What kind of beautiful strangeness will it take?

Sustainable design, matter and pedagogical encounters

by

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Abstract

Sustainability is not about achieving an end point, rather it is a way of knowing, feeling and being that embraces a different perception of the material world we live in. My thesis is an inquiry into the entangled relationship between design and matter with the hope of inspiring this dynamic understanding of sustainability. I consider how coming to know the material nature of design may help designers achieve a more intimate perception of matter, and alter not only the way we design, but also what we think design should be. Matter is the force that binds the human with the nonhuman, the relationship human's share with the material world shapes our thoughts and ideas, and the fabricated world we live in today had its birthplace in human imagination. Of interest to me is the question: If design, as a practice, were to challenge the Western antimaterial habit of mind that burdens both human and nonhuman beings, what unimaginable and strange realms may open up when our imaginations are pushed beyond the limits of disciplinary thinking? The intention of my thesis is not to arrive at a single solution that will draw us out of the unsustainable reality that lurks beneath much of design, mass production and consumption. Instead this is the thoughtful journey of one designer longing to discover what new dialogue can be found between design and matter beyond the limited scope of our instrumental reasoning so that we may begin to see, feel and know the material world differently.

Preface

This thesis is original, unpublished, independent work by the author, L. Korwin-Kossakowski

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List of Encounters

Acknowledgements

There is a lighthouse on the shore of West Vancouver. Everyday for a year I would walk with my dog down to the pebbled beach on the opposite bank and feel I want to reach that place where the lighthouse stands. I give my sincerest gratitude to my supervisor Dr. Dónal O'Donoghue for being the beacon that guided me across the restless tides, for his faith in me venturing into unknown waters, for his encouragement, kindness and patience as I learned to navigate, and for bringing light to my ideas through his immense knowledge and a way forward onto *terra firma*. Thank you. I thank my thesis committee who have been lanterns of inspiration along the way. I am truly grateful to Dr. William Pinar for his support, insightful comments and valuable feedback. I am indebted to Dr. Karen Meyer for sharing her enthusiasm towards writings and for inspiring my own words.

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Dedication

To Fanfan,

my loyal companion and guide

who helped me see and feel the same world differently

Prologue

I was born an immigrant, and I cannot remember a time when foreignness has not been my companion. It is not the companionship I yearned for, as it made me doubt my legitimacy to place, and question my status to belong. I hoped one day, foreignness would tire of me as I had tired of it. I imagined how we would part ways and I would be introduced into community and share in the human song (Meyer, 2013)[1]. It never occurred to me that instead I might have to re-immigrate. Today I know a peculiar reality and way of being that comes from immigrating from immigration. Although I abandoned my birthplace and its song, and I feel I lost some sense of myself, I have resisted in relocating myself firmly within the new. Perhaps I surrender myself to the call of foreignness after all, and I will finally allow it to guide me and show me what lies outside of the human collective.

As a young girl finding myself outside of community, I sought comfort in the warm earth that would recognize my shadow, and the wind that would recall my name and whisper it back (Korwin-Kossakowski, 2012). Children often have a capacity to intuit the language of the nonhuman collective, but as we grow older our dependency on thought makes us detached (Meyer, 2013). Leroy Little Bear shares in the belief that place grounds humans to the earth, and he says, "you have an identity problem when the land doesn't recognize you anymore" (Chambers, 2008, p. 123). As I wander from place to place, I contemplate how do I live in a way so the land and I share in intimate communion and mutual recognition. Scholar and life writer, Cynthia Chambers (2008) encourages us to learn to do what is appropriate in all the places we traverse and occupy, for "to dwell in a place, to come to know a place requires that I learn to watch." (p. 120). I am still learning

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[1] All citations of (Meyer, 2013) throughout the thesis refer to class notes taken in a lecture on June 6, 2013, to a EDCP 585A class by Professor Meyer.

to watch through eyes belonging to no place, and a heart belonging to all the places I lived in.

What, you may ask, does this have to do with my paper, with design and with matter, or exploring the ideas of sustainability? This has very much to do with the way I see and perceive the world around me. By living in the in-between spaces outside of the collective, I endure certain confinements and limitations, but I also experience openness to diverse ways of being in the world (O'Donoghue, 2008). This awakens my curious gaze, but it also stirs my heart to find the connections that bind together the diverse in-betweens I know. Conditions that spill over borders and boundaries resonate with me, and this is perhaps why these broad and global issues have caught my interest and in some way inspired me to feel a connection to a cause. I would like to use the word community instead of "cause", however in the cosmopolitan understanding, I devote myself to justice and not to a particular human community (Pinar, 2011).

This is not to say that I flatter myself with the term cosmopolitan, and it is only in leaving each new place that I come to terms with what I have left behind. My endless journey of separation from place is also marked with an abandonment of my prejudice past (Pinar, 2011). As I question the opaqueness of the present, and long for a less fragmented future, I am grateful that there are words to express the complexity of not belonging to a particular community and nation (Pinar, 2011). My estrangement from the cultures and histories I held dear, comes from a certain "privilege" of being able to leave or escape difficult circumstances (Pinar, 2011). As the third generation in a row having to re-immigrate, I feel suspended in a space that is between an Eastern European heritage, an African materiality, and a nationless reality (Korwin-Kossakowski, 2012). In 1994 scholarly writer Angelika Bammer wrote that displacement is one of the most fundamental experiences of our century. I am not alone in my estrangement. I am perhaps only alone in the causes that I hold dear, as they become my community.

My commitment to cause is supported by my understanding of justice, which may differ or conform to other scholars and even change over time. Coming from a Western culture I share in the imperative to respond (O'Donoghue, 2012)[2], however having the right intentions does not automatically lead to the right answers. Perhaps I need to consider that it is not as important to define justice or find solutions for injustice, as is the ability to dwell in the uncertainty of present problems seen from an angle outside of community. In staying with the trouble I may open up new conversations within well-worn debates (Haraway, 2009). As much as I would like to tell the next person who asks me about my research, that it is about "this community" and "that specific problem". I have been forced by circumstance into a self-reflexive distance from my own culture(s), as I consider what particularities bind us to a universal humanity (Pinar, 2011).

It is my affection towards all the material earth that gives me compassion for the ideas around matter, and to recognize the urgency in exploring sustainability. It is my many years of experience with mainstream design that leads me to consider how the creative nature of the practice is being distorted by consumer culture. I know a design completely detached from the materiality that upholds its existence, and this drives me to question what is design, and what do encounters with designed objects teach humans about the world we live in? By exploring fabricated objects and the environment, it could be argued that this thesis encompasses everything (Sterling, 2005). However, as Sterling (2005) understands, " seen from a sufficient distance, this is a small topic." (p. 5). The absence of community creates a space and distance large enough for me to explore these ideas.

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[2] Class notes taken in a lecture on May 28, 2012, to a EDCP 523A class by Professor O'Donoghue.

Chapter 1: An invitation to beautiful strangeness

"The quest for a sustainable world may succeed, or it may fail. If it fails, the world will become unthinkable. If it works, the world will become unimaginable." (Sterling, 2005, p. 7).

I begin with feeling

John Dewey believed that an organism is capable of sensing a problem between itself and the environment long before it is known (Bishop, 2010). The ever-increasing volume of literature on the subject of sustainability in design makes it clear I am not alone in feeling that some sort of equilibrium has been lost between the natural world and the artificial environment of our own making. However, the problem I find with felt difficulties is precisely that they are felt, and often they reside in non-objective and intuitive ways of knowing. As I surrender to the call of my unease, I consider how do I create the conditions for the not yet known (O'Donoghue, 2012)[3]. In the wake of our betrayal by Western knowledge systems, feminist scholar and educator Patti Lather (2007) reminds researchers that, "there is a being in excess of our languages of knowing" (p. 3). She asks us to consider what unimagined realms can open up in the loss of absolute knowledge (Lather, 2007). Perhaps seeing the world more feelingly is the only passage left into the realm of the unimaginable (Shakespeare as cited by Wollen, 2012). It carries with it the vulnerability of not having a predetermined route, but also the openness to all possibilities. My thesis is the result of a strong sensing of a problem and the complexities of non-linear research, as I contemplate what unimaginable ways of knowing and being can challenge the unsustainable systems of production and consumption with which design is entangled with.

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[3] Class notes taken in a lecture on June 11, 2012, to a EDCP 523A class by Professor O'Donoghue.

Sterling's (2005) understanding of sustainability lies in the realm of the unimaginable, something so different it could quite possibly be escaping our languages of knowing (Lather, 2007). Because it is impossible to grasp things in their totality, parts of the world are perhaps already unimaginable, but I have not yet stumbled upon them, and equally the unthinkable is all around us and even within us. My thesis does not have the ambition of providing a single formula for a more sustainable way of design, but rather it is a personal journey of exploration into the discomfort I feel towards contemporary production systems and consumption patterns, that are in the words of environmental design professor Stuart Walker (2006), physically, ethically and spiritually untenable. It can be read as the story of one designer's inquiry process, driven by the unthinkable, the unsustainable, and the unbearable systems, practices and global machines modern day societies live by, in search for what beautiful strangeness can still be found through a deeper understanding of design and matter (Fuad-Luke, 2009). Nigerian writer Chimamanda Adichie (2009) warns against the danger of single story, and she explains that "when we reject the idea of a single story we gain a kind of paradise". My story is therefore only one of many ways of weaving a particular pattern of understanding from the literature and inquiry process.

The paradise that I have come to imagine through this process is one where thoughts and ideas are inspired through a wondrously different understanding of matter, our natural environments, and by extension design. I give appreciation to sustainable design consultant and writer Alastair Fuad-Luke (2009) for the term beautiful strangeness. It is not entirely an oxymoron but an interesting consideration of or juxtaposition of words that I believe alleviates some of the apprehension towards the not yet known, and invokes anticipation for the beauty it may possess. My interpretation of the words is a curious aesthetic of the mind willing to grasp the interrelatedness between human and nonhuman beings. Sustainability does not have to be the opposite of the stylish novelty circulating within commercial design. The mundane and functional products serving the same systems of instrumental reasoning are just as unsustainable. Perhaps one of the uncompromising challenges we face is that we produce far too much, and do not push our imaginations far enough into the realm of the

unimaginable. The imaginations of designers need to be stimulated by ways of knowing that surpass disciplinary thinking, with new ways of understanding the material environment and our entangled relation to it. The project of this thesis is to explore what new kind of understanding of matter and design can guide us to beautiful strangeness.

Although I experienced some restoration through the inquiry process and research, I find it hard to remain balanced when, as Fuad-Luke (2009) puts it, nature, which includes our own humanity, is dying. I am motivated by self-interest in the survival of the natural environment and the material earth (Bennett, 2010). The thought of a mostly artificial world alarms me, as I feel in losing the natural world we also lose the blueprint of how to be a collective humanity. It is not my intention to reproduce a dualism between the natural environment and the artificial world. They are intimately implicated in each other, and as humans we are both technological and natural. I debate whether the sense of separation comes from divergent consciousness. As humans we have used design and technology to elaborate and create an environment that reflects a way of knowing, thinking and willing that is governed by a philosophy of reason and estrangement which is foreign to the laws/forces that govern the natural world, thereby creating an environment that appears artificial and in discord with nature. Design professor and author Tony Fry (2012) believes that "we live in a particular kind of ecology and culture that equally lives in us." (p. 89). Design's inability at present to articulate the ecological or social truth of our particular culture is preventing a more meaningful relationship between the artificial world of our own production and the natural environment (Fuad-Luke, 2009). I turn to the literature and resources on sustainable design and matter to further explore these concepts.

A short overview of the literature

Determining what is design and what does design do have been the focus that has guided my research within design literature. The work of Tony Fry (2009) on design and sustainability has helped

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me place the enormous complexity of design in the broader context of the fabricated world. Design is immersed in every feature of our material and virtual world (Fuad-Luke, 2009). Fry (2009) understands design and designing to be "an active characteristic of everything we take to be given within the unnatural world we are born into." (p. 24). What has set us apart as humans, with the ability to design, now seems to be creating more and more complex global systems and advanced technological realities that we have little control over. Ben Highmore (2009) initiated a design project that explores the dense, contradictory, interwoven and entangled everyday moments of living that make up design culture. According to Highmore (2009) design configures and arranges social action, sensual perceptions, it orchestrates the purposeful and accidental bringing together and being apart of bodies and objects. And it does all these changes, exchanges and transformations materially (Highmore, 2009). Perhaps most significantly for my research Highmore (2009) emphasizes the inseparability between the ideational and the material phenomena that make up design. Only by acknowledging the presence of the entanglements of ideas and matter within design, can we begin to understand design in the context of the fabricated world (Highmore, 2009).

Although sustainable design theorists (also see Fuad-Luke, 2009; Fry, 2009, 2012; Highmore, 2009; Madge, 1997; Margolin, 1989, 1996, 1998, 2007; Margolin & Margolin, 2002; Orr, 2002; Papanek, 1985; Walker, 2006), all express concern about the well being of the natural world and believe design is part of a larger system that exploits the material environment for capitalist gains. Inadequate understanding has been given to the matter used in the artificial products we encounter and consume, and little exploration is done into the entangled dependency between humans and matter, and design and matter. My thesis is the initiation of a discussion between design and matter, driven by the urgency of sustainability. For any design object or idea to be sustainable, designers must understand the human relationship with the material world and the natural environment, as well as their interdependencies, as design is the main force behind materializing our fabricated lives (Fuad-Luke, 2009). While design has been looked at from multiple perspectives, I explore the possibility of what would it mean for design to look back through the perspective of materiality (Highmore, 2009). In looking back and understanding

design from the perspective of matter, I hope to expand the concepts with which design can be interpreted.

Feminist anthropologist Marilyn Strathern believes that it matters which concepts we use to think other concepts with (Haraway, 2009). Turning away from well-worn debates on sustainable design and working with a philosophical framework that questions the very essence of material entanglements has help me think about design differently. I admire the vocabulary of feminist academic Elizabeth Grosz (2011) who recognizes that life and matter are not polar opposites, instead she understands them as intimately tied together through a multitude of gradations, various degrees of elaboration of one and the same force. Grosz (2011) aims to understand to what limit will the humanities need to be forced to make the transformation into new forms of knowledge, "given its inability to accommodate the full range of humanity let alone the inhuman forms of life that surround and enable the human." (p. 15). I follow faithfully the work of political theorist Jane Bennett (2010) as she brings to life vital materiality and reveals the kinship between the human and nonhuman. Bennett (2010) understands causality as emergent and non-linear, and she draws human attention sideways to the entangled federation of actants that make up experiences and encounters. I continue to think with feminist theorist Karen Barad (2003), who believes that there is a relentless distrust of nature, materiality, and the body that informs much of contemporary theorizing. In her view matter is not a thing or static entity, but a doing, a harnessing of agential potential, and matter, like meaning, is not articulated or expressed in isolation but in relation to and part of mingled assemblages (Barad, 2003). Haraway (2003), reminds us that we are ultimately all bonded by significant otherness, and therefore coexists in a mutual identity that is inherently unsettled, individuated, separate, and yet strangely related (Barad, 2003). "We are continuously connected while yet belonging to a singularity." (O'Donoghue, 2008, p. 113), and it is through these connections that we experience the world and learn.

Drawing on the work of Elizabeth Ellsworth (2005), I explore the pedagogical potential of material encounters with objects and fashioned environments. These encounters can be understood as the everyday interactions we have with the most commonplace and ordinary artifacts. Ellsworth (2005)

encourages us to look for these experiences of learning in times and places beyond a knowledge that is perceived as a made thing and easily captured by language. When we encounter objects or designed environments, the experience can offer the possibility to learn or unlearn through the materiality of our bodies as we forge relations with the material world around us (Ellsworth, 2005). Our interaction is not only reduced to that particular object, instead we often become entangled with a whole range of invisible material exchanges, and at the most everyday level we can get caught up in the sensations, emotions and aesthetics that accompany global trade (Highmore, 2009). As we make and remake sense of ourselves through these dynamic and fluid relations, we are given the possibility to mobilize and transform meaning, helping to inform the ways in which people engage and transform both culture and politics (Ellsworth, 2005). "Thinking and feeling our selves as they make sense is more than merely the sensation of knowledge in the making, it is a sensing of our selves in the making, and is that not the root of what we call learning?" (Ellsworth, 2005, p. 1). Pedagogical encounters can reaffirm and restore habits and dominant norms, or through sensation and materiality they have the potential to bring us into being differently. The literature and ideas that I have referenced above have been interpreted through a diffractive methodology that encourages constructive engagement across these disciplinary boundaries by reading insights from the chosen areas of study through one another (Barad, 2007).

A summary of the methodology used in the research study

For the purpose of the study I have brought into conversation the key ideas explored in the literature in sustainable design, matter, and the pedagogical potential of encounters, with the anticipation of showing how experimenting and theorizing with different concepts is a dynamic practice that plays an important role in the production of meaning (Barad, 2007). It is only for the design of the thesis that I pull apart these always already entangled phenomena and reassemble them linguistically in a way that may bring about new configurations and understandings. According to Fry

(2009) the nature of disciplinary thinking is restricted in its capacity to grasp and engage the entangled complexity of unsustainability. Bringing these concepts and theories together as a *métissage* therefore allows me to move away from the modernist understanding of language, which is assumed to be transparent for the most part, and relies on reason to provide an objective and reliable foundation of knowledge (St. Pierre & Pillow, 2000). A *métissage* is the braiding of different strands of theory and practice that oppose the easy transparency and clarity of concepts (Hasebe-Ludt, Chambers, Oberg & Leggo, 2008). Chambers, Donald and Hasebe-Ludt (2002), define *métissage* as "a site for writing and surviving in the interval between different cultures and languages; a way of merging and blurring genres, texts and identities; an active literary stance, political strategy and pedagogical praxis." (para. 1). It is in some ways very similar to a diffractive methodology, for as these different braids of concepts come together they produce a unique pattern of understanding, that some would say has the power to undo logic (Hasebe-Ludt et al, 2008).

Like the *métissage*, diffraction is about finding patterns of difference, it can be best described by using an image of two pebbled being thrown into a still pond and observing the interference patterns that develop. I use this methodology as an apparatus that can help bring the reality of entanglements to light, while being itself an entangled phenomenon (Barad, 2007). A diffractive methodology also requires attentiveness to and responsiveness/responsibility to the specificity of material entanglements (Barad, 2007). According to Haraway, by replacing the overused metaphor of reflection with diffraction we can begin to understand which differences matter and for whom (Barad, 2007). She explores how through a diffractive methodology we can make a difference in the world and materialize the world differently (Barad, 2007). It is a particular practice that brings forward the reality of entanglements, while itself operating as an entangled phenomenon (Barad, 2007). Haraway explains that diffractions, "unlike reflections, do not displace the same elsewhere in a more or less distorted form... rather diffraction can be a metaphor for another kind of critical consciousness." (Barad, 2007, p. 71). These small but meaningful differences can help researchers acquire a more subtle vision and new ways of knowing, which can in turn help achieve different ways of seeing and experiencing in the world

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(Barad, 2007). By coming to know the entangled nature of differences (Barad, 2007), I recognize that such exploration cannot arrive at a single solution for a sustainable design practice, however, it may hold our attention to the immense potential that design carries, and show how designers need to be mindful of the current practices in design and the yet to be imagined possibilities.

To complement the diffractive methodology, the thoughts, feeling and ideas of my self-study will become one of the conceptual braids woven into this unique pattern of understanding. The experience of a day without plastic and other encounters with fashioned environments and objects has brought about an awareness of my own dependencies to the artificial world that surrounds us, and that I have in some way co-created for myself. O'Donoghue (2012)[4] believes that "all experiences change us in ways that cannot be predicted", as we continually live with the potential of becoming a different elaboration of the same. We do not preexist an encounter, our entangled experiences and interactions brings us into being (O'Donoghue, 2012)[5]. It is the combination of all the designed objects and spaces that we encounter that continually make and remake who we are.

In light of my research in design I view pedagogy associated with encounters as a surrendering to acquired habits or norms, or negotiating with the perceived will of the fashioned object or designed environment. By thinking pedagogy with design I have come to know how we learn through the interaction we have with fabricated things and environments, in this way design objects and environments orientate and orchestrate our habits and behavior. They conform our bodies, direct our perceptions, frame our thoughts, and to an extent make us who we are. Ellsworth (2005) reminds us that it is not easy to think experimentally and speculatively about possible and impossible pedagogies related to the encounters we have with design and matter, as these places of encounter are still things in the making. These relational realities where I experience my learning self have been threaded throughout the thesis as encounters. They are intimate occurrences and personal experiences with design objects and environments that support the different concepts and ideas discussed in the

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[4] Class notes taken in a lecture on June 6, 2012, to a EDCP 523A class by Professor O'Donoghue.
[5] Class notes taken in a lecture on June 4, 2012, to a EDCP 523A class by Professor O'Donoghue.

chapters below. These encounters are pedagogical in nature; I have been brought into being differently through the experiences and the entangled web of mind, body and the materiality of design environments and fashioned objects.

A brief introduction to the chapters

In the chapter that follows I explore the expansiveness of design, as it has become immersed in every aspect of the materially and virtually fabricated world. The entangled relations humans have with the fabricated world are reflected in our attitudes towards the natural environment and matter. I further establish what new distinctions and categories are emerging in design as it tries to accommodate the ever-growing complexity of the artificial world. Distinctions in design often become complicated and escape their static definitions when things start circulating in the material world. These fashioned objects become entangled with the social life of other things, taking on unpredictable trajectories and tendencies that create new materializations. I finally consider how technology has come to dominate all aspects of life, and how design has become enamored with this technological dream. The Plastic Age (Mulder, 1998), a modern marvel of inventiveness and convenience, has had far reaching consequences not only for the material environment and different ecologies, but its alien quality has become bonded with our own bodies.

The third chapter I dedicate to matter. I reflect on how our disposable lifestyles and consumer habits are creating an antimaterial culture. We arrive in specific worldly circumstances and to an extent the designed environment predetermines our relationship with the material world. By turning our attention towards a vital materiality we may understand how all bodies become more than mere objects (Bennett, 2010). Although Western materialism has reduced matter to an inert by-product of our consumer habits, it always carries with it the potential to be more than it is and to become entangled in different ecologies and further materialize through a heterogeneous assemblage. In

addition I embrace the work of Elizabeth Grosz (2011) who explores how evolutionary theories have

evolved to a point where difference in materiality is understood as a difference in degree rather than a

difference in kind. Design can be understood as an evolutionary self-transformation (Grosz, 2011), yet

what humans have done with this evolutionary elaboration has not been prefigured, and we need to

become mindful of our unsustainable actions. I ultimately take up the idea of sustainability as a process

rather than an end point (Fry, 2009). Sustainability needs to become a way of seeing and feeling the

material environment that is guided by a willingness to know human and nonhuman entanglements

differently. The destructiveness towards the material environment that is associated with modern day

consumer culture is threatening the stability of matter, which could impact future evolutionary

becomings, including our own.

In the fourth chapter I look at how sensation has become an integral part of design and

technology, and it is through the sensorial encounter in design that we experience the learning self and

change. The force of sensation comes through materiality to become entangled in the encounter, and

we learn and experience because we are material beings that experience the materiality of another

(Ellsworth, 2005). By being in relation to the materiality of fashioned objects and designed

environments, we can afford sensation and the potential to learn. In the final section of the chapter I

take into account the hegemony of the visual and how it has come to dominate all other senses and

sensory experiences. How we see the world is a reflection of our own conditioning, and it is indivisible

from how we treat the world and our material environment. The sensorial is to some extent an

unexplored terrain, and it is an interesting place from which to think about new ways of understanding

matter and the possibilities for a different relationship with the material world.

I conclude with a final chapter that brings together design, matter and pedagogical encounters

with everyday objects and environments, to discuss the unique pattern of meaning that has emerged

by braiding these concepts together. A new design language could offer the potential to think about

sustainable design in different directions and gives the opportunity to speak about objects and things in

new ways. Design can also begin to create a meaningful dialogue between itself and the matter that

sustains it. I imagine how the curious thought that accepts the nature of human and nonhuman entanglements can guide design into new ways of knowing. It is a way of overcoming the crisis of imagination in design that has been governed by an instrumental mode of thinking and feeling the world. I present a way forward for sustainable design that requires a bold leap of the imagination into different ways of knowing.

Closing thoughts

There is no one unimaginable solution that can solve all problems, as even the quest for sustainability has brought little relief to both human and nonhuman beings that have endured the turbulent history of modern capitalism[6] (Haraway, 2003). Fry (2009) explains that a sustainable design practice is dependent on far more than the simple addition of ecology and democracy to the equation. Instead a new way of thinking of design is required, one which does not privilege man as its pinnacle (Grosz, 2011). To move beyond the constraints of current design theory, I have turned toward a deeper understanding of the relation between life and matter, so as to think about design differently. My thesis is the continuation of a conversation in sustainability, and the initiation of a dialogue between design and the material world. This may open up the opportunity for design to find its real voice, "because design has failed to communicate its own social and environmental ambitions to society." (Fuad-Luke, 2009, p. 50). The significance for design in finding a real voice is that it may free itself from the constraints of producing desires that serve the commercial needs of powerful economic mandates, and become more socially engaged and aesthetically nurturing.

The argument I bring forward is that design needs to be oriented towards new ways of understanding matter and the entangled nature of all that exists. The conceptual and the natural need

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[6] According to Rogoff (2011) modern-day capitalism is marked by industrialization and technological progress, however currently the system is facing concerns such as resource depletion, pollution, financial instability and inequality. This leaves the future of itself and unborn generations in question (Rogoff, 2011).

to be reconnected, as the ecology of ideas is intimately bound to the material world and our perception of it. A new understanding of matter and materiality is essential if designers are committed to sustainable design and working with a long-term investment in the planet. I further argue that a new design language can help design be heard differently. O'Donoghue (2012)[7] believes that "a new language and new ways of speaking creates new objects." A design vocabulary that creates unexpected objects could offer the potential to speak about sustainability in new ways. Through a new design language design can become less about solving problems, and more about creating possibilities, bringing it closer to the unimaginable (Walker, 2006).

Exploring the complexity of these arguments will not produce certainty and accuracy, but it will bring the complicated conversation into a richer register of consideration (Fry, 2009). Bennett (2010) explains how critique is needed to explore new possibilities and alternatives, which will later them selves become the object of critique and reform. As we become aware of the entangled reality of all that is, while navigating our bodies through our inherited landscape of an artificial earth (Highmore, 2009). The alternative that will achieve a sustainable design practice is one that supports regenerative relations with both organic and inorganic life, and requires us to rethink our relationship with matter and the natural environment. In this way design can communicate a new language in which not only human bodies come to matter, but all bodies come to matter (Barad, 2003).

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[7] Class notes taken in a lecture on June 13, 2012, to a EDCP 523A class by Professor O'Donoghue.

Encounter 1: Longing for creative laughter

Longing for creative laughter

Design and I have been entangled for a long time, we have danced, wrestled, labored and played, but we have never held a consistent embrace. The desire to create, to transform has been with me for as long as I can remember. Perhaps this is why my relationship with design seemed obvious to others, but not so to myself. What inspired me most in the pursuit of becoming a designer was the idea that what I created would guide the viewer's eye over stylish forms and pleasing curves. Delighting the visual senses could be devoid of meaning. The cost of all this fanciful refinement was that I designed in a ruthlessly competitive environment. I was being primed for the life of a graphic designer who has one master – consumer objects and services. My work is to make things desirable, competitive and sellable. This was the measure of success.

In the lonely long hours between servicing objects, I call on design to run with me to the realm of the unrestrained, where creative laughter comes simply from the joy of creating. Author and poet Milan Kundera (1987) revives my conviction that another creativity does exist. He believes "that [things] born of the echo of God's laughter create the unimaginable realm where no one owns the truth and everyone has the right to be understood" (Kundera, 1987, p.164). In all the years that I worked as a designer I encountered design reduced to creative labor. I witnessed a design that never questioned the "truths" it monopolized, while selling misunderstanding. Creativity is a magnificent gift we as humans share, and it cannot all come from laughter, however it must come from the desire to promote understanding of the complicated realities we live in. I cannot help but wonder would the unimaginable world in which objects and things resonate from the joy of creative laughter need sustainability? What would it mean to be entangled in such a world?

Chapter 2: The entangled nature of design, matter and meaning

"Existence is not an individual affair, individuals emerge through and as part of entanglements." (Barad, 2007, p. ix).

2.1   Introduction

The artificial world we are entangled in had its birthplace in human imagination and how we nurture and school the new minds that will have a hand at creating our future material environments is crucial. I continue the chapter by considering the entangled nature of design and matter, their mutual interdependencies, as well as their relation to the global systems that uphold our post-industrial reality. I further look at how distinctions in design help us understand design as a separate yet interrelated phenomenon. The designed environment that most people engage with is anonymous, and therefore we should be wary of the seduction of the brand new designer object, as it has only just started circulating within the intricate web of matter and sociality that gives it life (Highmore, 2009). And finally I also explore how technology, the environment and the human interpenetrate each other creating new and unforeseen realities through their material exchange (Fry, 2009). Technology has modified the way billions of people inhabit the world (Fry, 2009). Mesmerized by its philosophy of progress, technology has limited our ability to perceive any other way of inhabiting the world. Woven into these sections are intimate encounters and personal experiences with fashioned objects and design environments that support the different sections in the chapter. These encounters are pedagogical in nature, I learned through these experiences, and they may serve as small windows of insight into lived experiences for the reader.

2.2 Entanglements: Design, matter and meaning

Design: The entangled ubiquity of design

How we inhabit the world can to a large degree be attributed to design (Fry, 2012). The everyday design environments I encounter are perhaps the best examples of how design plays a significant role in making me what I am and by extension collectively what we are. No matter how foreign the land or cityscape may be, the artificial objects and fashioned environments within it will orientate our behavior. Doorways, corridors, stairs, windows, pavements, benches, parks, walkways, handles, rails, tills, toilets and traffic lights become a web of design objects and environments that constantly demand our compliancy. It is not often that I stop to contemplate how the designed environment around me is in some sense accountable for what I am and for what I may still become. As a graphic designer I would often consider the wasted creativity invested in unwanted flyers, but seldom would I muse over how convenience store packaging, advertising crammed into mail boxes, or disposable coffee cups carry with them the potential for change and transformation, to make themselves and us other. These things are after all "junkable" they can be thrown "away". As we continually negotiate our entangled existence with objects and fabricated environments, from paper towels to high-rise buildings, the design of each has all played its part in what we are now.

Design has helped humans become and achieve many extraordinary things. However, in the broadest sense, collectively, we have reached the point of unsustainability, "where the oceans have been depleted to critical levels and our terrestrial actions, combined with the damage done to the planets atmosphere, constantly reduces planetary biodiversity" (Fry, 2012, p. 4). Fuad-Luke (2009) encourages a much-needed conversation about the global environment. Yet by first turning our attention to design's potential to shape the world, designers may come to know how we have become unsustainable. To achieve this end, I have elevated the context of design over its more usual preoccupation with the aesthetic and the utilitarian, and in doing so I aim to place design into the

broader picture of our becoming (Fry, 2012). I acknowledge that this is a very ambitious task, but without an attempt to understand the essence of design and the creative force that guides it, there is little chance of creating a design intelligence or philosophy that can help design and designers navigate out of the unsustainable. Fry (2012) believes that the way mankind has emerged and made its presence in the world is intimately tied to the fabricated world. In other words what we make and what we are is indivisible, and this invisible relation is reflected in our attitude towards the material world, the natural environment and matter.

We only need to look at the expansiveness of the modern world to understand the enormity of design (Highmore, 2009). In an environment where we increasingly form more intimate relationships with the growing amount of artificial things around us "nature" can no longer be understood as a separate category, as it is in fact entangled with, transformed and activated by design (Highmore, 2009). Stem cell research will soon make the designing of bodies possible, while the genetic modification of our food has redesigned our eating habits, environmental crisis and climate change show how nature and design are increasingly implicated in each other (Highmore, 2009). Fry (2009) explains that conquering nature has long been part of human ambition and it is this desire that initiated the creation a world-in-the-world. "Steadily design as an anthro-directive, profoundly secular and omnipotent practice displaced the 'invisible hand of God'." (Fry, 2009, p. 3). Design has enabled humans to perceive themselves as master creators. Making systems and machines that bring new things into being has enabled us to feel like the authors of new worlds-in-the-world. In all this material splendor, technological innovation, ecological degradation and humanitarian crisis created around us, have we ever stopped to question ourselves, "how do [we] dare to disturb the universe?" (Barad, 2007, p. 395). The question Barad poses makes me consider as humans can we only bring thing into being through disruptive practices?

Our world-in-the-world is only one among countless possibilities of expressing ourselves and experiencing our everyday reality. Design shapes our material and immaterial world, and encounters with these fabricated environments play a significant role in the way in which we inhabit this particular

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world and what kind of organism we will be (Fry, 2009). It is not the only way, and even though "the designer and designed objects, images, systems and things – shapes the form, operation, appearance and perceptions of the material world we occupy." (Fry, 2009, p. 3), the possibilities for inhabiting a different world are endless. To change the way we inhabit the world we need to change the way we design. This is easier said then done, as we do not design in a vacuum. What we design is continually influenced by the world around us, by other designs that have already been manifested in the world and by the concepts, language and beliefs that nurture our imaginations. The tools we create are therefore marked by our cultural practices, and these marks will act back on the tools user (Fry, 2009). In this sense the designers themselves become altered through the encounter with the designed (Fry, 2009). We cannot change the environment we live in today, and we cannot dispose of the tools that help us survive and navigate through the complex structures of our post-industrial world. What we can change is the way we think about design, matter and the natural environment and to acknowledge that our advancements in design have only further revealed our entangled relation to the material world.

Matter: An ever-present vibrancy

The word matter brings to mind to the idea of passive stuff, something raw, brute and inert (Bennett, 2010). There is also a tendency to divide the material environment into dull matter, made up of things, and vibrant life, characterized predominantly by us and then other beings (Bennett, 2010). However, to grasp the entangled presence of matter in all human and nonhuman processes I pursue a deeper understanding of matter. Barad (2003) explains "matter is not little bits of nature, or a blank slate, surface, or site passively awaiting signification; nor is it an uncontested ground for scientific, feminist or Marxist theories... Matter is not immutable or passive, it does not require the mark of an external force like culture or history to complete it." (p.821). Instead she understands that matter has always had a historical actuality, and perhaps we should come to know how we have been part of its

history as opposed to it being part of our own historicity (Barad, 2003). The fabricated world of our own making is a relatively young environment, when understood in relation to matter.

It is not easy to separate design and matter. Design intensifies matter's potential for further materializations, and matter enables design to manifest itself in the physical form as objects and things. They are both intimately tied together. That being said, it is not easy to separate matter from any process, thing or being. Bennett (2010) encourages us to acknowledge the dense network of dynamic and vibrant matter we inhabit. She further explains that if we can come to know ourselves and the objects that we study as "a heterogeneous compound of wonderfully vibrant, dangerously vibrant matter… then not only is the difference between subject and object minimized, but the status of the shared materiality of all things is elevated." (Bennett, 2010, p. 13). The knotted world of relations not only binds together all bodies, but our interconnectedness can humble humans into the common unity of matter (Bennett, 2010). Questions around sustainability seem to arise when we create conventional designs that try and elevate or separate us from this inextricably enmeshed material network. Bennett (2010) reminds us that if we are making design processes and objects that harm one section of the web, the harm may extend and be felt by many other bodies including our own (Bennett, 2010).

If we are to accept matter as a force with its own propensities and tendencies (Bennett, 2010), it also means that unsustainability can no longer be viewed as a fixed state. Instead it needs to be seen as a perpetual material and cultural change and exchange (Fry, 2009). The fabricated objects and things I interact with and encounter daily, are made to appear separate and distinct. All the things that I use, consume and own are suspended in a reality that often conceals the chain of events and ecologies connected to their creation. From the worn out bristles of my toothbrush to the latest smart phone, all are entangled in global systems of extraction, exploitation, production, consumption and waste. Fry (2009) emphasizes how "the extraction of raw materials, greenhouse gas emissions and the exhaustion of agricultural soils around the world are linked not only to each other but also to the volume and choice of products in shops and supermarkets." (p. 112). Bennett (2010) believes that our present understanding of matter as inanimate stuff not only influences consumer habits and modes of

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production, but restricts sustainability. In Western consumer culture where junking has become second nature to us, we need to remember that "away" is also a location and an environment. Discarded and unwanted commodities can never be thrown away as their vital materiality and potential activity will always continue (Bennett, 2010).

The matter we use in the production of things and objects is intricately connected to ecological systems prior its extraction, and it will continues to become entangled in different environments as it moves through the fabricated world before it ultimately ends up as waste. At every stage it carries with it the potential for further materializations and to become other. Matter is always in a state of becoming. Many of its materializations extend over a timeframe that exceeds our perception, and we are unable to grasp these slow yet persistent changes (Bennett, 2010). We therefore hastily judge matter through our limited lenses reducing it to inert, passive stuff and see before us a fixed and static object. Design can be seen as one of the catalysts that transform matter into the artificial world of our own making. Design uses matter to create new objects and things, often changing its composition, and thereby enhancing matters potential to take on new tendencies and trajectories. How we transform the given matter and resources available to us will determine what kind of future entanglement we will have with the ecologies and environments around us. If we approach our environment and ecologies with violence and disregard, it will reflect back on us, as they are not separate entities from ourselves. The environment is not a location out there somewhere, but rather something that inhabits human bodies and minds (Bennett, 2010).

Although matter is always present in design, we seldom design with matter in mind. I would argue that the urgency with which sustainable development is trying to restore over exploited and declining ecosystems is not evidence that our understanding of matter has changed, but rather that we have realized the need to replenish the immutable resources required to continue with the same instrumental reasoning. Bennett (2010) believes by understanding the "'alien' quality of our own flesh" (p. 112) we will come to know our own bodies as material, and that vital materiality is not a quality exclusive to humans, but rather an environment "populated and constituted by different swarms of

foreignness." (p. 112). Only through a deeper understanding of how the ecologies within us are entangled with and inseparable from those around us can we begin to design with the notion that we are in fact "the flesh of the world." (Merleau-Ponty as cited in Fry, 2012, p. 113). Many designers may well be designing with sustainability in mind, but it is still a leap of the imagination that needs to be gained to design with matter in mind.

Encounter 2: Learning from the everyday

Learning from the everyday
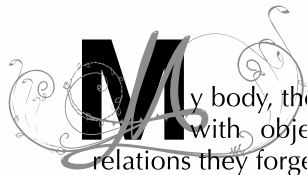
My body, thoughts, and senses are constantly entangled with objects, structures, things, and the specific relations they forge with the matter they were made from, and the global systems of trade and production and consumption from where they came. There is no object or being outside of this knotted network of systems and structures. I feel my body as it continuously relates to the world, to others, and to the material objects and beings that surround me, and my interpretation of them (Ellsworth, 2005). These entangled encounters speak to me beyond the limited scope of language confronting me through feelings and sensation (Ellsworth, 2005). As I encounter familiar objects they reaffirm the past connections I formed with them, they connect me to home and to the safety of habit. At the same time they continually invite my senses to experience new possibilities of the same, but in a different light, on a different day, at a different time, inspired by different thoughts. I am continually given the chance to transform meaning, I constantly learn, constantly unlearn through my experiences and encounters with these objects (Kenway & Fahey, 2009). I think and I feel my being in relation to others as I make sense of the world I encounter, I not only sense the making of knowledge, I sense my self in the making as I come into being – I am entangled, I am learning, I am becoming (Ellsworth, 2005).

2.3   Distinctions within interrelatedness

Design: The ever-growing complexity of design

"From architecture and art to jeans and genes" (p. 62) art critic Hal Foster (2001) believes that

design is everywhere, no place is untouched by its expansiveness (Highmore, 2009). This has never

been more evident to me than in the last few months as I grappled to single out just one object of

design from the vast expanse of my own personal designed environment that I could use as a beacon to

draw my thoughts to. Some objects may appear more useful, indispensable, desirable, aesthetically

pleasing or less convenient than others, but how does one begin to gauge, which is more designed?

When everything has undergone the process of design, no single item stands out as uniquely designed,

everything appears almost commonplace and natural. This is perhaps why the importance of design

escapes us, for where does one start when just about everything inorganic we interact with or

encounter in our fabricated world has to be taken into account. The measure for design could perhaps

be tied to distinctions in design. In her book "Design and the elastic mind" Paola Antonelli (2008)

explores how technology is accelerating the rate with which design is evolving. New categories and

courses in design are being offered to accommodate the ever-growing complexity of the artificial world

(Antonelli, 2008). Humanitarian design, sustainable style and identity design are offered in design

schools in the Netherlands, while the Royal College of Art, London, has design courses focusing on the

senses, sensuality, identity and memory (Antonelli, 2008).

Although distinctions in design are very clear within the different design disciplines and

professions, it is more complicated to separate objects into different categories once they become

entangled in our everyday realities. Margolin (1989) believes that as long as design training remains

fragmented and isolated a coherent design philosophy that delves into the complexity of design will

elude us. Even though the design profession functions on separation and specialization, this is not

always carried through to the things that are created by these disciplines. A world of interrelatedness

and entanglements awaits all things, as we do not live in a pre-given objective world (Cox, 2011). Highmore (2009) believes that a design object should not be seen as a 'finished' product that is adopted or adapted by the user, instead it should be understood as part of a "designed environment as an active field of engagements and entanglements" (p. 3). A plumbing fixture can be described as a piece of functional design, however, once installed it becomes an environment populated by different microscopic organisms and constituted by different swarms of foreignness (Bennett, 2010). As objects and things move through our capitalist models of economic development they take on different trajectories and become woven into collective or individual value systems. While the status of certain objects is elevated, in the blink of an eye this culturally invested brilliance can be lost, for the value perceived in objects is dictated by an entire set of shifting beliefs, desires and coded languages (Rogoff, 2001). We also need to bear in mind that not all individuals have the same access to design experiences (O'Donoghue, 2009). Some anonymous design objects carry with them an inherent planned obsolescence, while high design is often regarded in terms of limited editions and collectable items, made from quality materials and craftsmanship (Julier, 2000). It would seem that ending up as garbage or waste would be the great leveler of all things. Yet what is spent, useless and undesirable to one person may seem of value to another.

Many of the distinctions we make within the objects we encounter are shaped by advertising design as it seduces us with the sex appeal of the inorganic (Highmore, 2009). We are led to believe that through the consumption of products we will be able to appease our manufactured desires. According to Papanek (1985) it is not only consumers that struggle in these lands of plenty, but designers also suffer from the tyranny of absolute choice, "when everything becomes possible and all limitations are gone, design can easily become a never-ending search for novelty, until newness-for-the-sake-of-newness becomes the only measure." (p. 42). As new designs and products continually flood this environment they will displace the meanings and value of other objects and things in relation to them. In this way new distinctions are continually been made. Different entanglements are continually been forged.

Designer Bruce Mau asks the simple yet profound question: "Now that we can do anything, what will we do?" (Stairs, 2006, para. 1) Perhaps designers need to take a break from doing, and spend more time looking at and understanding what has already been done. By coming to know what has been done and understanding how things come into being designers can start transforming design intelligence (Fry, 2009). This should involve getting to know distinctions in design that are other than those based on a production model that emphasizes styling and coding (Julier, 2006). Highmore (2009) believes we need to start seeing the anonymous next to the recognized objects of high design, and to think more about the ordinary and inescapable, such as the disposable drink bottle, and less about *haute couture*. To better understand the everyday design objects we encounter, we need to grasp the expansiveness of the world of the made (Margolin, 2007). Shreds, cardboard, carpets, plugs, school desks, discarded boots, bicycles, ubiquitous design holds our attention to nothing but an et cetera, an environment of circulating objects and intimate connections (Highmore, 2009). According to Highmore (2009) "we have to come to recognize the massive range of 'designed' elements in the world that we are implicated in and come to know how we are incorporated in a variety of design processes. To fail to see this is to fail to see the world at all." (p. 7). Although the study of design in this context may seem endlessly unmanageable in its multiplicity (Highmore, 2009), I have come to realize that the more of the world I am prepared to see, the less inclined I am to elevate single objects of design, instead I welcome the perpetual flow of matter entangled with bodies, creating sensations and affect.

Matter: New distinctions create new entanglements and new materializations

Matter, even more so than design, is a massive expanse of diversity that makes up the entire world. Humans continually add to the multiplicity through artificial products and by-products. Margolin (2007) believes that the world of the made will soon be like the world of the born: "autonomous, adaptable and creative, but consequently out of our control" (p. 10). Our human inability to completely

dominate matter is a reminder that what is manifest in the world of the made has been created through human ingenuity but it is not entirely because of it, as the matter of the artificial world often confronts us with its unruly potential (Bennett, 2010). Although a distinction can be made between the artificial matter of our own making and the given matter of the world, including organic and inorganic life, it is a futile attempt to disentangle them, as all matter exists in a continual state of transformation and exchange, and everything always comes from and goes somewhere (Fry, 2009). This exchange does not only happen outside of our selves as increasingly we consume and become bonded to both the given and artificial matter of the world.

It is hard to imagine that the outside could be within, and that the very atoms of seemingly distant and distinct artificial objects may at some point be circulating within our bodies (Bennett, 2010). The natural and the artificial environment is not something separate from human bodies and our participation in nonhuman entanglements will to a large degree determine what kind of organism we will be (Bennett, 2010). Bennett (2010) explains that it is therefore "foolish to define the self as something purely human." (p. 116). In the same way pure nature uncontaminated by humanity does not exist (Bennett, 2010). The synthetic matter that surrounds us is increasingly being absorbed into our bodies, and Fry (2009) points to unregulated and unlabeled nanoscale particles contained in products circulating on the global market as an example of the new materiality we may soon become entangled with. How this matter will affect human bodies is not yet known (Fry, 2009), and the complexity of human and nonhuman entanglements takes on a whole new meaning if we start to wonder how many other bits of foreign matter have we already become bonded to? The force of things becomes most apparent when we realize how many of these new materializations will be beyond our human control.

According to Bennett another attempt at domination and control over matter and the environment by Western materialism is the creation of a distinction between dead matter and vibrant life (Shanks, 2010). Although anything available for consumption is often regarded as dead matter, it could be argued that within our post-industrial society the boundaries between the two conditions are porous. Perhaps we need to further question what falls under the category of dead matter, and would it

only include the natural resources needed to sustain modern day consumer lifestyles, as well as the discarded by-products and waste left over from consumption? Does it matter at which point nature and other resources are simply considered inert and lifeless? Bennett challenges this way of seeing, feeling, and understanding the world as the entanglement of these different categories has become harder to ignore (Shanks, 2010). Even though the exploitation of dead matter takes place in an environment far from the vicinity of our vibrant lives, all matter is entangled in a dense network of relations (Bennett, 2010). Fry (2009) urges us to remember that "the environment is not a location, rather it is everywhere, the inner the outer, the earth, the sky, the ocean, the world given and the world of our own creation." (Fry, 2012, p. 3). We can never stand outside of the environment, and nature is not a container that holds our humanness, instead all matter including our own is in a continual condition of exchange and change (Barad, 2003). Perhaps in this vast expanse of vibrant matter what matters most is not the creation of separate categories for the material world but rather understanding matter's potential for further materializations and how this will affect the future of all matter including our own.

Encounter 3: Silent instructions from things

Silent instructions from things

I feel engulfed by the world of the made (Margolin,2007). I navigate through this unending expanse of matter and a rainbow of design. Woven into this man-made fabric I see the world of the born, but its matter too has been designed, landscaped, clipped and pruned. Nothing seems to escape design. In all this design I find myself searching for something, something that will catch my eye, something that I will encounter and it will move me to see design differently, perhaps more intensely. I wonder why the objects around me appear commonplace and natural. Why does the chair feel familiar, why do I not question its awkward shape, or how it invites my body to surrender to its function? According to Massumi, my habits shape the materiality of my body as they reside as much in the flesh as in the conscious and unconscious awareness of my self (Ellsworth, 2005). My habits occupy an ambiguous double location, as both the cultural and the material environment I encounter will impact the nature of my being (Ellsworth, 2005). Could this be why I perceive the objects and man-made environment as natural, as given? The mark of culture has given me the capacity not to see the world around me. I have become habituated to these things, these objects and these encounters. This may also be the reason why I find it hard to single out an object of design that stands out amongst others in the fabricated world of our own making.

My habits provide me with a sense of security and control, yet they also limit the possibility of experiencing the world differently (Highmore, 2009). In every new designed environment I seek out and succumb to more habits, as objects and machines in turn control my daily routines (Highmore, 2009). I carry the potential or power to alter or change these objects, as their disposability is often apparent, yet, it is I not the objects who surrenders to the disciplinary habit of mind and the principles of instrumental reason (Highmore, 2009). Where and when did I begin to learn to obey the silent instructions from things? As I dance through the web of matter and design, the world and I exist in difference, in encounter (Ellsworth, 2005).

2.4   Technology and the Plastic Age

Design: The techno-fix

There is design in nature, and perhaps I would go as far as saying that nature is in essence design. The human capacity to design is simply a unique and individual expression of nature, such as thinking (Barad, 2003). How is it then that the artificial environments we create has left us feeling disembedded from the world (Pinar, 2012)? Within the developed world, human consciousness is dominated by technology that drives a philosophy of modernist logic (Pinar, 2012). Technology has transformed not only the way we grasp the world, but also our way of being in the world as it transforms the way we know, think and will (Pinar, 2012). Perhaps both technology and design have been misguided by our partial and instrumental reasoning, as together they create impersonal and alienating institutions that lock us into a fragmented society, and we become estranged not only to ourselves but also the natural environment. When I admire a spider's web gracefully negotiated and constructed between a branch and the old deck chair, I witness both technology and design. The delicate structure is at the constant mercy of a shifting environment and an unpredictable walkway, yet the spider does not create deliberate systems and technologies to control its habitat. Suspended between the natural and the artificial, I cannot help but wonder, perhaps the spider is working from a philosophy more complete than our own.

Living by any other philosophy has become almost unimaginable in an environment where we increasingly struggle to separate and distinguish between technology and the human, as artificiality interpenetrates both (Fry, 2009). Instead of being an optional *mode d'être*, technology has become the only way of life on earth (Pinar, 2012). "We do not just live with technology but by it." (Fry, 2009, p. 35). And it would appear that design has been hijacked by this technological dream. Many designers are enchanted by the power of unobstructed design that innovative technology such as the computer delivers (Antonelli, 2008). The danger that lies in the belief that a technological redemption will save us

is that "techno-fixes" usually solve problems by devising immediate solutions from relevant data, leaving problem solving without the intellectual labor of judgment acquired through knowledge and wisdom (Pinar, 2012). These "techno-fixes" are often idealized as we fall under the spell of their transformative power and agency (Fry, 2009). Haraway (2002) reminds us that our technologically enhanced vision is an illusion, a god-trick, "allowing us to construct a usable, but not an innocent doctrine of objectivity." (p. 678). The most troubling illusion of all is the illusion that human agency somehow has the ability to direct technology as if it were independent from human beings (Fry, 2009). Entangled in every aspect of the artificial world we cannot will our innovations from a position outside of technology.

Plastic is an example of technological ingenuity that is steadily surpassing human agency, as we become more and more entangled with the life histories of plastic (Miller, 2007). The "plastification" of society through the invention of synthetic polymers has changed the way we live, design and make things (Mulder, 1998). It has also changed the matter we interact with, as the vast majority of human beings alive today deal almost entirely with artifacts far removed from virgin materials (Miller, 2007). Immersed in the Plastic Age (Mulder, 1998), one can barely imagine an activity without plastic playing a role, this is especially true in developed countries where up to 100 kg of plastic is consumed and discarded per person per year (Mulder, 1998). The convenience brought about by plastic designs has not been ours alone to behold, it has become entangled in different ecologies and environments, creating consequences whose outcome we cannot yet predict. Out of the global 260 million tons of plastic used per annum, "substantial quantities of plastic debris contaminate marine habitats, from remote shorelines to inaccessible areas of deep sea to heavily populated coastlines." (Thompson, Swam, Moore & vom Saal, 2009, p. 1975). Bennett (2010) warns against the danger in not recognizing the force of things, especially things that would generally be considered as inert.

Less plastic or less technology is not anti-technology, as we are already technological beings (Fry, 2009). However, Fry (2009) believes that living with the erroneous hope that science and technology will save the planet, diminishes human agency and accountability and reduces our

awareness to other possibilities for change. If we are to make our minds elastic (Antonelli, 2008) and become open to new possibilities, our innovations should not be guided by a global capitalist hegemony of idealized prosperity at the cost of our surroundings (Stairs, 2006). Walker (2006) considers how contemporary design has been more successful at creating problems than providing solutions, and perhaps "it is more accurate and more constructive to say designers create possibilities." (p. 37). This concept of design may help in introducing the much-needed ethical dimension to the practice (Walker, 2006). With the stretch of our elastic minds, a more intimate understanding of matter needs to become an essential component of an ethical design practice.

Matter: A perfectly plastic world

Technology has transformed matter giving it new structures and compounds. Plastic may be the most obvious example that we encounter daily, a convenient, lightweight non-corrosive product that is versatile and durable (Mulder, 1998). This invaluable material is used in packaging, electronics, transport, construction, and untold number of other possible applications (Mulder, 1998). There are at least 20 different types of plastic, each can be further divided into countless grades and varieties, and each can take between 400 and 1000 years to decompose (Thompson et al, 2009). At the start of the mass production of plastic some 70 years ago researcher and chemist E.G. Yarsley and V. E. Couzens (1945) mused over the "plastic man" and the perfectly plastic world he would live in.

> "This [imaginary] plastic man will come into a world of color and bright shining surfaces where childish hands find nothing to break, no sharp edges… and the frames, like those of his house are of molded plastic, light and easy to open never requiring any paint… wears a denture with silent plastic teeth and spectacles with plastic lenses . . . until at last he sinks into his grave in a hygienically enclosed plastic coffin." (Yarsley & Couzens, 1945, p. 149-152).

These imaginary setting are not far from the world we live in today. Yet in this perfectly plastic world with "no crevices to harbor dirt and germs" (Yarsley & Couzens, 1945, p. 149) the agency of

matter and its potential to become entangled with other nonhuman bodies and ecologies has all but been forgotten. While the possible applications for plastic are inexhaustible, we need to remember that the force and agency that accompanies this different matter is equally as vast. Barad (2007) reminds us that agency does not exist in isolation, but only through mutual entanglements and relations that all beings and things share. "Humanity and nonhumanity have always performed an intricate dance with each other" (Bennett, 2010, p. 31). While plastic has become our new dancing partner, it is also swirling through other ecologies and environments creating changes and transformations, as different bodies and beings get caught up in our consumerist plastic frolic. But what will happen to those bodies that are unable to do the steps? Where will this plastic frenzy lead them? The plastic we make today will dance around for another 400 to 1000 years, and the echo of its movements will always be there, broken down and re-assimilated into the material orchestration of the world.

While the volume of plastic consumption in industrialized countries is enormous (Mulder, 1998), Bennett (2010) reminds us that bodies increase their agency through the assistance, collaboration or interference of many bodies and forces. The more plastic is used and discarded, the greater the potential for it to become entangled with other bodies and matter, thereby enhancing its potency. Understanding how entanglements enhance or weaken agency may help in achieving a more horizontal relation between technology, matter and the natural world. Bennett (2010) believes that this horizontal relation needs to be extended even further between humans, biota and abiota. In her view, thought, matter and action are aspects of the same, "for there is but one matter-energy, the maker of things seen and unseen." (Bennett as cited in Jackson, 2011, p. 127). Thinking is simply one of the many expressions that nature can afford itself (Barad, 2003). If all our thoughts and ideas that inspire design and technology are simply nature performing itself differently, it is strange then that we should use nature to overcome itself.

Encounter 4: A window into different worlds

A window into different worlds

Technology has complicated my relationship with the material world. Yet it enables me to see and perceive the world differently, it enables me to ask different questions about the world in which I live and my perception of it (Schmidt, 2008). While the Internet and technology is always gently steering me towards consumption, towards commodities through banners and pop-up ads. For brief moments I feel how this technology is also able to collapse in some way the mechanisms of physical, social, and linguistic distancing that separate me from the exploitation required to sustain my "normal" life (Pachirat, 2012). It has given me a window into different worlds. Time and spacial order are more complicated in this realm. It is not linear; it can be repeated, it can be paused. In some way I have control over it. Time and space is often intensified by a multiple sequence of visual events, and then heightened to sound.

I wonder if the screen of my computer that I endlessly stare into can be understood as transitional space. Can this window into the virtual world be considered a space where I experience the instability of boundaries as my inside and outside are put into play (Ellsworth, 2005)? In these moments of relation to a technological other the permeable boundaries can inspire me towards self-change where I experience myself learning and coming into being differently (Ellsworth, 2005). The cognitive effects of the change come later, when I am in relation again to other bodies and things. They are especially vivid when I return to an already known thing, or a habitual object and I see the same thing, but I no longer see it in the same way. Then I become aware of my transformation, but I cannot trace back to the moment of change. To encounter the moment between the world and I or between an other and myself I enter into the reality of relation (Ellsworth, 2005). In this interrelational space I must withdraw from myself in some way and become neither self nor other (Ellsworth, 2005). This transitional space does not open up with every encounter, or technology that I experience, but it does exist always and everywhere as potential (Ellsworth, 2005).

2.5   Conclusion

By presenting design as an active characteristic of everything we know in the fabricated world, I bring attention to the expansive nature of design (Fry, 2009). Although design and matter are entangled in every aspect of global systems that sustain modern day consumer lifestyles, I introduce matter as a vibrant force with dynamic trajectories, propensities and tendencies of its own, capable of designing beyond the intended function of a design through new material configurations (Bennett, 2010). I acknowledge distinctions in design and focus on how the study of a single design object means to engage in the intricate web of entanglements, from sensual orchestrations, material assemblages to individual negotiations, each object resides in a fluid environment of exchange that continually defines and redefines its boundaries. Design as a discipline has long neglected the material nature of its practice and all that it owes to the matter that sustains it, and I argue that designing with matter in mind requires a more intimate understanding of our relationship with the material world that sustainability has not yet achieved. I explain how technology has come to dominate all aspects of life, focusing on the modern marvel of plastic and its far-reaching consequences, not only for the material environment, but also how its alien quality has become entangled inside our own ecologies.

Encounter 5: Wasted moments

WASTED MOMENTS
PE-LD

The ritual of throwing away is a thoughtless ceremony I partake in daily. Yet the effort of trashing is perhaps vested with more emotion than I allow myself to bear. Sometimes in the act of junking, I experience a certain kind of mournfulness in the constant disregard of spent material things. I feel a certain kind of sadness in that I outlive most objects' usefulness. In all my divorcing of things, I glimpsed a moment when the stuff I rejected exhibited an excess of its being, an excess of the human meanings, habits or projects marked onto it (Bennett, 2010). I encountered this moment when lingering with a disposable plastic packaging, a thing I junk. As I lingered with this particular plastic, I heard it issue an inaudible call (Bennett, 2010), An incomprehensible call as if to ask to be more than junk. I was looking at the matter of an ordinary man made object expressing the ability to move me beyond its mere disposable status, displaying traces of independence or aliveness (Bennett, 2010).

Every encounter I chance with disposable objects brings with it the potential for me to learn (Ellsworth, 2005). Most encounters confirm the objects status as junk and validate my right to junk them. If however, in a fleeting moment, this unwanted stuff has the capacity to impinge on me something other than its expendability, do I not possess the capacity to impinge on it my disregard for it? If all matter is vibrant and holds an expansiveness to become other, is it possible matter is "learning" and becoming different through its engagement with me? Is it possible that I imprinted on matter its wastefulness through its encounter with me? Perhaps our mutual encounter reaffirmed its role, and it will fulfill its destiny to become waste and become entangle with different ecologies in a wasteful way. Grosz (2011) believes it is the inhuman forms around us that enable our human continuity. She explains how "the universe displays an expansive possibility and the possibility of being otherwise not because life recognizes it as such, but because life could only exist because of the simultaneity of the past with the present that matter affords it" (Grosz, 2011, p. 71). Could it be said that matter carries the memories of its past into the present, and if so, will future matter hold the awareness of my present actions and encounters?

Chapter 3: A material evolution

"Perhaps then the best way to start to engage with design culture is to see it as a mutual testing between materiality and method, a constant oscillation between interpretation and brute and tender matter." (Highmore, 2009, p.15).

"We at first may see only the world in our own image, but what appears next is a swarm of 'talented' and vibrant materialities (including the seeing self)." (Bennett, 2010, p. 99)

3.1   Introduction

In this chapter I begin with an encounter in which I show attentiveness to the subtle affects of vital materiality. During an entangled moment with a plastic artifact I felt it issue a call beyond its reduced capacity of mute matter. I deliberately share this echo of human agency expressed by an inert thing to counter the human philosophy of reason experienced as domination over the material world (Bennett, 2010). It sets the overall tone of the chapter, as I share in the faith that to achieve a more sustainable future it is perhaps most important to study the forces that binds us together in the material network of existence (Grosz, 2011). In the first part of this chapter I explore how our antimaterial behavior is manifested in modern day consumer habits and the role design plays in concealing the vitality of matter. Although inorganic matter has been reduced to a by-product of Western consumerism, it always carries with it the potential to continue designing and creating new configurations through spontaneous materializations. I further invoke the ideas of Elizabeth Grosz (2011) on evolutionary emergence to better understand the interrelatedness of all things, and how the human and nonhuman, life and matter share a material ancestry. Design can be understood as an evolutionary elaboration, yet how humans have used design has not been an evolutionary inevitability (Fry, 2009). In the final part of this chapter I explore new ways of thinking about sustainability. I once

again defend the ideas of Bennett (2010) and Grosz (2011) to highlight how the ecology of ideas is dependent on the way we see, feel and understand matter. I present my self-study of a day without plastic as an extended encounter braided within the chapter. Through the encounter I emphasize my dependency on the artificial world of our own making, and the complexity with which I am entangled to global systems of extraction, exploitation, production and consumption. Yet to survive the modern day environment we are implicated into these very structures.

3.2   Antimateriality

Design: The design of antimateriality

I catch myself often being irresistibly drawn to beautifully designed objects and things. Sometimes I hoard glossy décor magazines, admiring the perfectly staged photographs of interiors. Yet these design catalogues or lifestyle scriptures, which illustrate in glamorous terms how our lives should be, are inexhaustible. As new periodicals keep emerging I reach a point of oversaturation and I feel overwhelmed by the excess of novelty, things and aesthetics. Instead of being a manual that guides its reader into the wonder of creativity and materiality, they become seductive veils that blur any understanding of the world other than the universal capitalist mantra of economic progress through consumption (Fuad-Luke, 2009). I have the freedom to choose any style, from American Colonial, Cool Britannia, Shabby Chic, Scandinavian Country, Retro, Rustic, Modern Arabia, Nautical to Vintage, with the artifacts all quite possibly made in emerging or third world countries like China or Bangladesh. We can have anything we want, except a more meaningful relationship with matter.

Although design nourishes my appreciation for form, function and aesthetics, it also educates me into assuming the role of a consumer. We only need to look at our world wide waste problems to understand this compulsion is extended to the vast majority. Bennett (2010) believes that in developed countries the ever-increasing number of commodities purchased in ever-shorter cycles creates a

perpetual mode of junking, which is in effect antimateriality. Even though large volumes of the world's population are under-consumers, they aspire to the same disposable lifestyles that have become a natural way of life for developed nations. This is not a problem when resources are renewable, however, it is unsustainable within our limited material world (Fry, 2009). Walker (2006) insists that the ideals behind disposable lifestyles are the cause of our severe detachment from the material world. In this way design plays a significant role in determining what type of relationship we will have with the material and immaterial world (Fry, 2009). Western consumer culture negates matter at almost every stage of its structure. This tendency is most obvious through, the exploitation of raw materials for production, the increasingly disposable and short social life of products, and finally the masses of products that end up as waste to become entangled in different environments often disrupting their ecologies.

As the matter from our disposable lifestyles accumulates and becomes entangled with different ecologies, which are left with the unmanageable task of breaking down last years big thing as it leaks toxic chemicals into the environment, Haraway (2003) questions, "in how many ways do we inherit in the flesh the turbulent history of modern capitalism?" (p. 24). She further considers if commodification and consumption is a sign of our cultural progress, then how do we become accountable for turning third world countries into dumping grounds littered with the electronic decay of last years model, and how do we come to terms with the exploitation of human bodies used to process the ecologically toxic waste of the well informed (Haraway, 2003)? All of us are tied into these worldwide systems that are built on the assumption that we must buy more, waste more, and throw away more (Papanek, 1985). Papanek (1985) explains that if industry in all countries used our needs as a measure of production, we could drastically change our future. "If design is ecologically responsive, then it is also revolutionary… For design to be ecologically responsible, it must be independent of concerns for gross national product." (Papanek, 1985, p. 252). Untangling ourselves from these persistent cycles is not easy, as many of us are not even aware of the complex web of structures, systems and processes that bind us to the fabricated world, and leave us indebted to the natural world we devastate.

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What is most troubling in all this production, consumption and destruction, is that very few of the processes or products are tied to our survival or wellbeing. According to Baudrillard (1998) the excessive production and consumption of goods is something we are forced into, not as a right or pleasure but as a way of earning a place into legitimate citizenship. Baudrillard (1998) believes that consumption is exclusive of enjoyment, as enjoyment can be described as something done for individual benefit, consumption on the other hand is never done alone. "Instead through consumption we enter into a generalized system of exchange and production of coded values where in spite of ourselves all consumers are involved with all others." (Baudrillard, 1998, p. 79). Not only is consumption exclusive of enjoyment, but neither does it sell consumers the ecological or cultural truth through its products. Walker (2006) believes that layers of novelty, ingenuity, and style often cover up a hidden world of resource depletion, pollution and exploitation. "If, in its design and manufacture, the associated environmental, ethical and socio-economic issues are ignored, then the object can become symbolic not of beauty but of ugliness and harm." (Walker, 2006, p. 59). The beauty of an object should not only be apparent in its stylish surface, but also in the way it was brought into being and the potential it holds for future entanglements. This would require transparency at every stage of production, where responsibility and openness may equally be viewed as aesthetic qualities.

Grosz (2011) believes that the essential relation of debt to materiality and nature has been lost within the structure of patriarchal capitalism. Western culture reduces nature to a commodity that can be converted into property or a resource to be conquered, leaving the condition of the material body unrepresented (Grosz, 2011). Bennett (2010) fears that this "image of dead or thoroughly instrumentalized matter feeds human hubris and our earth-destroying fantasies of conquest and consumption." (p. ix). The desire for domination over the material world is expressed in all our systems and processes, including design. However, this hostility towards nature and to materiality is perhaps least obvious in design, as the allure of aesthetically pleasing and stylishly novel products can easily draw our attention away from the systems and processes that reproduce them. Bennett contemplates whether our violently reckless ways of production and consumption would endure if we were more

appreciative of the fact that our own matter is affected in this common struggle (Jackson, 2011). Although we may assume that our antimaterial behavior is directed at an external matter "out there" it will ultimately also become entangled with and affect our own materiality through the common foreignness that all matter shares.

Matter: Antimateriality, materiality and spontaneous potentials

In the civilized world we have evolved to a point where we identify ourselves more with the fabricated environment of our own making than our material ancestry. The foreign landscapes we create leave the urbanized individual isolated by many layers of artificiality from the matter that gave birth to humans. According to Baudrillard (1998) we are living in an age governed by objects and things, aligned to their persistent cycles, we bear witness to their birth, fulfillment and death (Norris, 2006). This death implies only that the designed object or thing has rendered itself useless after attempting to fulfill our desires. The matter of these discarded objects will continue designing as it becomes further entangled with different ecologies, creating new realities as "even the humblest forms of matter and energy have the potential for self-organization" (Sullivan as cited in Bennett, 2010, p. 7), and can create effects both dramatic and subtle. In this way we may also come to understand how in a hyper consumptive environment designed things are temporarily bonded to a human act, once they become discarded they can go on designing beyond their intended function actively supporting or negating different ecologies (Fry, 2009). Bennett (2010) reminds us that all bodies and things affect each other enhancing or weakening their power, in or as a heterogeneous assemblage. It is usually the least expected configurations of fabricated, inert or "lifeless" matter that can have the most damaging effects on the environment, often also affecting the wellbeing of our own matter.

The matter that has been woven into the fabric of man-made systems has an even longer and more complicated history that predates design and the creation of our first tools. Yet, little

consideration is given to the fact that it is the same matter that makes up the intricate assemblage of all that is animate and inanimate, artificial and natural. Barad (2003) encourages us to understand how the very atoms that make up the biological body are not distinct from the matter that engulfs and supports it. "We are also nonhuman and things too are vital players in the world." (Bennett, 2010, p. 4). Barad (2003) explains that matter is an active participant in the world's becoming, and it therefore carries the potential and power to transform through dynamic materializations. However, we have denied matter the fullness of its potential, and by limiting our understanding of power's capacity to the domain of the social, we are unable or unwilling to see matter as an active contributor of the world in its differential becoming (Barad, 2003). What level of perceptibility would we have to achieve to recognize the vital materiality in all things, and especially in the sheer volume of mass produced commodities.

Bennett (2010) supports the belief that Western materialism spurred on by the planned obsolescence of designer objects, where even consumer durables have a useful life of just a few years, has concealed the vitality of matter. She feels that there are many examples of a vital materiality around us, but to discern them we need to become attuned to their subtle affects (Bennett, 2010). Turning to readily discarded matter or waste is perhaps the easiest way to cultivate our sensory attentiveness to the power and potential of nonhuman forces (Bennett, 2010). We have all walked past a bin whose contents have been left to their own devices for too long as the smell alone hints at the volatile and unplanned design materializing inside. It is the communion of unwanted matter left to its own self-organization that can over a period of time produce dynamic structural changes and further materializations, as these spectacular assemblages of inorganic matter are much more spontaneous and creative than we ever imagined (Bennett, 2010). Bennett (2010) reminds us that "we are all vital materiality; we are surrounded by it, though we do not always see it that way. The ethical task at hand here is to cultivate the ability to discern nonhuman vitality and to become perceptually open to it" (Bennett, 2010, p. 14). This is particularly true for designers who want to create a more sustainable future as they need to learn to perceive the vitality inherent in the matter. It is a vitality that offers matter the potential to create dynamic materializations through heterogeneous assemblages, an

agency that is present in matter at ever stage of its transformation, before production, once it is a

produced thing and also its future potential to elaborate.

Encounter 6: A day without plastic

A DAY WITHOUT PLASTIC

I want to experience the point at which my life connects and becomes entangled to plastic. To do this I spend a day without touching plastic. Simple enough I thought, until I get up on the designated day and go to the bathroom where I see the plastic toilet seat. Although I decided not to make any preparations for this day, other than leaving water in a glass container, I do not anticipated meeting my first obstacle so early in the morning. After the bathroom challenge I think my day will be down hill from there. Having done a full day detox in the past, I think I am well prepared for what lies ahead of me. However my total dependency on the artificial world becomes most apparent to me when it is taken away. I struggle.

I begin by accessing my environment, and the more I contemplate what the things around me are made of, the more I realize how artificiality has crept into almost everything. More accurately I have perhaps never come to consider how many artificial and plastic things surround me. My space becomes reduced. Even the least expected objects have artificial fillers or fabric. A traditional Indian daybed with a woven seat is my refuge and confinement. The only other seating option is the cold tiled floor. I spend most of the day here with a few sheets of paper, some books and a sharpened pencil. I cannot communicate with anyone; computers, phones and electronic equipment are encased in plastic. I cannot go anywhere; shoes have rubber soles. I cannot shower; bathroom fixtures are plastic. I cannot cook; most kitchen appliances have plastic parts. I cannot interact with anything except for a few pieces of wooden or glass furniture. Food soon becomes a problem. I am hungry but I have no access to the fridge. I eat the fruit left outside but I know this will not keep me going for very long. The novelty is wearing off. I become restless and feel outside of my routine. I wonder how did my world become so full of stuff and so void of community, as layers of artificiality seperate me from the world, from others.

3.3   A material evolution

Design: Design as a form of self-transformation

As our technologically advanced world has gone beyond the control of any one individual, corporation or nation (Fry, 2009), we have to consider that perhaps our inability to completely master any of our given environments means that it is not our evolutionary destiny to be at the apex of any forms of creation, whether they are of our own design or whether they come from the natural world. Orr (2002) redefines design by turning our attention to the evolution of nature, a model of design success that he believes we should better understand if we are to remake our human presence in the world in a way that honors all life. According to Orr (2002), "the story of evolution is a record of design strategies as life in all of its variety evolved in a vast efflorescence of biological creativity" (p.4). The design strategies of our own making are not governed by the same forces of nature, they seem to comply with an entirely different set of laws. Fuad-Luke (2009) explains that the modes of making and the evolution of design culture can be dominated by controlling designers and design. In modern capitalism design is governed by an economic order that supports an instrumental form of making, bringing things into being without insight into what the consequences will be for the environments or human and nonhuman beings (Fry, 2009). Nature unlike humans seems to have a greater awareness of the consequences of its design action, and unlike humans it appears to have the ability to grasp the consequences of its designs designing.

Grosz (2011) considers whether inventions are forms of self-transformation, and if they can be seen as a deepening of our evolutionary becoming, "then reason, language, culture, tools, [design] and other distinctly human accomplishments must now take their place, not as the overcoming or surpassing of an animal ancestry but as its most recent elaboration, as one of the many possible lines of elaboration that life has enabled." (p. 24). Although design can be understood as an evolutionary elaboration of life and nature, what we do with our capacity to design is not an evolutionary inevitability

(Fry, 2009). Fry (2009) believes that our economic development is not the consequence of a 'god-given' nature; instead it is something humans have developed over thousands of years through social, economic and cultural structures. If for a moment we could imagine uncoupling design from these structures and systems we may finally be able to experience and see what our human evolutionary elaboration is capable of, and what potential design holds for lifting us out of our Western instrumentalist mode of thinking. An environment beyond the constraints of these systems and structures is perhaps where the unimaginable capacities of design reside.

Matter: A material evolution through the words of Elizabeth Grosz

Design, as a process, has been integral in shaping what kind of world we live in by using the resources and matter available to it. Grosz (2011) explains that this notion of tendency is not only experienced by humans, it is shared by all living beings. It can be described as an inner inclination to invent, to elaborate or to use a particular natural resource, such as light (Grosz, 2011). We may not be conscious of it, yet this boundless chain is threaded through all forms of life, connecting all living beings to each other and the ancestral forms of life the preceded them (Grosz, 2011). Humans are not unique in their capacity to exploit matter; the need for matter and resources may be the strongest commonality we share with other living forms. It may be uniquely human to foster an unsustainable relationship towards matter by not fully comprehending our own material nature. Many of the social, cultural and economic structures we live by create veils of misrepresentation that often shield us from perceiving the unsustainable nature of our own practices.

Grosz (2011) believes that life should not be understood as an other to matter or a mysterious alternative force, instead life and matter are intimately implicated in each other, various degrees of one and the same force. Organic life is simply a difference in kind from matter, appropriating the same resources and the same forces (Grosz, 2011). Grosz (2011) further emphasizes that through its stable

foundation matter can support and provoke life, giving life the opportunity to elaborate and to expand itself from inert matter. "Life is matter extended into the virtual, matter is life compressed into dormancy." (Grosz, 2011, p. 32). Design can be understood as a kind of transformation of matter, as a process design transforms the matter at its disposal to create new objects. The potter's clay can become a water urn. Through technological progress our capacity to restructure and completely alter the material resources at our disposal is changing the nature of matter. Within the last few decades, the invention of plastics and other artificial matter has revolutionized our daily lives (Thompson, Swam, Moore & vom Saal, 2009). But Grosz (2011) reminds us that it is the durational stability and composition of nonliving forces that enables the potential of invention and the elaboration of life in all its lively unpredictability. Perhaps a remote volcanic islands can best display this potential for invention and elaboration of life, made from rich volcanic lava and ash these islands are able to spawn life, elaborating into a variety of species over thousands of years. Our own man-made islands of waste and garbage have not, as of yet, supported the same level of creativity and ingenuity, and instead often harm or negate the life or eco-systems they interact with. It would seem that through the domination, control and exploitation of nature we have been tampering with this stable configuration and we need to question whether life can further elaborate from the artificial complexity that is now becoming entangled with and shaping the world. We are no longer simply exploiting particular natural resources; we are starting to change the material composition of these resources. The ever-increasing amount of artificiality we leave behind through the designs we bring into being could have an impact on future evolutionary becomings, including our own.

Grosz (2011) explains that for life to elaborate into the new and unforeseeable, it requires the essential groundwork of a matter that is relatively stable, regular and predictable. In other words "it is only because life perceives that which is regular and orderly in the material world that it has the resources necessary to innovate and invent." (Grosz, 2011, p. 30). As our consumer lifestyles persist, more and more artificial objects with a different material configuration become entangled in the relative stability of the given material world, making it unpredictable. Although Grosz (2011) believes

that life can be understood as parasitic on matter, "it draws from matter the forces it requires to enable it to persist, to grow, to make." (p. 33). Organic life has the potential to decompose and break down to its original state to return to the matter it came from. On the other hand, the artificial products of our own making do not have the capacity to break down in the same way. Matter is what binds everything together, it is the common thread that all life shares, carrying with it the potential to unfold into different forms of being through its own undoing (Grosz, 2011). In coming to know our communal dependency on matter, perhaps we need to question what new and unimaginable forms of expression will the materiality of our own making have potential for, if any, and will its unpredictability be able to sustain our own elaboration into the new and unforeseeable?

Given the opportunity, life will exploit even the tiniest unraveling of matter to emerge and evolve, and over an extended period of time it will differentiate into a multitude of living beings and species (Grosz, 2011). In other words life has the capacity to erupt and release that which is restrained in matter (Grosz, 2011). Grosz (2011) believes that "the becoming of life is the undoing of matter, which is not its transformation into (inert) being but placed in a different trajectory of becoming." (p. 54). Therefore life and matter are in a perpetual state of negotiation, creating conditions for the elaboration of life, and the opening up of matter to the memory of duration, flux and becoming (Grosz, 2011). This vibrant, dynamic, lively and animated matter is the very same matter that is exploited in all the systems that drive our consumer culture including design. If designers could use their creativity to grasp the life giving creativity compressed into matter, perhaps they would begin to design in a way that embraces matter differently and upholds its virtuality. It should become the designer's responsibility to sustain a materiality that carries with it the potential to be further unfolded and elaborated. Grosz (2011) understands how "each object is more than itself, as it contains within itself the material potential to be otherwise and to link with and create continuity with the durational whole that marks each living being." (p. 52). If we could foster a design practice that held the potential of materiality and nature at its core, with an aesthetic understanding of the human and nonhuman condition that is entangled with it, what objects of design could we produce, and how could we begin to reshape the world

3.4   Evolving ideas around sustainability and design

Design: Changing the ecology of ideas through matter

The quest for a sustainable future has brought little relief to both human and nonhuman beings. "While the definitions of sustainability are becoming increasingly sophisticated, environmental problems such as global warming, greenhouse gas emissions and toxic waste are becoming more severe." (Dobers & Strannegard, 2005, p. 332). One of the more important questions we may want to ask in relation to sustainable design and its multitude of definitions is whether humankind and nature have been placed at an equal level of consideration, which requires an attentiveness and sensitivity towards the human condition and the material world (Fuad-Luke, 2009). A sustainable design practice should be observing the vast array of interrelatedness between life and matter, and between the material objects of design and their impact on other forms of life. Designers should perhaps pause and at least try to grasp what has already come into being and the consequences of its presence. According to Fry (2009) everything we create has the potential to recreate the world, and designers need to become accountable for their designs and how they can unintentionally redesign the environment.

Achieving sustainability through design is not about what new products to make, instead Margolin (1998) explains that what design must do is envision a new life image and lifestyle that will support a vital materiality and an intimate knowledge of matter. Papanek (1985) insists that designers are complicit in the environmental crisis we face, as much of our ecological degradation is linked to various design processes, design values and design products (Highmore, 2009). Margolin (1998) believes that "design will change by the coming to consciousness of individual practitioners." (p. 88). Through the hard work of rethinking the role of a design, designers may confront the reality of their work and how it contributes to the changes in the environment (Margolin, 1998). Margolin (1998) calls it a crisis of imagination, an imagination that is trained to see nature as something that has to be overcome and controlled. Until designers embrace a knowing that understands how matter is

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intertwined with the ecology of ideas and the culture it finds itself in, our imaginations will always create and recreate designs that deny matter its full potential. Sustainability is not a stationary goal that needs to be achieved instead it is a dynamic process of seeing and feeling the world differently, a continual process of matter over mind (Fry, 2009). In Fry's (2009) opinion sustainability requires that the ecological and economical, in other words matter and ideas, be brought into conversation. To achieve this end "capitalism has to undergo a paradigmatic shift... that has not even begun under the banner of sustainability." (Fry, 2009, p. 44). Design on its own will not change global structures, however, it can redirect our way of viewing the material world (Fry, 2009). When we begin with matter as a way to guide imagination into the density of our entangled realities, the ecology of ideas will start to transform.

Could the fact that we mostly design with the future in mind create an environment where we produce and consume in excess of ourselves? Haraway (2009) believes that Western temporality places an enormous emphasis on what is prefigured or to come. In this understanding the present becomes reduced to a vanishing point, as it does not hold the same kind of thickness as the future (Haraway, 2009). Fry (2009) emphasizes that the human capacity to design comes from our ability to prefigure, yet, we seem to have lost ourselves somewhere in the future and become blinded to the present. By using Haraway's (2009) understanding of a new way of looking at temporality, we can begin to explore what a responsible designer may be. According to Haraway (2009) a responsible person faces its ancestry and those that came before, thereby being able to live thickly in the present. In our post-industrial society a designers' activity is oriented toward the future, often uninformed by the present let alone the past (Margolin, 2007). Design's constant preoccupation with novelty and technological innovation forces it to face the future with little time spent in the complexity of the present. The accelerated pace of change today, leaves little time to contemplate the past and the present goes unnoticed as designers try and create in a future frenzy.

Pinar (2012) explains that by reactivating the past we can come to understand a new configuration of the present. If we could reorient ourselves to the past, perhaps even as far back as an

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evolutionary past, we may come to understand the intricacy of the present and comprehend the mutual dependency that all beings share with matter. A deeper consideration of time can also help in coming to understand the claim to a vitality intrinsic to matter. " Perhaps the claim to a vitality intrinsic to matter itself becomes more plausible if one takes a long view of time. If one adopts the perspective of evolutionary rather than biographical time." (Bennett, 2010, p. 10). From a perspective of an extended duration, one that stretches into the past, the ingenuity and creativity of matter is far more apparent. This understanding can help in guiding all our processes including design. Fry (2009) believes that humans have had a long and complicated relation to the fabricated world that has endured since we started creating tools, but our entangled relationship with matter goes well beyond that, and it is time we acknowledge this inseparable bond.

Matter: sustaining matter for future evolutionary elaborations

As mass produced objects enhance the model of neoliberal capitalism, matter and the environment have suffered intense ecological degradation at the hands of human activity. Fry (2009) believes that we have hardly initiated the massive transformation required in achieving sustainability in all that we create, use and occupy. Many of the present ecological solutions in design are simply Band-Aids covering the festering wounds of our environmental problems and our attitudes towards the material world. They do not challenge the relentlessly extractive, hyper-consumptive political economy of massive waste and profound inequality that is so prevalent in the post-industrial age (Bennett, 2010). Achieving a sustainable design practice, one that supports regenerative relations with both organic and inorganic life, requires us to rethink our relationship with matter and the natural environment. Bennett (2010) reminds us that we are indeed walking talking minerals and therefore all matter pays the price of our thoughtlessness towards the future.

According to Baudrillard (1998) destructiveness has become one of the most predominant functions of post-industrial society, and he understands consumption as merely an intermediate term between destruction and production. Affluence can only be perceived as meaningful in material wastage where value is created by violent loss, leaving destruction as the essential alternative to production (Baudrillard, 1998). Fry (2009) explains "whenever we bring something into being we also destroy something – the omelet at the cost of the egg, the table at the cost of the tree." (p. 4). In our Plastic Age (Mulder, 1998) this process has become infinitely more complex with multiple layers of unmaking. At present we are not only designing and creating objects and things at the cost of other matter, but what we create is no longer able to break down to be re-assimilated into the natural environment. Will we know what more to make out of this new kind of matter, as a huge amount of discarded plastic trivia alone is doing untold damage and destruction to the oceans?

Grosz (2011) believes that life draws its elements, its very body and energies from inorganic matters, yet all of life is always on the edge of returning to the inorganic state. If, through our thoughtlessness towards the natural environment, the vital inorganic elements have been mostly removed or destroyed, what will happen to the stable, orderly and predictable foundation required for the elaboration of life (Grosz, 2011). Through our unsustainable behavior of mass production and consumption do we risk robbing evolution of its material conditions needed to invent? Will this new matter of our own creation be stable enough for spontaneous and dynamic innovation? If so the world will become unthinkable and we have to be prepared for a world where nothing will be as it was.

Encounter 7: The difficulty of living sustainably

THE DIFFICULTY OF LIVING SUSTAINABLY

As the day progresses I contemplate what does a day without plastic truly mean, and is it achievable as I feel more and more cut off from the world by the layers of artificiality that surround me. The novelty wears off and the exercise becomes draining and tiring. I come to the conclusion that many of my plastic things are ugly but useful. These are objects that make my life more convenient, easier, from fridges, phones, hairdryers, vacuum cleaners, brooms, mops, routers, radios, plugs, switches, toothbrushes and packaging. At what cost have they made my life so easy? All the things I see around me that are pleasing to me aesthetically are not made of plastic they are paintings and ornaments. But perhaps the paint is synthetic?

I imagine that in some strange and exotic environment it would be pleasant to have a day without plastic, but at home it is frustrating and limiting. Grumpy and tired, my head hurts. I feel restrained. What would it mean for more people to do this experiment would it be more or less frustrating? The days has not brought about my appreciation for plastic, but rather my dependency, like a drug I cannot function properly without it, I am cut off, cast out, lost and bound. I do not make it to the next morning. At around 9pm I break the plastic free day. I am tired and dehydrated. The first thing I do is check my emails, and the Internet, and I cannot lie it feels so good to be connected again. I have my window onto the world again. I can study sustainability again, as it is far easier than living it.

3.5   Conclusion

In conclusion, I argue that our antimaterial behavior is something we are inducted into through social, cultural and economic structures that support material exploitation, production and consumption. We arrive in a pre-given world that will to an extent shape our antimaterial tendencies and determine the way we see, feel and understand matter. I turn to a deeper consideration of our evolutionary becomings to emphasize how our communal dependency on matter is what all forms of life share. Coming to know the interconnectedness between all things may help develop a design practice that can nurture the potential of matter and nature at its core. I support the need to become more sensitive and attentive towards the nature that we have always been part of, as in this remembering we may come to know our connection to the natural world as something deeper than the mere exploitation, mastery and control of matter (Grosz, 2011). If we acknowledge the fact that our evolutionary ancestry resides in matter, we will have a better understanding of how the ecology of ideas is inseparable from the material world. What happens in one will affect the other, and this understanding should guide our interpretation of sustainability.

Encounter 8: An island of my own
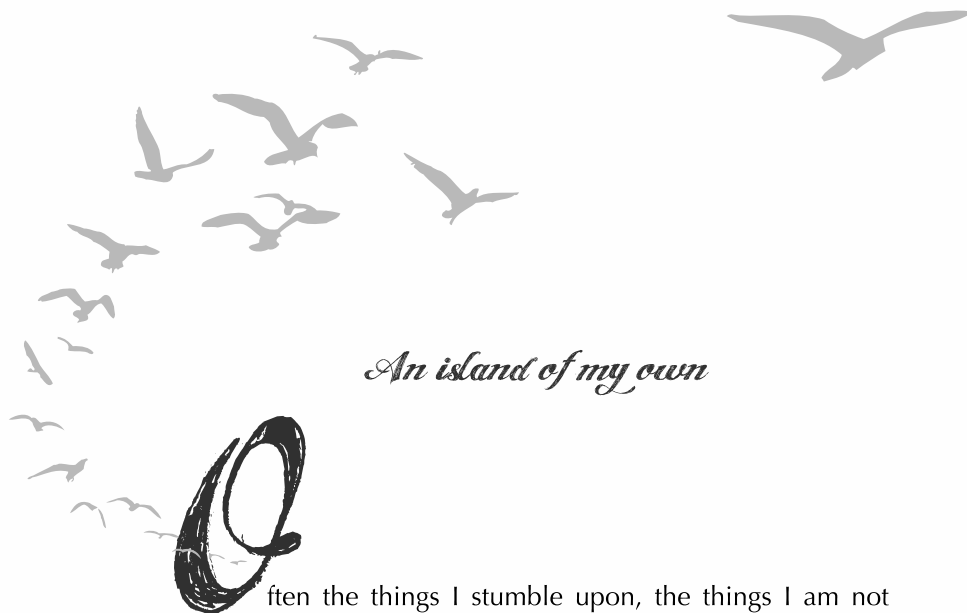
An island of my own

Often the things I stumble upon, the things I am not prepared for in body and mind, are the encounters that cause an emotional shudder, a sensation that escapes the persistence of thoughts and is more elemental than reasoning (Ellsworth, 2005).

I open a link to a video. It begins with a quote. Music and images take flight. They soar, hover, flutter and mingle. I flow into and infuse with the visual and sound, in return it touches me as we interpenetrate (Ellsworth, 2005). Captivated by the encounter I struggle to structure sentences to convey the excess of feeling that exists beyond cognition. How do I entrust language to translate this space as it draws me further in? I am in a place of intensity. I feel deeply. Without thought time and space are different, stretched by the force of the moment, holding a window into feeling and beyond it the vast openness of sensation. Once this window closes interpretation is invited in, and my feelings will be asked to leave. Until then I hold all presence in this space, and I feel myself to resonate not in thought but in the universal energy of emotion. Emotion without thought is open. Thought guides it towards anger or joy. The rawness of the story makes me tender. It bruises the soul. The video ends.

I return from the encounter. My words, language, and way of being have become more than they were. The subtleties of my transformation help me perceive the world anew, creating unexpected interpretations of the same. I continue, the same yet remade.

Chapter 4: A rainbow of meaning: Design, sensations and matter

"From what does all individual awareness arise and return? Simply: matter. Brain-and-body matter: rumbling sea for the rainbow of experience." (Massumi, 2002, p. 191).

4.1   Introduction

This chapter begins with a hyperlink to an actual encounter followed by my description of the encounter in which I express the intensity of a sensory experience that escapes the limitations of language and its inability to convey the moment of transformation experienced by the learning self. I thread the progression of this encounter throughout the chapter. Every time it surfaces it creates a small window into the lived experience that echoes the conceptual theme of the chapter, including how the sensorial and visual are entangled with the material nature of design. In the first section of the chapter I explore how sensation is a phenomenon created through material encounters. It is something that design and designers are trying to harness to heighten their consumer's experience of products. By looking at human-nonhuman assemblages and entanglements I focus on understanding how the material environment is a dynamic field of sensory encounters that affects us on a molecular level (Ellsworth, 2005). In the final section of the chapter I take into account how the visual sense has come to dominate all other senses and many of our sensory experiences. How we see the world is a reflection of our own conditioning, and it is indivisible from how we treat the world and our material environment. I further imagine what possibilities lie outside of the visual for exploring our understanding of matter and the material world.

4.2   Sensations that matter

Design: A sensory orchestration

It would appear that sensation is lacking in the complex social life of objects, and perhaps even within our own post-industrial consumer lives, as Antonelli (2008) points out one recurrent theme in design today is a stronger involvement of the senses. She explains how sensual interfaces help to both heighten and integrate the experience of high-tech functions (Antonelli, 2008). A turn towards the senses is not a phenomenon unique to design. According to Pink (2010) the "sensorial turn" (Howes, 2003, p. xii) has been embraced by the social sciences and humanities. These disciplines have come to acknowledge the fundamental presence of sensoriality in learning, understanding and representing the material world around us (Pink, 2010). The strong sensorial qualities in technology often allows participants to think and feel in a new ways by obliging an inner shift through the material encounter with the object (Ellsworth, 2005). Ellsworth (2005) believes that we need to grasp experience in terms of force and sensation. She understands it as an event in which the mind/brain/body becomes entangled with objects, spaces and time (Ellsworth, 2005). In such an entanglement, "the self is understood as a becoming, an emergence, and as continually in the making." (Ellsworth, 2005, p. 4). The preoccupation with the sensorial encounter in design is perhaps a way to guide participants into an experience of learning and change. But what exactly are these encounters teaching us about our selves and the material world we occupy? Perhaps they are guiding us to be more effective consumers.

As I further consider the pedagogical nature of encounters with sensorial objects, I bear in mind that every encounter is a personal transformation and each individual will experience the event or object in diverse ways. That being said, I would argue that collectively there are similarities in the way we consume, especially in the "developed" North. In a recent article in *The New York Times* titled "Where do old cellphones go to die?" the author Leyla Acaroglu (2013) explains that Americans replace their cellphone on average every 22 months. Although, as Fry (2009) explains, we are taught and teach

ourselves ways of knowing and acting through encounters with various design objects, environments, spaces and surfaces. Identifying the moment in which we individually learn to be consumers is almost impossible. Yet each design environment and object always holds the potential to transform its participant in ways that cannot be predicted (Ellsworth, 2005).

While technologically advanced designs are made up of scintillating and pulsating surfaces that can make our bodies tingle and bristle through the playful exploration of their seductive possibilities (Schmidt, 2008). I consider whether there is a moment when in owning such a design that the experience falls into the blandness of the habitual. Henry David Thoreau (1999) believes that we need the tonic of wildness, as it is only through the mysterious and unfathomable that we come to learn and explore. In modernity the tonic of nature has been replaced by the tonic of technology. Pinar (2012) explains that in a world governed by technology we live in anticipation of the next sensation, restless for the next 'hit' of information, as our lives become preoccupied with what new moment of stimulation we may encounter. These technological encounters and the anticipation of them further distract us from the natural world. I imagine that to begin a more sustainable relationship with nature we need to delight in environments and objects other than the high-tech, perhaps most importantly we need to encounter and relearn the sensorial potential of environments other than the man-made.

According to Highmore (2009) it is not only the high-tech that offers sensory encounters. All fashioned environments provide sensory experiences, although some technologies have given individuals the opportunity to create a personal environment of sensory depravation (Highmore, 2009). Cellphones and portable music players are among the innovative designs that help us escape crowds as we isolate ourselves from the cacophony of external sensory stimuli (Antonelli, 2008). I consider what other sensory deprivation has the fabricated world of our own making created. Ellsworth (2005) reminds us the nature of the knowing self is a thing in the making, "continuously evolving through our understanding of the world and our own bodies' experience of and participation in that world." (p. 1) If we have restricted our participation and engagement to an almost exclusively artificial and fabricated world, what part of the knowing self have we left unknown. To learn about all the given matter of the

world we need to encounter its particular orchestration of smells, tastes, textures, sounds and sights (Highmore, 2009). We must afford ourselves the opportunity to have the natural environment and its orchestration act on us in the same way as the fabricated surroundings. It must impinge, oblige, invite, affect, and influence our bodies and minds into a dance of entanglements and sensation, so that we can remake our selves and our understanding of matter through the encounter (Highmore, 2009).

The material objects we interact with are not encountered in isolation, instead they create a complex network of relationships between bodies, things and environments (Fry, 2009). "Effectively this means design does not actually create a finalized object or product, rather all that design brings into being remains in process within a particular kind of ecology of things, organic or inorganic." (Fry, 2009, p. 30). Ellsworth (2005) imagines how the experience of the learning self comes through the exploration of these environments, as the human and the material interpenetrate and extend into each other. She reminds us that not all encounters with design objects and environments have the potential to "hold" us in sensation (Ellsworth, 2005). Turner insists that a "mere experience" is quite different to "an experience", and considers the distinction between the two (Pink, 2010). He believes that mere experience can be described as the continuous flow of events and sensations that we passively accept (Pink, 2010). One has to wonder whether the introduction of sensual interfaces and the strong involvement of senses in technology is a way to avoid having consumers slip into mere experiences. Which could cause the consumer to turn to another environment or object and experience sensorial stimuli elsewhere. Perhaps the addition of sensorial components can also counteract the lack of spontaneous sensual stimuli in the fabricated environment, unlike nature, artificial objects do not display voluntary and dynamic happenings. The object environments that we become accustomed to can quickly become static in stimuli. Through habit designed environments can turn into things we passively accept, and perhaps the continual changes in high-tech objects that demand our interaction through plug-ins, grooming, upgrades and plug-outs, are designed to keeps us stimulated always anticipating the new experience, always learning to become more experienced and effective consumers

(Sterling, 2005). However, we must remember that the natural world and its resources are burdened through the continual production of novelties.

Matter: Purposeful and accidental sensory entanglements

We learn and experience because we are material beings that encounter the materiality of another, whether it is natural or artificial, and the forces of sensation come through materiality to become entangled in the encounter. Ellsworth (2005) highlights that it is because of biological and molecular events taking place in the body of the person, that every encounter is material in nature. Bennett (2010) believes that when things have the capacity to affect human bodies and minds, they can be seen to possess a certain kind of independence. We often experience this undeniable moment when encountering a innovative form of technology for the first time, such as being able to talk to an iPhone Siri through a voice command and then hearing "her" (the phone) talk back. Before the seductive novelty of the encounter turns into habit, we are intimately affected by the sensory experience of having an inanimate object respond to our needs verbally. Bennett (2010) understands this event not so much in terms of a doer behind the action (of the phone talking back), but rather a doing by a federation of actants or "an effecting by a human-nonhuman assemblage." (p. 28). While Ellsworth (2005) calls it the reality of relation, an entangled flow of material in which the learning self is in a process of becoming through the sensation of the encounter.

Bennett (2010) uses the 2003 New York blackout as another example of the agency of objects in excess of human interpretation, designs, or function. The blackout is described as a sudden electrical grid overload that left widespread power outage throughout Northeastern United States and Canada (Barron, 2003). Out of the 55 million people affected by the outage, many remained without power for up to two days (Barron, 2003). It remains a mystery as to how a local blackout could have cascaded into the large-scale distress of the power grid (Barron, 2003). Bennett (2010) believes that the electronic grid

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is better understood as "a volatile mix of coal, sweat, electromagnetic field, computer programs, electron streams, profit motives, heat, lifestyles, nuclear fuel, plastic, fantasies of mastery, static, legislation, water, economic theory, wire and wood, just to name a few actants" (Bennett, 2010, p. 24). The entanglement of different elements of vibrant material and the assemblage of ad hoc groupings, produced encounters and experiences of a grid whose "heart fluttered" and "lives and dies by its own rules" (Bennett, 2010, p. 25). The fickle display of independence possessed by the electronic grid created a sensory experience that affected millions of bodies. No one was prepared for a power outage on such a massive scale, electricity is anticipated to go where it is sent, "but sometimes it chooses its path on the spot, in response to other bodies it encounters and the surprising opportunities for actions and interactions that they afford." (Bennett, 2010, p. 28). We do not anticipate inert matter, particularly the artificial one of our own making, to gives signs of vitality. When it does the intensity of the experience or the encounter with the force of things can become headline news.

The force of most things, especially the everyday consumer objects we engage with and that barely gets our fleeting acknowledgment, do not make it to the front pages of the news. Ellsworth (2005) believes that we seldom question "the artful or banal orchestration of materials or the orchestration of forces, sensations, stories, invitations, habits, media, time, space, ideas, language, objects, images, and sounds intended, precisely, to move the materiality of minds/brains and bodies into relation with other material elements of the world." (p. 24). Yet, all that is matter, including our own materiality, and much that is immaterial, including information and images, exist in a continual condition of exchange (Fry, 2009). The matter that engulfs and entangles us is simply a mass of potential sensory experiences waiting to unfold, producing encounters that will shape our perception of the world around us.

Encounter 9: Designs designing

Designs designing

It only occurred to me later that the trailer for the documentary Midway Island is a poetic display of entanglements. This is design's designing. Where designed objects have exceeded their expected use and function, and they go on designing beyond their intended purpose, creating new realities and unthinkable worlds. This is matter interpenetrating different ecologies. The matter of our own making and the artificial world is no longer separate from the natural environment. The force of things is at its most acute here, and our disposable lifestyles at their most insensitive. I saw an orange bottle cap, was it the one I discarded so thoughtlessly as while back? Or was it the bottle cap from the water distributed to survivors of the tsunami, grateful to have clean bottled water? My senses meander with the story as I follow the trailer to an island of feeling, to a place that can be neither accessed nor authenticated through our languages of knowing (Ellsworth, 2005). It is a place where the entangled relation of my mind, my body and the encounter come together to create a sensory experience (Ellsworth, 2005). In four minutes this sensory story was able to resonate with an emotion and a way of knowing that I wrestled to write and explain through words in my thesis.

Technology and design have brought together a graceful tale, the fatal dance between them and nature, the contorted spin of bodies and artificial matter. Technology has taken us into the Plastic Age (Mulder, 1998). However, without technology this documentary would not exist. Design has had its hand in the production of our artificial creations. Yet, without design we would not have these refined shots, this edit, this compilation of images and music, and this sensory experience. Through these elements I feel the reality of relation and I am held in sensation (Ellsworth, 2005). Once I abandon the present moment of sensation I will think rather than feel emotion as I try to make sense of my emotive journey (Bennett, 2005). I return from every island of feeling transformed, as these places of sensory experience bring me into being and change my lived relation to others and the world around me.

4.3   Design and the visual senses

Design: The visual bias

Within our material world the visual has come to dominate all other senses, and Marshall McLuhan explains that any technology or innovation that supports the persistence and force of the visual is extending its power to all other spaces (Cavell, 2002). We are the first human beings to live completely captivated by a technological structure whose seductive power is circulated by the charisma of images and innovation (Kroker, 1984). The design disciplines that are associated with our consumer excess, such as graphic, interior, product and fashion design, have flourished in this environment, and Fry (2009) explains that the visual has taken over all modes of design communication. The commercial media has limited design to a styling and coding of appearance and function (Fry, 2009). Through this aesthetization of material goods, design has created an environment where there is an anticipation of novelty but no longer of progress (Walker, 2006). In our consumer society where visibility is of utmost importance, and being seen has completely over shadowed seeing, the way things look is crucial. Julier (2006) explains that modern capitalism is most effective through the commodification of things, and it is therefore essential is to make things visual. Things are transformed from a non- or pre-visual state into an aestheticized state. Julier (2006) believes that to establish effective communication with the consumer audience artifacts can no longer simply be made they must be designed.

Foster (2002) emphasizes that the aesthetization of society has gone beyond the commercial to influence every facet of life, for in this visual consumerist world the designer rules. Design and the visual have come to penetrate all aspects of our materially and virtually fabricated world (Fry, 2009). Fry (2009) invites us to recognize the expansiveness of design, "every element of our built environments and every artifact in them; our urban and rural industries and all they produce; all our institutions, military and civil, and all the systems that enable them to function; all communication media and everything created by the entertainment industry; all forms of representation and all perceptions

prefigured by these representation. So why is it that we are blind to all most all of this?" (p. 121) We

need to consider how after time and repetition things start to appear natural, even if they are not

(O'Donoghue, 2012)[8]. If we take into consideration how dependent design is on the visual and how

tightly connected they are, challenging the hegemony of the visual would also mean challenging

design. Mitchell (2002) reminds us that vision is not given by nature, it is a cultural construction that

supports dominant norms and beliefs, and we learn to fade from view that which conflicts with our

cultivated ideologies. As Fuad-Luke (2009) succinctly explains, "whoever controls the designers…

controls to a large degree the expression and evolution of design culture." (p. 33). Through the influence

of design to shape our artificial world this control is further extended to visual culture and social culture.

More than ever before meanings circulate visually (Rogoff, 2001), and design, as a practice

should question the complex relationship we have with seen and unseen objects and beings (Bal, 2003).

Rogoff (2001) encourages us to question what is also hidden from view behind each object and

obstacle, as we are often unable "to see" what is out there beyond the limits of our expectations. We

are inundated with images, options, information and products that endlessly streams before our eyes

(Walker, 2006). All this visual gluttony "conveys information, affords pleasure and displeasure,

influences style, determines consumption and mediates power relations." (Rogoff, 2001, p. 25). These

cultural practices produce what is experienced as the natural, and determine the ways in which we

inhabit and view the world (Bennett, 2010). "It is an environment where perhaps the eye that has seen

too much, and becomes the tired, bored and inattentive Postmodern eye, the cynical, discontented eye

that takes momentary interest in the idea of being able to own an powerful multimedia computer in

strawberry, blueberry or lime, but fails to see the wonder in being able to own a computer." (Walker,

2006, p. 147). The visual appeal of objects often veils their materiality, as we are more attracted to the

symbolic value of the object than its matter. What would it mean for sustainability if design were to

become more critical of its relationship to the visual? One can only wonder what is lost and left unseen,

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[8] Class notes taken in a lecture on May 30, 2012, to a EDCP 523A class by Professor O'Donoghue.

overlooked, unrecognizable and discarded in this process of unseeing we employ to navigate our modern day realities.

Matter: The unexplored strangeness beyond the visual

The world of human perception is translated almost entirely through the visual. By limiting our understanding of the world into visual terms we have reduced the possibility of experiencing a more animated world (Aoki, 1990). It is perhaps even more humbling for humans to consider that we can see less than one percent of the electromagnetic spectrum and less than one percent of the acoustic spectrum is available to us (Toporek, 2013). "The existence of the rainbow depends on the conical photoreceptors in our eyes, to animals without cones the rainbow does not exist, this means that we do not just look at a rainbow we create it." (Toporek, 2013, para. 1). Although we can delight in the visual of a rainbow, we need to remember there is a whole multitude of senses undetected by our human perception. We should perhaps consider that a vital materiality partakes in a far fuller range of this spectrum, and that we really cannot imagine what a vision given by nature would look like (Haraway, 2002). Regardless of our underdeveloped perception and senses, as humans we have created a separate and privileged order for ourselves that elevates us above the natural world (Cox, 2011). Enamored by our own brilliance and self-recognition we fail to acknowledge our moral disregard for the earth and matter, and we blind ourselves to the possibility that an impassive nature exists outside our cultural inscriptions (Barad, 2003), and therefore struggle to see and know ourselves and matter differently.

Bennett believes that to construct the politics of vital materiality and a new ontology of life we need to reconnect with all that animates our world and confront the separation that also exists in our sensory perception of reality (Princen, 2011). Achieving a more horizontal mutualness and learning to trust matter in its agential intra-activity, in its becoming, and its potential for further materializations, is no easy task (Barad, 2003). Just as we find security within the familiarity of the visual domain, we live

with a certain comfort in the predictability of the destructive control of our ecologies, and it is the dynamic refiguring process whose outcome may not be known in advance that awakens a fear in us (Barad, 2003). Does our humanness feel so threatened by the nonhuman because we have come to understand that the common materiality that we share with all other beings and things resists translation into our languages of knowing and exceeds our sensory perception and understanding (Jackson, 2011)? Bennett (2010) affirms that it is only by acknowledging our non-humanness that the agential capacity for the more-than-human may finally be taken seriously. Or perhaps it is our curiously human tragedy that we are destined to rage against the senses that we will never attain or understand, as we remain convinced that the objective I/eye has seen it all (Jackson, 2011).

By focusing so resolutely on the objective I/eye, we have lost sight of what other ways of knowing can be found through other senses. Changing the way we see, feel and understand matter is the groundwork required for a more sustainable design. Perhaps by becoming less enchanted with the eye, we can begin to explore what unimaginable possibilities wait beyond the visual (Aoki, 1990). Because we cannot always see a vital materiality does not mean it does not exist, by turning to other senses we may begin to hear the rhythm of the earth's vital pulse (Aoki, 1990). A world beyond the visual that is interpreted by other senses is truly a landscape of strangeness, whose beauty we have not yet uncovered. But how does one even begin to describe this unknown topography? Ludwig Wittgenstein believes that in the West, even the world of language has come to affirm and overly rely upon visuality, thereby reducing the possibilities of other ways of being in the world (Aoki, 1990). In such a space one has to consider is it at all possible to recalibrate the senses, when design, technology and language hold a strongly visualist bias (Davies, 1995). The gateway to a deeper understanding of matter and a more sustainable existence is perhaps through our other senses.

Encounter 10: A dialogue with matter beyond language

A dialogue with matter beyond language

My eye is a mute witness to the view of life choking on plastic waste (Bennett, 2005). The Midway Island trailer touches me, not only because I see, but also because I feel. As a video, I may be led to believe that its emphasis is on the visual, but the visual does not inspire sensation in isolation instead it drifts and sways on a steam of sound and music where time and space have been enhanced and complicated. O'Donoghue (2012)[9] believes that there is no such thing as a completely visual medium, as all senses converge through their sensory pathways, helping me feel and not see the event (Bennett, 2005). If I were physically present at the event, my other senses may be called into the encounter, and perhaps a plane passing by would have drawn them away again. Although the visual medium of the trailer has been manipulated and intensified through the eye of the camera, edited into a touching sequence, elevated to music, I consider whether the reality of the face-to-face encounter would be more or less profound than my virtual experience? Perhaps it is not as important to distinguish which encounter is more sensory or intense, but whether it provides the opportunity for thought to confront me outside the concepts and subjectivities I already have, outside the material reality I already know (Ellsworth, 2005). In this way I may become other, with new thoughts and new understandings of my entanglements. It is a way of changing my relation to the material world.

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[9] Class notes taken in a lecture on May 9, 2012, to a EDCP 523A class by Professor O'Donoghue.

Although I have been transformed by the experience, I struggle to confine its meaning into words. How do I relay feelings to others without diluting them through representation? Perhaps the trailer captures a more direct dialogue with matter than what I am able to produce through words. By being a seeing animal I constantly create the conditions for other to see (O'Donoghue, 2012).[10] But I must remember that I am also a feeling animal that needs to awaken my other animal senses and create other dialogues with the sensible terrain (Abram, 2010). As a creature of earth and matter I can draw from a vast landscape of sensory experiences that do not collapse into our given language structures (Abram, 2010). So I may begin to feel the "polyrhythmic pulse of this place – this huge windswept body of water and stone, this vexed being in whose flesh I am entangled." (Abram, 2010, p. 3). I am not sure that even a fraction of my words could do the same as a sensory encounter, but if they could inspire others to explore the matter of the living library that surround us, and swells within us then I am pleased.

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[10] Class notes taken in a lecture on May 9, 2012, to a EDCP 523A class by Professor O'Donoghue.

4.4   Conclusion

I argue that designs dependency on the visual is an interesting concept to think about in relation to designs reliance on matter, which has been articulated in earlier chapters. By challenging visual culture, we are indirectly challenging design, and I continue to think how the dynamic between design and matter would change if we were to uncouple it from the hegemony of the visual. Would we simply be left with the rational and utilitarian by such a severe suggestion, or would design find other senses or means of expressing itself creatively. I contemplate how the sensory has been exploited by both design and technology. However, the sensorial is also an unexplored terrain, and it is an interesting place from which to think about new ways of understanding matter and the possibilities for a different relationship with the material world.

Chapter 5: Closing thoughts about design, matter and sustainability

"We should become amateurs and dilettantes. These terms are usually taken to be derogatory, but the word 'dilettante' comes from the same root as 'delight', and 'amateur' from the same root as 'amare', meaning love. To be a dilettante and an amateur is to be someone who delights in the diverse beauty of the world and engages in a pursuit because of a love of the subject." (Walker, 2006, p. 37).

Braiding the ideas, concepts and thoughts around sustainable design, matter and pedagogical encounters throughout this thesis, has produced a new pattern of understanding. This pattern of understanding can never offer the impossible dream of certainty (Lather, 2007). There is no one design strategy or formula that can guide us into a sustainable future. Instead this inquiry is an opening up to the possibilities of new thoughts, conversations, encounters, and experiences of design and the material world that surrounds us. Lather (2007) reminds us that the straightforward story has become unthinkable, as we become immersed in the complications and messiness of our entangled realities. Yet, we need to be entangled, and we need to admit to our entanglements. It is only through our capacities for being in relation that we learn, change or become other (Ellsworth, 2005). By turning our attention to the everyday objects and things we interact with and encounter, we may come to know how they shape our perceptions of lived experiences. In this chapter I conclude with the idea of expanding the language of design. A new design vocabulary could offer the potential to think about sustainable design in different directions and give the opportunity to speak about objects and things in new ways. I imagine how the curious thought that accepts the nature of human and nonhuman entanglements, can guide design into a beautiful strangeness. I present a way forward for sustainable design that requires a bold leap of imagination into different ways of knowing. In some way my thesis is in itself a design that ruptures convention with a counter narrative and original form (Fuad-Luke, 2009).

A new design language

The relationship humans have had with objects is a long and intimate one (Sterling, 2005). According to Sterling (2005) tools are probably older than speech, and in some way we could say that design, with its ability to give form predates language. This perhaps means that design can stand independently of language, but would it have reached the same level of complication as we have today if this were the case, or would it have reached another kind of intricacy. Complexities in both design and language have evolved over time, and today they are so entangled it is hard to conceive of one without the other. Gayatri Spivak believes that "the language we possess possesses us." (as cited by O'Donoghue, 2012)[11]. Therefore it should follow that it also possesses the way in which we design and bring things into being. The landmark innovations of our time such as the car, computer or Internet preceded the language used to describe them and name them. Could it be argued that our particular language paved the way for these inventions and not others? Is there a certain chain of thoughts and ideas that are guided by the language we use? Design has the capacity to not only shape our world but also to create new words. That being said we may also wonder what role language plays on the imagination, we may want to consider in what ways does the language we use limits our realms of the unimaginable, and thereby also constrain design.

At the simplest level, Fuad-Luke (2009) understands every designed artifact is a form of communication. Design is not only caught up in the linear and instrumentalist understanding that modernist language produces, but has been pivotal in creating a language of signals (Norris, 2006). Baudrillard (1998) explains that entire social structures are based on the coded language of consumerism, which societies use to converse and communicate with. It is a language that needs to be learnt and acquired like all languages. Through dedication and repetition we become well versed and eloquent until the act of conversing/consuming becomes second nature to us. Within this structure of

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[11] Class notes taken in a lecture on May 9, 2012, to a EDCP 523A class by Professor O'Donoghue.

communication, individual needs and pleasures are reduced to speech effects (Baudrillard, 1998). Baudrillard (1998) considers it as "undoubtedly the most impoverished of languages: full of signification and empty of meaning." (Norris, 2006, p. 466). If Design in a significant part is able to help in the construction of the coded language of consumerism, then surely it has the potential for other and more meaningful forms of communication. Perhaps it can help develop a more nurturing dialogue with matter and the natural world that sustains us.

While design boasts its multilingual capacities it has not produced any meaningful dialogue between itself and the material environment. Matter is continually reduced to a category of passive and immutable stuff, and does not participate in the agency and historicity that are granted to language and culture (Barad, 2003). Barad (2003) believes we have put more faith and understanding into the construction of discourse and concepts than in the simple contemplation of matter. This seductive habit of mind echoes the constructivist and traditional realist belief in the ability of words to mirror preexisting material phenomena (Barad, 2003). Barad (2003) emphasizes "the relationship between the material and the discursive is one of mutual entailment. Neither is articulated/articulable in the absence of the other; matter and meaning are mutually articulated." (p. 822). Therefore the ecology of ideas is inseparable from the relationship we have with the material world. How we treat matter is intimately tied to the realm of our imagination. The designs that speak the language of consumerism where created from ideas fueled with the belief that matter and the natural environment are resources to be exploited and used.

The language of consumption that a capitalist driven design practice creates and converses in is a very isolating experience calling consumers into a nonreciprocal exchange. It arouses no collective solidarity amongst people, as the consumer stands solitary next to millions (Baudrillard, 1998). It is easy to see how in such an environment we may feel a deep alienation towards our civilization, which only produces our loyalty through consumption. Karen Meyer (2013) believes that there is such a things as the collective, animals speak this language through instinct, and perhaps even matter knows it. Our dependency on language and thought has made us become detached (Meyer, 2013). She feels that

there is a way back to the human song of community, we can intuit our way back (Meyer, 2013). Design needs to understand the language of community and collectivity between our selves and all other living and nonliving beings if it is to be sustainable. By coming to know the entangled nature of design, matter and meaning, designers and design could expand its own language, and find a new vocabulary with which to think in different directions. A new design language has the capacity to extend the design practice into the unknown and guide us into the realm of beautiful strangeness.

Into beautiful strangeness

According to Abram (2010) language has become a tool that severs our potential to experience nature more intimately as it tears us out of the world in order to represent it. He believes that we need to start exploring what curious form of thought would it take to bind us ever more deeply into the mottled density of the earth (Abram, 2010). We draw from the same matter as all other beings. "We breathe the same air[...] drink the same water, depend on the same sun, and draw nutrients from the same soil or oceans" (Fry, 2009, p. 113). To live as earth (Bennett, 2010) therefore means nothing but vibration and resonance (Grosz, 2008). There is no real difference between biological life and inanimate matter, except for the sophistication with which the energy that makes that matter is flowing (Grosz, 2011). And yet, we struggle to find a common dialogue between our selves and the environment, and equally within our fabricated world we strain to achieve a reciprocal exchange with the disposable things and objects we engage with.

Even though words are human artifacts designed by us, Abram (2010) believes that speech is not an exclusively human possession, and we may want to consider how "the very language we now speak arose first in response to an animate, expressive world – as a stuttering reply not just to others of our species but to an enigmatic cosmos that already spoke to us in a myriad of tongues?" (Abram, 2010, p. 4). Ellsworth (2005) confirms that we will not only find prelinguistic ways of knowing in nature, but it

is also a place of prehistory and human beginnings that offers refuge from the fabricated world (Grosz, 2011). By returning to a different understanding of nature, one in which we praise it and sing it, it will once again be recognized as a place of life, renewal and sharing (Grosz, 2011). Perhaps we need to question what kind of a language would it take to stir a new humility towards matter and other earthborn beings (Abram, 2010). I share in the faith of Henry Beston (1961), who believes that we need another, wiser and perhaps more mystical concept of nature. According to Beston (1961) civilized man surveys the natural environment through a distorted lens of his knowledge, removed from universal nature by a life complicated through artifice and objects.

> "We patronize them for their incompleteness, for their tragic fate of having taken form so far below ourselves. And therein we err, and greatly err. For the animal shall not be measured by man. In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear." (p. 25).

Perhaps by exploring the not yet lived aspects of the world (Agamben as cited by O'Donoghue, 2012)[12], we will unearth languages that have the capacity to give voice to the complex moving web of interrelationalities of all beings (Ellsworth, 2005). If we could see, feel and understand our environment more intensely through these languages we may come to know design rethought and remade (Fry, 2009). It is the "inhuman forms of life that surround and enable the human." (Grosz, 2011, p. 15). And Lather (2007) believes that our best teachers are those dwellings that refuse the betrayal of Western knowledge systems, as they communicate beyond the confines of our language structures and interpret the same world differently. Sustainable design will flow more naturally out of this curious aesthetic of mind towards the world.

The curious aesthetic of mind or beautiful strangeness that I gesture to here is about overcoming the crisis of imagination in design that has been governed by an instrumental mode of thinking and feeling the world. It needs to be seen as an antidote to the harshness of modernism with

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[12] Class notes taken in a lecture on May 23, 2012, to a EDCP 523A class by Professor O'Donoghue.

its approach to a material world ripe for human exploitation in the name of progress and creativity. It is a gentle revolution of thought, inspired by new solidarities, a new aesthetic and new analytic practices regarding the formation of ideas and concepts (Bennett, 2010). Beautiful strangeness is not a place or an object, although it can guide us to the unimaginable that we are yet to make, it is a way of thinking and being in relation to the material world that is different. It is a consciousness that is willing to accept the entangled nature of all that exists. It will humble our illusion of human mastery and bring to light the common materiality of all that is, emphasizing how all bodies are akin (Bennett, 2010). Beautiful strangeness is a way of thinking that can provoke a new understanding of what we consider beauty to be within design and the fabricated world. It can help us transform and re-orientate our perception of aesthetics and what it should be.

In the Western world for example the ideal of a suburban environment is pictured as a tranquil place where homes are framed by white picket fences and well-manicured hedges. How will our sense of aesthetic be challenged if we were to change that lawn into a vegetable garden or an orchard? In some states in the US there are rigid mandate as to what type of fauna can appear in front yards, and growing vegetables can sometime be considered illegal. Fry (2009) believes that design students need to learn how to grow their own food. I am not encouraging all design students to become farmers, and this concept could take up only a small module of a full design course, but I agree with Fry's suggestion, as there is a certain wisdom in the idea of asking creative people to undertake a task where they will be responsible for the growth of a matter that is more unpredictable, creative, vibrant, and animated than the easily malleable and controllable computer programs and other artificial materials that design students engage with daily. When design students are asked to design new playground equipment, perhaps instead of making something new and brightly colored, they could document the trees left in their vicinity that would be considered climbable for children. In all our measures for convenience and safety we have been led away from the simple pleasure of climbing a tree or engaging in nature, and design students may want to consider what would it take to return to such a childhood joy and grasp the aesthetic difference between an aged tree and playground equipment. There are many other

examples of a more sustainable approach to design and living, such as the 100 Mile diet by Alisa Smith and J.B. Mackinnon, the slow food movement by Carlo Petrini, as well as William McDonough and Michael Braungart's (2002) cradle-to-cradle approach to design that supports regenerative design processes that enrich and protect ecosystems.

What all these concepts and theories share is a way in which to be more sustainable, as our survival depends on healthy ecosystems and environments. My aim through this study was to go a level deeper by presenting why it is not enough to simply sustain the natural environment, but we also need to understand how our own materiality is intimately tied to and affected by everything that happens in the material world. Although beautiful strangeness does not have the same intensity as Bennett's (2010) oxymoronic truism that the human is not exactly human, I share in her faith that it is a phrase that activates our remembering of the self of a new self-interest. The ideas around self-interest will dramatically change in a world of vital materialities (Bennett, 2010). As our self-interest changes so to will our designs and our designs designing. In this sense what I would like to share is not another way of being more sustainable, as good work has already been done in that area, but rather the material reason behind why we should be more sustainable that can alter the way we see the self and change our self-interest. Instead of believing – I am doing this because it is sustainable to my part of the world and my life depends on it – I want to foster the understanding that – I am doing this because my own materiality is dependent on it, because I am deeply implicated and entangled with all other beings and things and we share a common materiality. In this way we may come to know the dialogue we are having with the environment whether it is natural or fabricated always comes through matter. For designers a deeper understanding of materiality is like learning a more detailed language of sustainability and being able to better converse with the material world around us.

What now and what next?

As humans we have a propensity to create, however, at present we are producing in excess of our needs. The excessive amount of goods produced is not the hallmark of progress but rather the manifestation of unsustainable thoughts and ideas. I am not suggesting that we curb imagination, on the contrary, I consider whether a heightened imagination can be achieve through intellectual labor, knowledge and wisdom. Designers need to start creating with the awareness that what we make carries with it the potential of change for other beings and ourselves. "A process set up anywhere reverberates everywhere" (Massumi as cited by O'Donoghue, 2012)[14]. Things, objects, processes and systems cannot be magically undone once they come into being. A scene I remember from the film "The gods must be crazy" (Uys, 1980) illustrates this idea beautifully. It is a scene where Xi the San Bushman finally finds the end of the earth so that he can throw away a glass Coca-Cola bottle that has caused so much pain and confusion within his family clan (Uys, 1980). Standing over a great precipice Xi throws away the object and it vanishes into an expanse of clouds swirling below him (Uys, 1980). It was a design that proved to be very convenient, but it did not serve the wellbeing of the collective or the community. And so Xi leaves his family to start an epic journey to find the end of the earth, to give back the gift the gods had mistakenly given him (Uys, 1980). Our reality has no end of the earth where we can cast away what was mistakenly made.

We need to make an epic journey of our own, not in body, but in willingness and openness of seeing, feeling and understanding matter differently, intuiting our way back to the collective of human and nonhuman entanglements, and designing in a way that is aesthetically nurturing. Our sheer cliff is the edge of our ways of knowing, and what opens up in the face of the loss of absolute knowledge (Lather, 2007). We cannot give the gods back our modernist logic we have to struggle to undo it ourselves. Perhaps the first step is to question the cultural practices that are embedded in many

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[14] Class notes taken in a lecture on May 14, 2012, to a EDCP 523A class by Professor O'Donoghue.

dimensions of our socio-cultural, economic, and political life, that are experienced as natural (Fry, 2009). These often-irrational systems we live by impact the material environment and our relationship with matter. Lather (2007) reminds us how Western knowledge systems assume the innocence of knowing, grasping and understanding. Sustainability has offered design the opportunity to question the knowledge systems through which it elaborates and manifests itself, and to find its real voice (Fuad-Luke, 2009).

Orientating design towards new ways of understanding sustainability requires gathering emotional resources to deal with the sense of loss and insecurity coming from the "dark enough spaces" that disrupt old regimes of knowing (Lather, 2007). It also requires courage to become a pathfinder (Fry, 2009). "To move forward we have to come to terms with the discovery of what we have become in our homelessness and isolation – in making a world we have almost lost the world, in becoming individuals we have lost common unity." (Fry, 2009, p. 247). Designers are not unlike artists and philosophers in that they have equally defended the need for beauty and aesthetic value in the things and environments we use and live in (Papanek, 1985). If philosophers work in concepts and artists work in sensations (Bennett, 2005), then designers should perhaps work in both concepts and sensation, and use their imaginations to see the world more feelingly. In this way designers may design not only with sustainability in mind, but also with matter in mind, and with the knowledge that their own materiality is deeply implicated and entangled with all other forms of life and matter.

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