for example, is: "to think a *subjectless* object, or an object that is *for-itself* rather than is an opposing pole before or in front of an object."[53]

Many of the most basic quality distinctions we make rely on the identification and isolation of the subject from that which is other to it: the natural is often conceived of in terms of its negative relation to the human, while qualities like intelligence and beauty are measured according to a narrow set of ideals that clearly privilege human form. But within the parameters of ooo an effort is being made to level out these concepts, to determine value using non-human criteria and to focus on the distributed agency of collectives in the formation of systems of meaning and value. In this spirit, imagine for the plastic objects in *Garden* a reality such as the one Jane Bennett outlines for objects in general. Imagine an ontology that seeks to "emphasize, even overemphasize, the agentic contributions of nonhuman forces ... in an attempt to counter the narcissistic reflex of human language and thought."[54] This reframes plastic as a part of a network of objects and agents, making up a node or several nodes of an expansive web of interconnected agents and significances in which some of the most cherished distinctions between humans and their environment are called into question.

Thinking about *Garden*, and other works like it, through the flat ontology of ooo repositions the viewer and the artist in relation to the work. The viewer must acknowledge the radical independence and otherness of the objects on display. This is not the same otherness that I have been critiquing, which positions human-made objects as separate from the

53 Levi Bryant, *The Democracy of Objects* (Michigan: Open Humanities Press, 2011): 19.
54 Jane Bennett, *Vibrant Matter: A Political Ecology of Things,* (Duke University Press 2010): xvi.

environment. This is the equal positioning of each object and assemblage of things, through which each object is afforded its own dignity and the human is required to relinquish ownership and authority over its creations. The alterity and agency of each floral-printed particular cannot be reduced to its aesthetic or sentimental quality, and instead exists as a nexus for an entire spatial and temporal web of relations that are unknowable by the casual observer, and possibly unknowable altogether. As Graham Harman, the philosopher who formally named ooo, claims drawing inspiration from Heidegger, "the object withdraws."[55] There is never any full disclosure of one thing to another. Ooo also challenges the authority of the artist as the sole creative contributor to the work. The abundance of plastic objects are not only passively acted on and collected by the artist, but call out to her in a meaningful way. By virtue of their existence the objects play a significant role in the act of accumulation; in a meaningful way the pieces of plastic call out to the artist and to the viewer and demand attention.[56] Munson herself, when describing the initial process that led to her practice of plastic accumulation, seems to have only inadvertantly begun collecting such large piles of plastic objects. Initially, she had been responding to pink plastic cultural objects individually as models for her painting, keeping the most interesting ones she found around her studio. Eventually there were so many of the objects lying around that they became an artwork in themselves, the force of their commonality and presence forming a coherent whole with its own distinct cultural meaning.[57]

Jane Bennett would be especially interested in Munson's collecting practice, as her philosophy deals with practices of hoarding[58]. Drawing on the philosophies of Deleuze and

55 Graham Harman, *The Quadruple Object* (London: Zero Books, 2011).
56 Bennett, Jane.*Artist and Agency in a World of Vibrant Matter.* Paper presented at The New School, New York City, 2011. https://www.youtube.com/watch?v=q607Ni23QjA.
57 Jennifer Liese, "On the other side of the mall: a conversation with Portia Munson," *Ten by Ten Magazine* 1:2 (2000).
58 Watch Bennett give a talk on hoarding in her lecture, *Artist and Agency in a World of Vibrant Matter*.

Guattari, Bennett wishes to reimagine the objects we confront and, more often, overlook in our daily lives. She views objects as autonomous actants which are as deserving of attention in their own right as both the cultural and subjective states and positionings that we often study instead in our investigation of the world. Bennett is interested in developing a language through which we can theorize and understand objects as acting independently from our active perception of them, and to create a positive ontology of the thing-in-itself, in contrast to the negative formulations of objects typical in both modern and contemporary philosophy. The phenomenon Munson describes of her artistic process resonates with Bennett's theory that objects call out in a meaningful way to be collected.

This points towards a theory of equal relations, which shifts focus away from the human actor. It does not necessarily change anything about the structure of the material world, but rather alters the act of description. In representing the world to ourselves, ooo argues for a more lateral understanding of causal processes, with agency radiating not just from the human subject but instead residing in lattices of intentionality that can not be strictly localized. Such a system of representation calls into question a hierarchical structure of being which privileges human creation above all else and draws sharp distinctions between our production and the rest of the material world. For the theorist of vital objecthood, where the human is just another object, the designator “artificial” becomes meaningless. At the chemical level, it does not matter what led to the existence of a certain collection of molecules; the chemicals are indifferent to such concerns. As stated in this risk assessment review of natural and synthetic pesticides, “the biological activity of a chemical is a function of its structure rather than its origin.”[59]

Portia Munson's work can offer us a glimpse into the possible worlds and works of art

59 J. R. Coats, “Risks From Natural Versus Synthetic Insecticides,” *Annual Review of Entomology* 39 (Jan 1994), 511.

that can be created from our throwaway plastic objects and help us to imagine the potentials for the colourful new life that can emerge as plastic continues its conquest of the planet. Plastic can create a network of life and meanings of its own, and thus we must prepare ourselves for new realities. What we are now faced with is a new invasive species – plastic – which has a life we cannot predict and whose future is determining ours. Not only are we are in interaction with objects, but objects themselves are agents – agents that are as indifferent to us as we are to them. We can shift our perspective in a way that enables us to understand ourselves as forming collectives with these objects. By revaluing plastic as an active participant in the assemblage of social meanings and material realities, its current semiotic denotation is destabilized. Plastic has surpassed all of our expectations by entering the biosphere and integrating itself within the great chain of being. Plastic exists in excess of its status as synthetic or man-made and need not be placed on unequal ontological footing with other objects and materials.

IV: LIFE

> Life in Plastic, It's Fantastic!
> -Aqua, from their 90's hit *Barbie Girl*

The radical ways in which plastic is supporting new life are brought home most effectively in the overlapping worlds of the bioartist and the posthuman theorist. These two fields share an overlapping interest in challenging the ontological categorization of life and the non-living, the natural and the artificial. Both look to contemporary technologies for cues regarding the limitations of current understandings of the world and the role of the human within it. By working directly in a laboratory setting with organic matter, the bioartist employs biotechnology in experimental ways that are often troublesome for current ethical and metaphysical paradigms. Building on this research, the posthuman theorist often

carefully considers and incorporates these kinds of experiments when formulating alternative metaphysical systems of meaning that shift focus away from human-centred understandings of life. Though bio art and posthumanism diverge at certain points and cover different ground in the scope of their analysis, I will be focusing especially on their points of convergence around new technologies and definitions of life. While the posthuman theorist might challenge the category of "bios" upon which the practice of the bio-artist is based, the two areas of study are interested in destabilizing rigid conceptual distinctions between life and the non-living.

Posthumanism also shares many of the same theoretical concerns as speculative and vitalist philosophies. Taken together, these theories characterize a general movement in contemporary continental philosophy away from humanist concerns and subject-based perspectives, towards more nuanced and networked visions of identities and agency. Jane Bennett could easily be considered under the scope of the posthuman in terms of her emphasis on objects and their internal drives and calls. As described by Rosi Braidotti, a notable posthuman theorist, "the common denominator for the posthuman condition is an assumption about the vital, self-organizing and yet non-naturalistic structure of living matter itself."[60] According to Braidotti, one major point of departure for those interested in the posthuman are the ways in which biotechnologies alter the basic constitution of living matter, shifting "the frame of reference for the human today."[61] Throughout this paper, indeed, I have been actively employing a kind of posthuman critique of the distinction between the natural and the artificial, based as it is on a privileging of the human. By putting this critical structure in dialogue with biotechnologies that are working through plastic, I will extend the reach of this critique to reimagine the life of plastic as a vital material.

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60 Rosi Braidotti, *The Posthuman* (Cambridge: Polity Press, 2013), 2.
61 Braidotti, 40.

In the experimental world of the bio-artist, a central and defining line of inquiry is around the status and definition of life. As a field that, through the use of biotechnology, frequently calls into question long-held beliefs about the distinction between life and non-life – and between the human and the non-human – bioart is especially well situated to problematize the prevailing understanding of cultural production. Issues of nature and culture are necessarily central to technologies that alter the very structure of that which is identified as natural. When considered through traditional metaphysical and religious belief systems, the biotech scientist and the bioartist can easily be seen as "playing god" in their manipulation of the blueprints of life. Although it is true that, however inadvertently, humans have been manipulating genetic structures since at least the domestication of grain or dogs, now the stakes are higher. Technology and, more ominously, bureaucracy, are beginning to extend beyond the traditional "cultural" realm and into the very structure of living matter through genetic engineering and associated patenting rights. Bio-artists use their practice to comment on these developments and to suggest alternative paradigms for carrying out meaningful discussions about the impacts and liberties of the biotech world.

These challenges to the status of the human respond to the intellectual trajectory of separating the human from the natural into categorically opposed camps, with the *natural* being all of that which is not human. In this system, anything produced by human technology or associated with the rational structures of human consciousness is somehow non-natural. For an example of the latter, consider the now popular piece of folk wisdom that there are no straight lines in nature. The various interpretations of this message hinge on the basic distinction between what is conceived of by humans (the straight line) and that which otherwise exists naturally. This parsing of categories into natural and non-natural, into human and non-human, leaves the human body as an interesting and often unresolved space of

meaning. Are the biological functions of the human – its eating, breathing, digestion, acting as host to microorganisms and bacteria, sexual urges – reconciled into the identity of the human or relegated to the baser and more irrational domain of the natural? More often than not, I and many others would contend, the latter is the case,[62] and this area of scholarship presents many opportunities for both the posthuman scholar and the bio-artist to challenge the status and existence of the "human" as a distinct category. Plastic is one of the materials through which such a challenging takes place.

Pelling Lab, a research laboratory in Ottawa that focuses on biophysical manipulation, works with experimental situations that frequently cross into the world of bioart. The lab describes itself as "an exploratory space at the University of Ottawa dedicated to understanding the limits of living systems."[63] Andrew Pelling, the head of the Pelling Lab, considers the space to be "in the middle of art and science,"[64] and the lab features an active artist residency program. One of Pelling's 2011 projects, *Semi-living Minifigs*, demonstrates the active integration of plastic into living systems, while also resonating with theories of the posthuman (figures 19 and 20). The project features three iconic plastic LEGO figurines coated in genetically modified cells. These cells grow like a skin around the anatomically vague signifier of the human. The cells are a combination of human cells and jellyfish DNA, the latter contributing a florescent protein to create an eerie green glow. The processes used to create the now living – or at least semi-living – figurines are the same as those used routinely in bioscience labs, and Pelling maintains that they are also fairly cheap, running him less than one hundred dollars.[65] The techniques and materials needed for isolating and manipulating

62 Why else are our great architectural spaces considered to be supremely rational, non-natural products, while our defecation is not?

63 *Pelling Lab Website,* accessed May 16, 2015, http://www.pellinglab.net/.

64 Jeanne Parkinson, "Bioart in Ottawa: An Interview with Andrew Pelling," *Vague Terrain*, October 26, 2011, accessed May 16, 2015, http://vagueterrain.net/content/2011/10/bioart-ottawa-interview-andrew-pelling.

65 Ibid.

cells are surprisingly available: "Living things are easily manufactured and modified like plastic toys."[66]

Following the comparison between current bioscience and plastic playthings is fruitful: there are many surprising parallels between the conversations surrounding the production and ramifications of plastic and those now found around biotechnology, especially during the early history of plastic. Plastic and the technologies required to create it were completely revolutionary and alien to people until very recently. The public attitudes towards these new technologies varied in polarized ways, mirroring contemporary debates around genetic and biological manipulation. Social commentators in the early twentieth century were similarly unsure of how to respond to plastic as a versatile new medium. They called the chemists responsible for plastic production the new alchemists and viewed their work as being nearly mystical in its tampering with the material substrate of reality.[67] According to one author, with the creation of plastic the structure of *things* changed.[68] However, given the immediate consumer applications of plastic and its near immediate ubiquity, it became quickly assimilated within an emerging global capitalist society. Plastic came down firmly on the side of the synthetic marvels of science. The consequences and ethical dimensions of bio science are similarly uncertain today and elicit strong reactions in those skeptical of the merits of new technologies.[69]

With these concerns in mind, what kind of reactions might be provoked by the semi-living LEGOS? The notably anthropomorphized plastic toys have been wrested from the

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66 "Semi-living Lego Minifigs," *Pelling Lab Website,* April 13, 2011, accessed May 16, 2015, http://www.pellinglab.net/semi-living-lego-minifigs/

67 Meikle, 108.

68 Ibid., 179.

69 Consider, for example, the anti-gmo movement."GMOs (or "genetically modified organisms") are living organisms whose genetic material has been artificially manipulated in a laboratory through genetic engineering, or GE. This relatively new science creates unstable combinations of plant, animal, bacteria and viral genes that do not occur in nature or through traditional crossbreeding methods." From "What is GMO?" *Non-GMO Project*, accessed May 16, 2015, http://www.nongmoproject.org/learn-more/what-is-gmo/.

annals of childhood and forced to host an ethically dubious mutated life, perverting the unassuming innocence of play that the figures connote. But is there more to the juxtaposition between laboratory work and the playful interlocking of childhood toys? Andrew Pelling believes so: he intentionally used the LEGO figurines to signify an ease of combination and manipulation.[70] Further, when considered through the lens of posthumanism, this project contributes an unsettling destabilization of the human, as both the form (the LEGO signifier) and the matter (the human cells) of the human have been altered by the insertion of the non-human. Biotechnologies frequently muddle up the clear separation of the worlds of the living and non-living, of the natural and the artificial, as surprising combinations of materials and processes produce objects that aren't easily categorized. However, for the radically posthuman theorist, *semi-living legos* might not go far enough; they are still embedded in a radically human-centric system of meanings and significations.

For another, more explicitly *post*human example of an artwork that combines significant cultural icons and bio-coating, I will turn to Maurizo Montalti's sculptural work *Continuous Bodies: The Ephemeral Icon*. This research project presents a rich, materially dense sculptural installation that places plastic at the centre of attention (figure 21). Employing the strategies of the bio-artist, Montalti combines his research in the laboratory with the display culture of institutional gallery spaces.[71] Various mass-produced plastic objects are fed to a special fungus, *Phanerochaete chrysosporium*, which slowly decomposes them and leaves nothing behind aside from potential fertilizer (figure 22).[72] The sculptural artworks featured in *Continuous Bodies* complicate the vision of plastic as an eternal menace, imposing itself onto the natural order from beyond. The selected objects take on forms so

70 Parkinson.
71 For more on Bio-Art, see: Eduardo Kac, ed, *Signs of Life: Bio Art and Beyond* (Cambridge, London: The MIT Press, 2007).
72 Maurizio Montalti “Continuous Bodies: The Ephemeral Icon,” *Artist Website*, accessed May 16, 2015. http://www.corpuscoli.com/projects/the-ephemeral-icon/.

ubiquitous that they function as icons for late 20th-century consumer culture: the white plastic spoon, the Monobloc plastic chair. The exhibition shows the items at various stages of decay, including the detritus remaining after the fungi has had its way and the objects have been reduced to morsels.

Through his research and experimentation, Montalti provides an opportunity to reassess the categorization of plastic as separate from nature, and furthermore to challenge the idea of the non-natural altogether. The organic remains from this process are nothing more than decomposed matter, which is nutritionally rich and can be used subsequently as fertilizer to support new life.[73] "Immortal" plastic is shown to lose its form and colour and melt away through interaction with organic entities. The fungus that the artist uses is already present in the environment, and although it is isolated here for its destructive potential and applied in fairly sterile conditions, it actively reveals the ultimate instability of plastic's polymers. *Continuous Bodies* productively engages with concerns about the ontological status of different living and non-living entities, demonstrating an intimate relationship to decay that is shared by the seemingly immutable products of human labour and the substances that make up non-human ecological networks. It presents the viewer with creative solutions to a legitimate ecological issue, by working with a fungus that can potentially help relieve us of the abundance of plastic in our environment. Equally, it contends with the traditionally hierarchical taxonomy of life, organic matter and the non-living. Through an immediate confrontation with the destruction of our iconic, apparently non-biodegradable creations, Montalti's sculptures eat away at our immortality. They remind the viewer that, geologically speaking, the idea that human beings and their byproducts are more than an

73 Ibid.

interesting layer of sediment is absurd.[74]

Following the insights of the posthuman and nonhuman turns, humanity itself should be understood to be caught up in systems of value and meaning that do not always feature us as the main characters.[75] In the constantly shifting dynamics of a global ecosystem, plastic compounds are just a tough fibre that will eventually be broken down by the right microorganisms. By refusing to confirm the given separation of the human-made from the natural, this artwork thereby challenges the vision of humanity's fundamentally privileged place in the world. Montlati's use and dissolution of plastic destabilizes the discursive conceptual structures that surround the natural/artificial distinction. Human production is continuous with the environment. The consequence of isolating a specific location or system of material interactions as the site of some kind of ontologically-distinct form of production risks creating a hierarchy of importance that could potentially devalue and overlook certain networks, materials and individuals. Places like scenic parks and lush forests, which resemble our natural ideal, may be preserved, while other ecosystems are left to disappear.[76]

It is worth exploring the myriad so-called natural domains in which plastic has imbricated itself – some of which may seem more alarming than others. On the most enduring register, as a mineral, the presence of plastic has been written into the geological record. Tumbled around by the ocean currents and possibly melted by exposure to extreme heat in areas of volcanic activity, plastic has begun to mix with sand, volcanic rock and

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74 For a fun narrative account of geologists in the future discovering this layer of sediment, see: Robet Krulwich's article “Is planet Earth under new management?” *NPR*, February 26, 2014, accessed June 13, 2015, http://www.npr.org/sections/krulwich/2014/02/26/282516133/is-planet-earth-under-new-management.

75 Braidotti, 3; Also see Richard Grusin, ed, “The Nonhuman Turn” (Minnesota: University of Minnesota Press, 2015).

76 “If we set too high a stock on wilderness, too many other corners of the earth become less than natural and too many people become less than human.” William Cronon, 20. For similar trends in media discourse, see also Matt Soniak, “Why do you want to save the whales, but not the crickets?” *The Week*, March 3, 2014, accessed May 16, 2015, http://theweek.com/article/index/257199/why-you-want-to-save-the-whales-but-not-the-crickets.

seashells to form what are being called "plastiglomerates."[77] This new type of rock has been found on the beaches on Hawaii and while it is unknown what subsequent conditions of heat and time will do to the rocks, it seems likely that they will go on to join the fossil record as a marker of plastic's life on this planet. As a rock, plastic does not seem too threatening, though in its capacity as a migratory material it has spread to quite disturbing lengths. Plastic is found in significant quantities in virtually all major bodies of water, including the frozen variety.[78] The Arctic Ocean, often imagined to be one of the last remaining hold-outs for ecosystems unspoiled by human intervention, is in fact full of frozen bits of plastic and other synthetic material.[79]

Plastic is not only a geological material, however; it is also found in abundance in biological systems. For instance, a fascinating study from the university of Guelph in Ontario reveals the presence of plastic in local beehives.[80] This presence is not accidental, but the result of a deliberate integration by the hive builders – the bees – who intentionally use this material for their nurseries as the plastic protects the young bee larvae from harmful parasites. In the animal world, plastic is not only found in the guts of animals, but also in the make-up of ecological systems more broadly. We have already seen how plastic debris in the Pacific Ocean is now host to microorganisms that support much larger food chains. Additionally, the increased presence of solid debris in the oceans is altering the food web by

77 Ryan Whitwam, "Plastic rocks beginning to show up on Hawaiian Beaches," June 5, 2014, accessed May 16, 2015, http://www.geek.com/science/plastic-rocks-beginning-to-show-up-on-hawaiian-beaches-1595843/.

78 John Flesher, "Great Lakes teeming with tiny plastic fibres," *CBC News,* January 12, 2015, accessed May 16, 2015, http://www.cbc.ca/news/canada/thunder-bay/great-lakes-teeming-with-tiny-plastic-fibres-1.2897780, Claire Dussud and Jean-Francois Ghiglione "Bacterial Degradation of Synthetic Plastics" *Tara Expeditions*, accessed May 16, 2015, http://oceans.taraexpeditions.org/en/m/science/news/bacterial-degradation-of-synthetic-plastics/.

79 Caroline Winter, "How so much plastic got into the Arctic Sea," *Bloomberg Business*, May 30, 2014, accessed May 16, 2015, http://www.bloomberg.com/bw/articles/2014-05-30/how-so-much-plastic-got-into-the-frozen-arctic-sea#r=rss.

80 "Urban Bees are Using Plastic to Build Hives," *News Release*, *University of Guelph*, February 11, 2014, accessed April 15, 2014, http://www.uoguelph.ca/news/2014/02/post_261.html.

supporting the breeding practices of larger invertebrates.[81] Sea skippers, an insect that skate along the surface tension of the water, exploit the abundance of hard plastic morsels for the purpose of hosting their eggs.[82] This increases the population of sea skippers, which further increases the population of crabs, their main predator.[83] The overall effects this will have on ocean ecosystems is necessarily uncertain, it demonstrates the productive integration of the material by living creatures. As researcher Heinz-Dieter Franke soberly points out in an interview with *Deutsche Welle*, the nature of the effects of this shift depend on your perspective.[84] Some creatures benefit, while others suffer.

There are many researchers aside from Montalti experimenting with forms of plastic degradation. Other kinds of fungus have also been discovered that break down the main constituents of plastic and leave only nutrient-rich biomass.[85] For example, Pestalotiopsis microspora, a fungus found in the Amazon rainforest, has been applied to plastic objects by Austrian industrial designer Katharina Unger. After she exposes plastic waste to this fungus for a few months in specially-designed pods, an edible product for humans results. In fact, there have been many microbes and species of fungi that have been found to break down plastics.[86] Although it is still uncertain how we might implement a productive strategy for these organisms to break down plastics on a large scale, their existence and capabilities demonstrate the ability of presently existing organic life to adapt to the not-so-strange hydrocarbon chains we have been producing. This puts plastic ahead of trees in its quickness

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81 Jennifer Welsh, "Ocean Garbage Patch Breeds Bugs," *livescience.com,* May 8, 2012, accessed May 16, 2015, http://www.livescience.com/20183-plastic-ocean-insect-breeding.html.

82 Fabian Schmidt, "Insects benefit from plastic waste," *DW,* December 8, 2012, accessed May 16, 2015, http://www.dw.de/insects-benefit-from-plastic-waste/a-16161519.

83 Welsh.

84 Schmidt.

85 Anna Roth, "Plastic-Eating Mushrooms Could Save the World," *modern farmer*, January 6, 2015, accessed May 16, 2015, http://modernfarmer.com/2015/01/plastic-eating-mushrooms-save-world/.

86 "Gut Bacteria from a worm can degrade plastic," *American Chemical Society*, December 3, 2014, accessed May 16, 2015, http://www.acs.org/content/acs/en/pressroom/presspacs/2014/acs-presspac-december-3-2014/gut-bacteria-from-a-worm-can-degrade-plastic.html.

to integrate into the ecosystem through degradation. After the first trees appeared on planet earth during the Carboniferous period, it took around 50 million years for any organism to evolve which was capable of breaking down the tough lignen found in tree wood. For those 50 million years, trees fell and littered the terrain and refused to break down – a period of time far more significant than the estimated lifespan of plastic.[87] Trees, our symbolic referents for balanced and harmonious natural life, were themselves once a menace on the global ecosystem that required time and adaptation in order to become a more active part of the life-cycles of other creatures.

By performing experimental work in the laboratory that intentionally plays with traditional expectations and ethical systems, bioartists begin to demystify the microscopic worlds that have until recently remained beyond the grasp of human recognition, though not always beyond our technologies. The complicated web of material interactions that make up biological systems and that constitutes the hardware of consciousness is becoming more well understood, and so the separation between the experience of being human and the processes that operate in and around the human will necessarily become less certain. Critically engaging with the composition and dissolution of various compounds through deliberate manipulation using biotechnologies, creating new forms of life and not-quite-life, creates an opportunity to challenge the status and importance of the biological itself and the identification of different categories of being. Posthumanism is likewise striving to come to terms with the material reality that supports and sustains experiences of self and seeks to theorize new categories of being in which the designators of "natural" and "artificial" would be meaningless and new forms of life are possible that share equal legitimacy with the kinds

87 David Biello, "White Rot Fungi Slowed Coal Formation," *Scientific American*, June 28, 2012, accessed May 16, 2015, http://www.scientificamerican.com/article/mushroom-evolution-breaks-down-lignin-slows-coal-formation/. Daniel C. Eastwood, "Evolution of Fungal Wood Decay," *ACS Symposium Series* 1158 (2014), Doi:10.1021/bk-2014-1158.ch005.

of life that have come before.

CONCLUSION

> Everything passes, everything perishes, everything palls.
> -French proverb

As countless artists produce work exclusively in plastic, it has become both its own medium and subject matter. The close association between plastic and the (lack of) well-being of the environment is clear, and it may be that this is not an unfair assessment. I do not wish to convince anyone that plastic is *good* for global ecosystems, however I do think there is room to question some of our basic assumptions about our categorization of plastic as a non-natural substance. There is room to reconsider plastic as it currently is understood, as an "other" to the networks that make up that complicated sphere of material interactions that make up our environment, in favour of a more nuanced and rich narrative. Such a narrative would see human production as continuous with the environment, and humanity itself caught up in systems of value and meaning that do not feature ourselves as the main characters. The consequence of isolating specific locations and systems of material interaction as the sites of some kind of distinct production – whether that be of-human or of-nature – combined with an ethical privileging of that manner of production, risks creating a hierarchy of importance that devalues and overlooks certain networks, materials and individuals.

Although plastic is a part of a massive process of global alteration triggered by human activity, it does not somehow remain external to the so-called natural material processes that compose various networks and ecosystems. Its origin in human activity does not merit the distinct ontological marker of "artificial"; does not separate it fundamentally from the geological and biological activity of the non-human. Plastic is truly a post-human material; it honours even the "post" prefix in its reliance on humans for its production. The existence of

plastic challenges traditional categories and creates the need for new cultural forms in order to account for its novel structure and modes of disruption and integration. The quick and ready incorporation of plastic into organic systems demonstrates the larger sense in which life processes are continually adapting and suggests that plastic can have a role in the ecosystem that is not merely destructive. Although plastic may have its departure point in human activity, at its most basic level it is just a contingently hewn-together string of chemicals continuously being bombarded by a host of other chemical processes.

By insisting on holding certain materials apart from others on the grounds of their production by humans, an unnecessary ontological gap opens between that which is considered natural and that which is instead merely other or derivative. This radical distinction obscures the impact of industrial production and ignores the new ecosystems that continuously emerge within and through the 'non-natural'. The persistent strange insistence on viewing human activity, including its material slough, as being endowed with some kind of transcendent metaphysical status apart from the rational structures governing the “earthly” realm does not do justice to the material mutability of the variety of possible assemblages of chemical compounds. The artists who are challenging these views can create exciting untold narratives that reframe dominant cultural perceptions in an engaging and possibly in a more honest way.

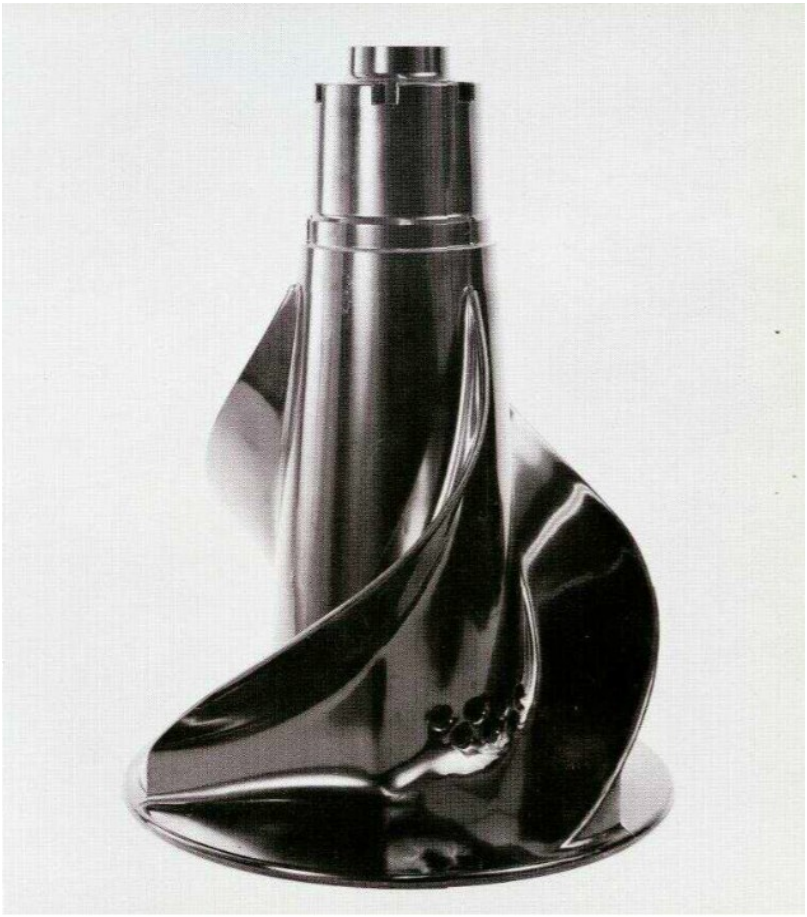

FIGURE 1: Washing machine agitator. Phenolic. 16”x10”. Manufacturer: Durez Plastics Division, Hooker Chemical Corp. Image source: *PLASTIC as Plastic* catalogue.

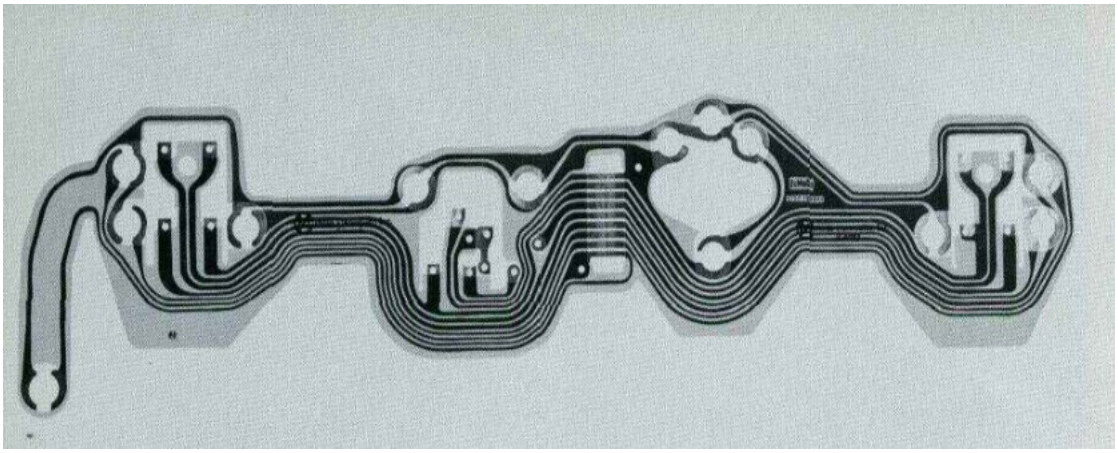

FIGURE 2: Circuit. Copper encased in polyester film. 261/2" x 6". Manufacturer: Methode Electronics, Inc., Chicago, III. Image source: *PLASTIC as Plastic* catalogue.

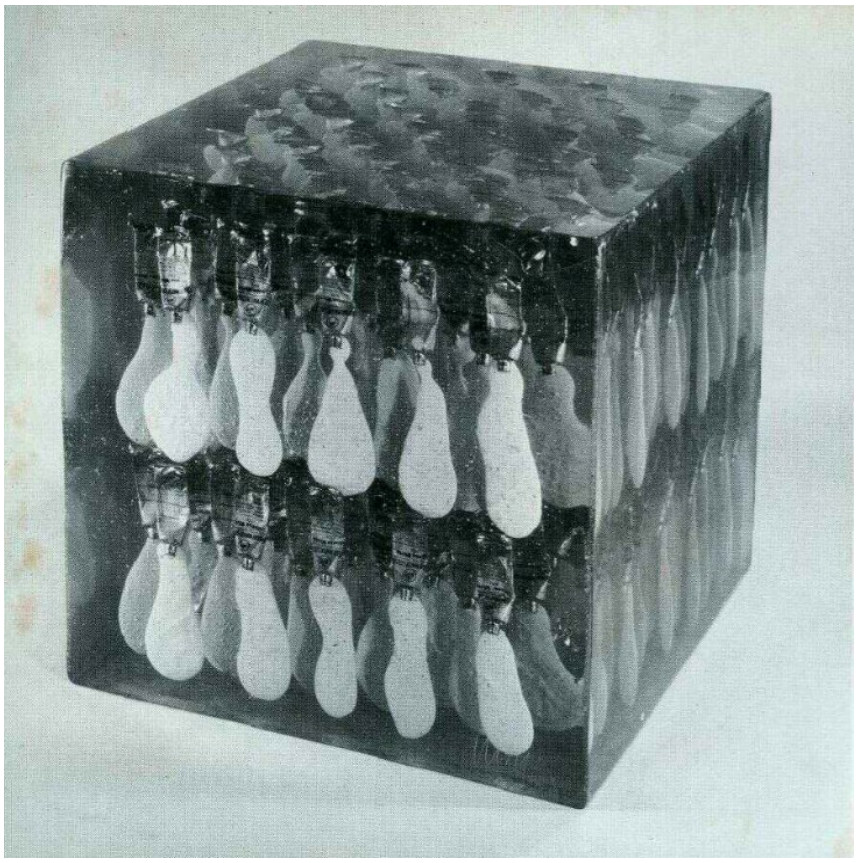

FIGURE 3: "Precious Icebergs" sculpture. 1967. paint tubes embedded in polyester. 11 "cube. Arman, Paris. Image source: *PLASTIC as Plastic* catalogue.

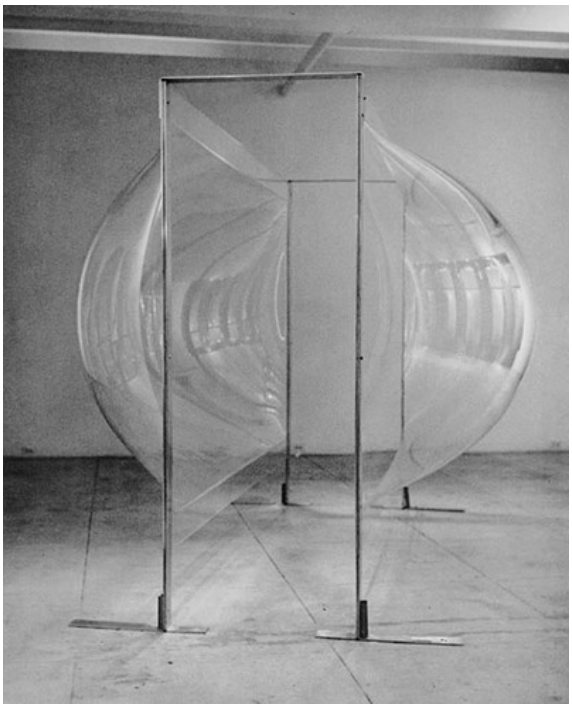

FIGURE 4: Les Levine. *Star Machine.* Acrylic plastic and aluminium. 213.4 x 243.8 x 304.8 cm. Image source: National Gallery of Canada http://www.gallery.ca/en/see/collections/artwork.php?mkey=7285

FIGURE 5: *Plastic Bag* poster. Image source: Artist website. http://www.raminbahrani.com/media.html

FIGURE 6: Screenshot. *Plastic Bag.* Film. Directed by Ramin Bahrani. 2009. VVS Films, 2010. DVD.

FIGURE 7: Screenshot. *Plastic Bag.*

FIGURE 8: Screenshot. *Plastic Bag.*

FIGURE 9: Screenshot. *Plastic Bag*.

FIGURE 10: Screenshot. “The Kingdom of Plastics.” video film. 1945. General Electric and Handy Jam Organization. Image Source: archive.org https://archive.org/details/Kingdomo1945

FIGURE 11: Enrica Borghi. Nebula. Detail. Plastic bottles, nylon. 2012. Francesco Lillo, Museo Tornielli collection. Image Source: Artist Website http://www.enricaborghi.com/en_US/home/works_installations/light_installations/nebula

FIGURE 12: Gayle Chong Kwan. *Wastescapes*. Plastic milk bottles, sound recordings from London and Moravia, speakers. Installation at Festival of the World, Southbank Centre, London 1 June - 1 November, 2012. Photo Credit: Gayle Chong Kwan and Linda Nylind. Image Source: Artist Website http://www.gaylechongkwan.com/works/wastescape#0

FIGURE 13: Arunkumar H G. *Forms of Activism*. 2014. Plastic bottle tops and steel wire. 7'x10'x12'. Installation photograph. Image Source: Artists website. http://arunkumarhg.com/

FIGURE 14: Melanie Smith. *Orange Lush I.* 1995. Plastic and wood. 244X144x25.5cm. Image Source: Artist Website http://www.melaniesmith.net/projects/orange_lush/index.html

FIGURE 15: Diane Cohen. *Postconsumer Mandala.*Plastic bags, handles, thread. Displayed at Anchorage Museum's "Gyre: The Plastic Ocean."
Image source: Anchorage museum website.
https://www.anchoragemuseum.org/exhibits/gyre-the-plastic-ocean/image-gallery/

FIGURE 16: Portia Munson. *The Garden*. 2000. Detail. ROCA.
Image source: Artist Website
http://www.portiamunson.com/installations/the-garden.php

FIGURE 17: Portia Munson. *The Garden*. Detail.

FIGURE 18: Portia Munson. *The Garden.* Detail.

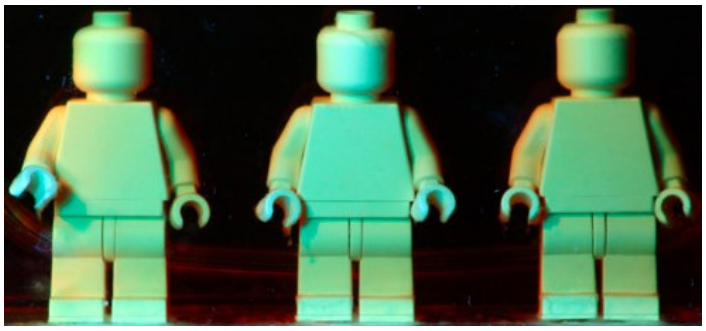

FIGURE 19: Pelling Lab. *Semi-living lego minifigs*. 2011. LEGO figurines, Human cells modified with jellyfish DNA. Image source: Pelling Lab website. http://www.pellinglab.net/semi-living-lego-minifigs/

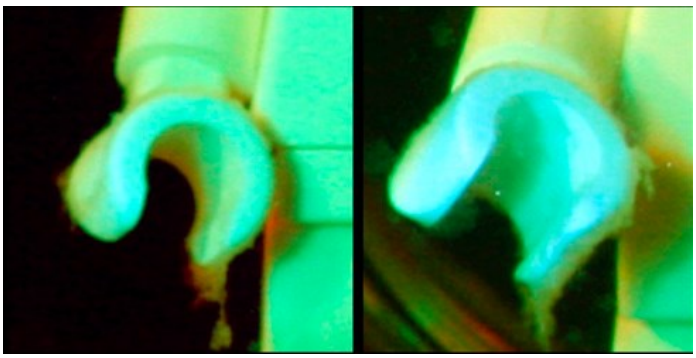

FIGURE 20: Pelling Lab. *Semi-living Lego Minifigs*. Detail.

FIGURE 21: Maurizo Montalti. *Continuous Bodies: The Ephemeral Icon.* 2012. Fungus and Monobloc plastic chair. Image source: Artist Website. http://www.corpuscoli.com/projects/the-ephemeral-icon/

FIGURE 22: Maurizo Montalti. *Continuous Bodies: The Ephemeral Icon.* Remaining Detritus. Image source: Artist Website. http://www.corpuscoli.com/projects/the-ephemeral-icon/

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