Finding Life In Living Buildings: Designing For the Future of the Anthropocene

Ben Small

Lewis & Clark College

Portland, Oregon

In partial fulfillment of the requirements
for the degree of Bachelor of Arts, with honors.

Environmental Studies Program

Spring, 2015

Table of Contents

Acknowledgements

This thesis would not have been possible without the support of a massive assemblage of human and non-human actors providing the impetus for my intellectual development (come on, that's funny! If you read my thesis you'll get it...) I'm indebted to my academic mentors (a large group of individuals who have tended my brain since a young age!) for guiding me through the world of ideas, theory, research methods, and writing conventions, and stimulating my curiosity and desire to better understand this world and my place in it. I thank Jim Proctor for overseeing this project in particular as well as for providing years of lessons, thoughts, academic advising, feedback and guidance. To Ben David and Jay Odenbaugh for their selfless expenditure of time reading several drafts of this paper (and other papers preceding it), applying their expertise to my ideas, as well as sitting on my orals board, thank you. Stacy and Michael for showing me their buildings. Cody the dog, for getting me off my computer and into the park and for those never-quite-expected kisses. Briana for sharing everything with me from ideas and readings to bread and cheese. And of course my family; my brother for always reminding me who I am and being chill, my mom for her truly unconditional love, and my dad for imparting his way of seeing the world to me.

Abstract

This paper explores the Anthropocene as a salient problem space for architecture and architectural theory. Principally, the concern of this thesis is to develop a robust, material focused notion of dwelling for the Anthropocene that challenges what has been called a modernist, post-material understanding of the Anthropocene. This paper argues that architecture, and specifically buildings as built/material environments, can influence the individual's understanding of how they exist in the entangled world of the Anthropocene. After establishing a framework for dwelling in the Anthropocene, this paper presents an analysis of two Living Buildings in the Pacific Northwest region of the United States to understand how these projects advance the possibility of dwelling in the Anthropocene.

"On the night of May 10, 1941, with one of the last bombs of the last serious raid, our House of Commons was destroyed by the violence of the enemy, and we have now to consider whether we should build it up again, and how, and when.... *We shape our buildings, and afterwards our buildings shape us.* Having dwelt and served for more than forty years in the late Chamber, and having derived very great pleasure and advantage therefrom, I, naturally, should like to see it restored in all essentials to its old form, convenience and dignity. [my emphasis]"

-Sir Winston Churchill, October 28th, 1943.

The old House was rebuilt in 1950 in its old form, remaining insufficient to seat all its members. Churchill was against "giving each member a desk to sit at and a lid to bang" because, he explained, the House would be mostly empty most of the time; whereas, at critical votes and moments, it would fill beyond capacity, with members spilling out into the aisles creating, in his view, a suitable "sense of crowd and urgency."[1]

INTRODUCTION

The Task of Architecture

It was a dark and stormy night, and I remember looking out my window at the wind howling through the trees and the rain rapping on my neighbors roof as I sat comfortably in my living room pondering the sentence I had just read in Sigfried Giedion's seminal work *Space, Time and Architecture*. It read, "contemporary architecture worthy of the name sees its main task as the interpretation of a way of life valid for our period."[2] Three questions took root in my mind; 1) "What is our period?" 2) "Once we know the answer to 1, how will we define a valid way of life for our period?" And, 3) "How will architects understand and reflect this way of life in the buildings they design?"

I found myself reflecting again on Giedion's proposal as I thought about how the field of

1 http://www.winstonchurchill.org/resources/quotations/famous-quotations-and-stories

2 Giedion, S. *Space, Time and Architecture: The Growth of a New Tradition*. 5th ed. Cambridge, MA.: Harvard University Press, 1967.

architecture might be informed by the concept of the Anthropocene. The Anthropocene has become a popular topic in academia (and beyond!) since the term was first used by biologist Eugene Stoermer in the 1980s. However, the use of the term "Anthropocene" to describe a geological epoch in which humankind is recognized as the predominant force impacting Earth systems wasn't widely used until popularized by Nobel-prize-winning Dutch Chemist Paul Crutzen in the early 2000s.[3] An important aspect of the term "*Anthropocene*" is that the concept describes a time (literally an epoch) in which the material relationship between humanity and planet Earth is fundamentally changing, or, equally important, that the human understanding of our material relationship to the Earth is changing. That is, human impact on the planet, from ozone depletion to ocean acidification, increasing concentrations of atmospheric CO2 to disruptions in the Nitrogen cycle, is considered to rival that of plate tectonics and other geo-forming phenomena. This shift in the scale of human impact signals the changing material relationship humans have to the Earth. Throughout this paper I use "we," "us," and "our species" to refer to the Anthropos, that is, the people of the Anthropocene. These are simply the human beings alive in the time of the Anthropocene, although it is pointed out that the driving factors of global change tend to originate in the Global North. That is, the causes and consequences of the "human enterprise" are unevenly distributed across the globe. For example, the Global North produces more greenhouse gas emissions implicated in global, anthropogenic climate change while the Global South is thought to be the most vulnerable to the dangers of climate instability. In this paper I engage with ideas, such as dwelling, Habitus, and the relationship between human and material world that I believe are not culturally specific, classist, racist, or privileging of particular identities in any obvious ways. As numerous academics have theorized, our

3 Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill. "The Anthropocene: Conceptual and Historical Perspectives." *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences* 369, no. 1938 (March 13, 2011)

material reality conditions our primary understanding of ourselves and our world as humans.[4] This shift in understanding is occurring during our lifetimes, and as such the Anthropocene could very well be a satisfactory answer to my first question.

To live in a world defined by unprecedented shifts in ecological conditions, social upheaval, and political tension requires a novel way of understanding the status of humanity, the individual, and our objects on planet Earth as well as the relationships between them. Recent work of sociologist-cum-philosopher Bruno Latour, among others, advances promising interpretations of such a theory of life in the Anthropocene.[5] In his Gifford Lectureship at the University of Edinburgh, Latour advances his idea of the *Earthbound,* a type of person adapted for life in the Anthropocene who possesses an understanding of the myriad "imbroglios" binding the individual in hybrid networks of human and non-human actors. In Latour's vision, these network connections give rise to agency and we find our actions and technologies connected to unexpected consequences that impact ourselves and warrant our care and attention. My hunch, as I will explain in this essay, is that Latour's *Earthbound,* along with other salient ideas for dwelling in the Anthropocene, constitute "a valid way of life for our period."

The concept of "sustainability" has a long history in the field of architecture and has certainly influenced the development of the built environment for several decades.[6] However welcome and beneficial innovations in the name of sustainability have been, it seems as though architectural theory has stalled in moving beyond an understanding of buildings as static objects.[7] That is, as far as popular discourse and theory surrounding the sustainability of architecture is

4 Miller, Daniel. *Materiality*. Duke University Press, 2005.

5 Latour, Bruno. "Facing Gaia: Six Lectures on the Political Theology of Nature." Invited Lecture presented at the Gifford Lectures on Natural Religion, Edinburgh, Scotland, February 2013.

6 Anker, Peder. *From Bauhaus to Ecohouse a History of Ecological Design*. Baton Rouge: Louisiana State University Press, 2010.

7 Latour, Bruno, and Albena Yaneva. "Give me a gun and I will make all buildings move: An ANT's view of architecture." Explorations in architecture: Teaching, design, research (2008): 80-89.

concerned, achieving LEED Platinum status is still a feat of innovation. Part of the work of this thesis is to demonstrate how moving beyond merely designing buildings as sustainable objects is a necessary step for architects in the Anthropocene. To embrace the Anthropocene and all it stands for in built form — to design our buildings to expose, convey and invite the individual to explore the complex human/non-human networks that constitute our world, challenge established dichotomies, and cultivate a sense of play, humility, and wonder — is the task of architecture in the dawn of the 21st century.

Examples of buildings designed by thinking beyond "sustainability" to confront ecological problems might not be wholly absent in today's built environment. A building designed to be more than merely a sustainable object would have to demonstrate an ability, as it were, to display and impact how humans understand their status in Earth systems. That is, if a "green" or "sustainable" building uses water efficiently, a building that moves beyond "sustainability" not only is efficient, but lays bare how humans and their behaviors are implicated in the functioning of the water cycle. In order to evaluate how buildings might become more than passive, sustainable objects, I chose to explore two buildings certified by the Living Building Challenge, a certification commonly referred to as the most rigorous sustainability standard for current architectural projects. My thinking was that if I found evidence of buildings demonstrating this type of thinking beyond sustainability, then there must be some merit to the idea of buildings as agents informing human knowledge of, and behavior within, global systems already taking hold, and worth spreading further. And what better place to look than on the cutting edge of "sustainable" design?

The task of this paper, therefore, is to provide fresh impetus for architecture in the Anthropocene; to ask the field to take on a roll which is significantly more complicated than advancing the tired shibboleth of Western "sustainability," but reflecting in material the very core

(essence) of what it means to be *Earthbound.* The end result, I hope to show, is the creation of a new *Habitus* for Global Northerners, and a better way to navigate, and dwell in the Anthropocene.

CHAPTER ONE
Which Epoch is it Anyway?

Materiality of the "Age of Us"

Pop-culture or hard-science? Opinions about the status of the Anthropocene seem about as varied as the people who hold them.[8] At its core, however, the great debate surrounding the Anthropocene centers on a set of empirically observed changes in Earth systems whose causes or accelerated rates of change have been attributed to human action.

The "golden spike" that would mark the official start date of Earth's new epoch has yet to be established by the scientific community, however a few suggestions feature prominently in the literature. While some authors argue the Anthropocene began concurrently with "the initial development of the human behavior sets that enabled human societies to modify species and ecosystems more to their liking," putting the start date somewhere around the emergence of animal domestication and agriculture, others have argued that the onset of the Anthropocene occurred contemporaneously with the first wave of industrialization circa 1800.[9] At that time, the proliferation of fossil fuel use ushered in an era of technological advancement driven by increasing access to novel, previously unexploited forms of dense and abundant energy such as coal. For example, harnessing the power of fossil fuels in industrializing nations in the 19th century lead to the ability to "synthesize ammonia from atmospheric nitrogen, in effect to make fertilizer out of air" which "revolutionized agriculture and sharply increased crop yields all over the world, which, together with vastly improved medical provisions, made possible the surge in human population growth."[10]

8 http://www.smithsonianmag.com/science-nature/what-is-the-anthropocene-and-are-we-in-it-164801414/?no-ist

9 Smith, Bruce D., and Melinda A. Zeder. "The Onset of the Anthropocene." *Anthropocene*, When Humans Dominated the Earth: Archeological Perspectives on the Anthropocene, 4 (December 2013): 8–13. doi:10.1016/j.ancene.2013.05.001.

10 Steffen, Will, Paul J. Crutzen, and John R. McNeill. "The Anthropocene: Are Humans Now Overwhelming

However, this "surge" in population and human impact on the immediate contexts within which industrialization was occurring would pale in comparison to the next major phase of the Anthropocene.

The progression of the Anthropocene from the rapid industrialization of the Global North in the 19th century shifted gears in the post-war years in what Steffen, Crutzen and Mcneill call the "Great Acceleration;" a term that describes the time of intensified globalization beginning in 1945 through the present day which encompasses the aggregate growth in the "human enterprise."[11] To illustrate the "Great Acceleration" the authors employ a wide range of graphs depicting sharp increases in the numbers of rivers dammed, motor vehicles on the road, telephones, McDonalds restaurants, and other indicators of the increasing intensity of human development.[12]

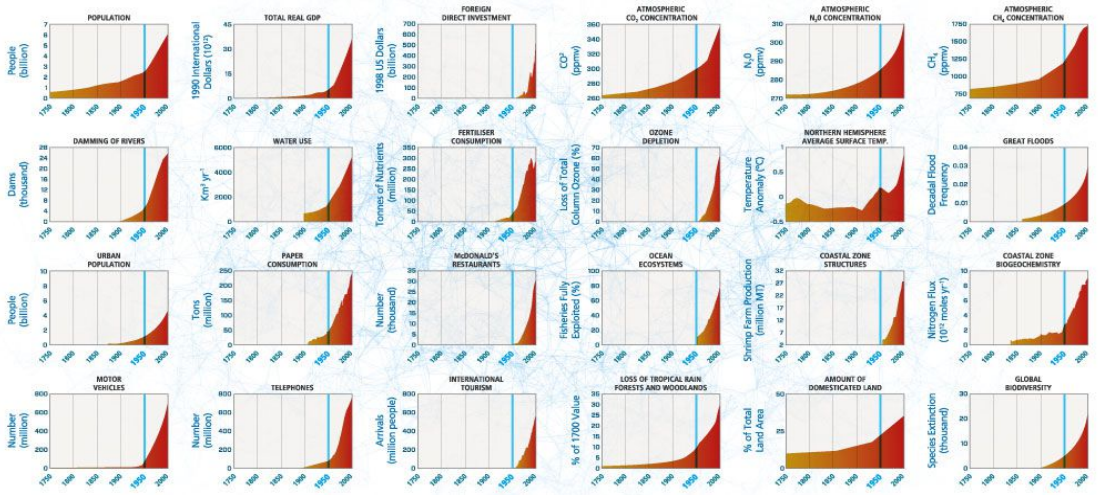

Illustration 1: The Human Enterprise and the Great Acceleration. Credit: Crutzen et al.

By providing a set of indicators of development trends in human productivity, the graphs and tables that depict the "Great Acceleration" mirror curves that reflect humankind's measurable impacts on

the Great Forces of Nature." *AMBIO: A Journal of the Human Environment* 36, no. 8 (December 1, 2007): 614 21

11 Ibid.

12 Ibid.

myriad global systems.

The impacts of the Great Acceleration on global systems such as the Nitrogen and Phosphorous cycles have been shown to come with consequences, and in turn promise to disrupt the human enterprise itself. In order to maintain the Holocene state of the Earth, characterized by relatively stable climatic conditions, availability of freshwater, and minimal fluctuations in biogeochemical flows in which humankind first flourished, a team of academics has established a set of "planetary boundaries" demarcating limits to anthropogenic impacts on earth systems that humankind would be wise to observe.

In their widely cited paper, "A Safe Operating Space For Humanity," Johan Rockström and colleagues demarcate a set of 10 "planetary boundaries" for changes in earth systems that, should continued human activity cause these thresholds to be transgressed, "could generate unacceptable environmental change."[13] These boundaries range from rates of species extinction (the authors propose we lower the current extinction rate from over 100 species per million species per year to 10) to the "global mean saturation state of aragonite in surface sea water" (as an index of ocean acidification). These thresholds are decidedly biophysical and correlate with complex and non-linear earth systems that, as the authors note, also impact the operation of sub-systems, such as monsoons, that have a direct impact on humans and non-humans alike.[14]

What I hope to have emphasized by briefly tracing these conceptual perspectives of the Anthropocene and the impact of the "human enterprise" on earth systems is that the way the 'age of us' is understood and expressed in the scientific literature is explicitly *material*. This may seem to be a trivial observation, but recent post-environmentalist thought criticizes modern environmentalists

13 Rockström, Johan. "A Safe Operating Space for Humanity." *Nature* 461, no. 7263 (September 24, 2009): 472 75

14 Ibid.

for adopting an awkward post-materialist relationship towards environmental problems. This post-material environmentalism, described as a nihilistic ecotheology whose sacraments are defined by empty gestures and self-flagellation by iPad wielding college students, results from the rise of the "knowledge economy" that has "accelerated the West's growing disenchantment with modern life, especially among the educated elite."[15] In their sharp and witty take on the major dilemma of modern environmentalism, *Evolve*, Ted Nordhaus and Michael Shellenberger describe the genesis of postmaterial environmentalism;

> "Knowledge workers are more alienated from the products of their labor than any other class in history, unable to claim some role in producing food, shelter, or even basic consumer products. And yet they can afford to spend time in beautiful places in their gardens, in the countryside, on beaches, and near old-growth forests. As they survey these landscapes, they tell themselves that the best things in life are free even though they have consumed mightily to travel to places where they feel peaceful, calm, and far from the worries of the modern world. These postmaterial values have given rise to a secular and largely inchoate ecotheology, complete with apocalyptic fears of ecological collapse, disenchanting notions of living in a fallen world, and the growing conviction that some kind of collective sacrifice is needed to avoid the end of the world."[16]

What the authors are critical of, in my mind, is the misplacement of the "trouble" of the Anthropocene exclusively in values, not in the relationship of material facts and values. That is, postmaterial environmentalists engage in thinking that establishes the myriad environmental problems of our world firmly in the realm of values and behaviors. "If only the CEO of Exxon could understand the beauty of Nature like I do, he wouldn't allow oil spills." "If only people valued Nature like me, they wouldn't drive SUVs. More people need to get out and see Nature." The clichés are as numerous as they are laughable. The challenges of the Anthropocene are undoubtedly tied to human behaviors, values, beliefs, politics, and ways of knowing. However, it must be reiterated that at a

15 Shellenberger, Michael, and Ted Nordhaus, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute, 2011.

16 Ibid.

profound level the challenges of the Anthropocene are material problems with significant implications for how humans and our behaviors relate to and exist within/as part of the material world.

A Fool's Hope? A Scholar's Doubt?

The viral video "Welcome to the Anthropocene" featured in the opening of the UN's Rio+20 summit on sustainable development in 2012 provides a concise summary of Steffen, Crutzen and McNeill's 2007 paper, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" The video begins by rendering the relentless spread of human civilization across the continents of the Earth as the proliferation of electricity is seen in images of glowing networks of new cities observed at night from space.

Illustration 2: North America at night from space. Credit NASA.

The image portrays the acceleration of the human enterprise as if it were akin to fluorescent bacteria colonizing a dark, primordial petri dish.[17] Although the film's narration never veers into dystopian

17 Revkin, Andrew C. "Exploring Academia's Role in Charting Paths to a 'Good' Anthropocene." *Dot Earth Blog*, June 16, 2014. http://dotearth.blogs.nytimes.com/2014/06/16/exploring-academias-role-in-charting-paths-

gloom, the film's message is unmistakably cautionary. Humanity is faced with an unprecedented wicked problem technological innovation has impacted earth systems causing ecological consequences which in turn threaten the quality of life on Earth (relative to the ecological stability of the Holocene) that has allowed our development in the first place; even if we cease all technological innovation tomorrow humanity would still face imminent climate change as a result of the inertia of increased concentrations of atmospheric CO2 caused by centuries of fossil fuel consumption, as well as current humanitarian challenges such as the lack of adequate housing, clothing, and nutrition for the underprivileged masses, which are problems that only further technological innovation seems to be capable of addressing.

The catch is, unlike bacteria we know where the edge of the petri dish is. That is, we know the finite reality of the Earth and its resources (an understanding that owes its popularity to a singularly important photograph, *Earthrise*, taken by the crew of Apollo 8), and we know that our current behavior, if sustained, will far outrun the physical constraints of our planet, especially if everyone on the globe were to live like those in the Global North.

---

to-a-good-anthropocene/.

Illustration 3: Earthrise. Credit NASA.

When this perspective is taken to extremes, and focuses on the "carrying-capacity" of the Earth as discussed in texts like "Our Common Future" (also known as the "Brundtland Report"), Paul Ehrlich's "Population Bomb," and "Limits to Growth" by Meadows et al, it approaches a Neo-malthusian projection of population increase and eventual catastrophic collapse. Other scholars have speculated that competition for resources will result in social upheaval if not all out resource wars!

There are many prevailing interpretations of this zeitgeist. Are we paralyzed with fear? Most lament the doomsday oracles as much as they resent climate deniers, criticizing both as un-pragmatic. But where does that leave us? Do we embrace the Anthropocene as a planetary opportunity? Public intellectuals such as Erle Ellis, Andy Revkin, among others, advance the notion that humanity can rally behind the Anthropocene as a way of avoiding fear-induced paralysis in this age of unprecedented change and challenge. Critics claim that such aspirations are overly hubristic,

put too much faith in technological innovation, and are fundamentally unscientific.[18]

Above all, discourse surrounding the Anthropocene is fundamentally a conversation by us, about us. The Anthropocene provokes humanity to question our status on Earth, and presents a material (as opposed to metaphysical) opportunity for humankind to attempt to understand and define our role on this planet.

The Earth in the age of the Anthropocene is a planet of our own creation, but not of our own design. This is our epoch, whether we accept it or not. The question from here becomes, "What is a valid way of life for the Anthropocene?"

18 "The Delusion of the 'Good Anthropocene': Reply to Andrew Revkin @ Clive Hamilton." Accessed February 15, 2015. http://clivehamilton.com/the-delusion-of-the-good-anthropocene-reply-to-andrew-revkin/.

CHAPTER TWO
A "Valid Way of Life" for the Anthropocene

Building Dwelling Thinking in the Anthropocene

The continuation of debate about whether or not the Anthropocene should not only be the age of us, but also be the age *by* us, is indication that the struggle to formulate a valid way of life for our period is thriving. As I mentioned above, debates rage about the possibility of a "good" Anthropocene and what sort of effort it will take to ensure a hospitable Anthropocene for humans and non-humans alike. A classic, and still quite large, rift divides those who think technological innovation paves the way forward into a "good" Anthropocene, while others assert the only thing to do is massively scale back the human enterprise or inevitably face the end of life on earth as we know it.[19] Both of these perspectives, however, rely on characteristically modernist notions of "progress" as both the cause of, and salvation from, humanity's unfortunate relationship with the non-human world as I will explain.[20]

In the midst of heated discussion about climate change, biodiversity loss, poverty, growing socio-economic inequality, and other global issues, Andy Revkin of the New York Times' "Dot Earth" blog offers an important point. He argues that more information itself doesn't solve problems like these, but only reinforces people's previous positions effectively stalling progress towards a theory of action in the Anthropocene.

Approached through discourse or science, it's clear the Anthropocene is the age *of* us, and therefore can be understood as "our period" complete with its own conditions and challenges. As we leave the comfortable world of the Holocene behind, and find ourselves in this strange new world of

19 Ibid.

20 Shellenberger, Michael, and Ted Nordhaus, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute, 2011.

our own creation a world of messy connections, unexpected consequences, and major changes our old ways of knowing and locating ourselves within established ontological categories may begin to fray. Unanchored from the relative stability of the last epoch, the modernist epistemology that requires things to be separate from one another to be understood will fail to make sense of anything in a world defined by hybridity, in which human entanglement in natural systems is so complex that thinking about separate 'human' and 'natural' systems just doesn't make sense.[21] This poses a problem for both the modernist epistemology as well as this specific dichotomy. That is, more information about the Anthropocene and the myriad challenges our species is bound to face can easily be appropriated as fuel for the fires of any modernist camp. What is needed is therefore not new ways of producing ever more information, but new ways of interpreting, understanding, and *knowing* that information. Unless we develop an updated epistemology or theory for dwelling in the Anthropocene, we may very well begin to feel utterly homeless on our own planet.

If a valid way of life for the Anthropocene won't come from the stalled postmaterial conversation of modernist discourse, it would seem that what humankind needs most at this juncture is in fact a new way of knowing and thinking about the material imbroglios that we constantly find ourselves in. That is, a valid way of life for the Anthropocene might look more like a new way of being or dwelling in the world (a new epistemology), than a set of dos and don'ts.[22] In an influential lecture given in 1951 titled "Building Dwelling Thinking," German philosopher Martin Heidegger discusses the relationship between building and dwelling in order to identify the source of homelessness, defined as a lack of dwelling or a feeling of not being (at home) in the world. Heidegger argues that *dwelling* is what it means to *be of* a land.[23] Before one can build, in the sense of

21 Latour, Bruno. "Why has critique run out of steam? From matters of fact to matters of concern." *Critical inquiry* 30, no. 2 (2004): 225-248.

22 Ibid.

23 It's well known that the German philosopher Martin Heidegger was a Nazi, and that his ideas have been co-opted by fascist regimes to legitimize authoritarianism and extreme nationalism. Perhaps the ideas I'm

construction but also of cultivation and stewardship, one must dwell, that is, *be of the land*. In this sense, building is not a means to an ends (i.e. build a house to dwell in), but is itself a product of dwelling. As the author says, "we do not dwell because we have built, but we build and have built because we dwell, that is, because we are dwellers." Heidegger's notion of building and dwelling rests in the human "capacity to cultivate and safeguard the earth, to protect it from thoughtless exploitation and defend it against the calumnies of the metaphysical tradition."[24] This "'saving power' that begins to surge in meditation on the essence of technology, [is] a new way of envisaging man's position with regard to things" and places.[25] As Heidegger states, "Spaces open up by the fact that they are let into the dwelling of man. To say that mortals *are* is to say that *in dwelling* they persist through spaces by virtue of their stay among things and locations." Therefore, we build, safeguard and cultivate our land (the Earth) because it is on it that we dwell (it is *of it* that we are), and such springs from thinking about and tracing our experiences of things and locations. Following Heidegger's logic, in order to safeguard and cultivate the soil, we must first *be of it,* and in order to feel at home (dwell) in a place, we must first *give thought* to our experiences of things and locales. To dwell and be of a land is therefore simply to know it, and continuously discover and rediscover it. We dwell in a place when we know its character, when we feel the change of the seasons as part of

---

using from Heidegger's *Building, Dwelling, Thinking* (published more than a decade after the end of WWII) are similar to the ones used to justify fascism, namely the idea that dwelling is the individual belonging to a soil. One can see how the idea of belonging to a soil could be used to engender nationalist fervor, but I use it to help explain/corroborate Latour's notion of being *Earthbound.* That is, dwelling (or humankind's ability to dwell) becomes a function of knowing about the place in which we live. The topic of place is written about extensively in various bodies of literature, and I acknowledge the vastness of the discourse surrounding sense-of-place. My goal, however, is to show that dwelling, in the context of the Anthropocene, occurs on simultaneously a much larger, global scale (think atmospheric commons and carbon emissions) and a much smaller, local scale (the specific solar budget and micro-climate of Hood River, for example) than the fascist nation-state. This sense of dwelling — that is, dwelling as the individual's sense of feeling connected to important systems such as the water and carbon cycles on both immediately local and global scales — I argue, is developed through experiences in Living Buildings.

24 Heidegger, Martin. "Building, Dwelling, Thinking." In *Poetry, Language, Thought*, translated by Albert Hofstadter. New York: Harper Colophon Books, 1971.

25 Ibid.

ourselves, and on a global scale when we feel the limits of the Earth systems that provide essential life-sustaining services. Any feeling of homelessness in the Anthropocene is therefore a failure to construct new ways of knowing how to trace experiences of things and locations in an ever more complex and shifting world. As Heidegger concludes,

> "The proper dwelling plight lies in this, that mortals ever search anew for the essence of dwelling, that they *must ever learn to dwell.* What if a man's homelessness consisted in this, that man still does not even think of the *proper* plight of dwelling as *the* plight? Yet as soon as man *gives thought* to his homelessness, it is a misery no longer. Rightly considered and kept well in mind, it is the sole summons that *calls* mortals into their dwelling.[original emphasis]"[26]

Homelessness in the Anthropocene can therefore be ameliorated by giving thought to and learning what it means to dwell in this age of us. Humanity must contemplate our material relationship (our status, as well the status of our objects) with the planet in order to understand this new world so as to *become of it.* Such contemplation requires a new epistemology adapted to understanding the shifting and hybrid ontology of the world in the Anthropocene.

First and foremost, such a way of knowing and thinking (and therefore dwelling) would recognize the hybrid ontology of the Earth in the Anthropocene, and would foreground change in it's notion of what the world is, and therefore what it means to *be* in the world. In his chapter "Love Your Monsters" from the e-book of the same name edited by Ted Nordhaus and Michael Shellenberger, Bruno Latour argues that the challenge to "modernize modernization" and move forward into the Anthropocene requires more of us than simply embracing technology, but rather a re-working (or complete replacement!) of the modernist ontology of separateness.[27] Latour describes

26 ibid

27 My use of the terms "modernism" and "modernist epistemology" are taken from Bruno Latour's writings on the topic of modernism. I acknowledge that "modernism" is hardly a settled concept and has myriad associated epistemologies, however, I'm borrowing from Latour in these cases and even though I can't say I necessarily condone his position concerning/categorization of modernism espoused in his many other writings on the subject, I do find his discussion of modernism and the modernist epistemology in *Love Your Monsters: why we must care for our technologies as we do our children* to be succinct and useful for my purposes.

his understanding of modernity and the peculiar modernist theory of knowledge (the modernist epistemology as I refer to it later) as

> "The dominant, peculiar story of humankind's emancipation rom Nature. Modernity is the thrusting forward arrow of time Progress characterized by its juvenile enthusiasm, risk taking, frontier spirit, optimism, and indifference to the past. The spirit can be summarized in a single sentence: "Tomorrow, we will be able to separate more accurately what the world is really like from the subjective illusions we used to entertain about it... we will be able to differentiate clearly what in the past was still mixed up, namely facts and values, thanks to Science"[28]

Latour advances an alternative to the modernist notion of progress (Science, capital S, as a means of separating "fact" from "myth") for one "that sees the process of human development as neither liberation from Nature nor as a fall from it, but rather as a process of becoming ever-more attached to, and intimate with, a panoply of nonhuman natures." I believe Latour's, as he calls it, "compositionist" epistemology sets the foundation upon which to develop a valid way for the Anthropocene.

To adopt Latour's compositionist perspective is, again to use the author's terminology, to become *Earthbound*, and therefore be able to locate the self in a clearly delineated, yet shifting "terroir." That is, to be Earthbound is to recognize and operate within a series of dynamic entanglements which bind the individual to myriad human and non-human actors in a finite network. To know one's "terroir" is to be aware of the feedback loops that distribute the consequences of action and recognize the limits, or as I mentioned earlier, the "planetary boundaries" that demarcate "a safe operating space for humanity." However, in light of unexpected changes which are commonplace in the Anthropocene, in terms of the composition and intensity of the terroir-defining network connections, it doesn't suffice to learn about the limits and imbroglios of the Earthbound's "terroir" from a modernist Science that claims to objectively identify the laws of

28 Latour, Bruno, *Love Your Monsters: why we must care for our technologies as we do our children* in Shellenberger, Michael, and Ted Nordhaus, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute, 2011.

Nature by placing things in hermetically sealed ontological categories.

As I explained above in the section titled "Materiality of the Age of Us," current understanding of the Anthropocene is based on scientific observations communicated through papers which tend to use graphs and tables to depict the changes caused by human action. However, Latour argues that this process of transcription — transcribing real world phenomena into data via scientific instruments and measurements — reduces something material, something moving and hybrid, into a static, immaterial representation. This is problematic because, such a reduction makes the loops and limits that define the Earthbound terroir difficult to *feel*. As Latour says,

> "those limits cannot be dictated from the outside simply because they have been 'objectively determined by the laws of nature' and transported as a piece of pure information to everybody through generalized education... No, those limits have to be felt, they have to be generated, they have to be discovered, they have to be decided from the inside of the peoples themselves. Without decision, there is no body politics, no liberty nor autonomy."[29]

To the Earthbound it is imperative to maintain a collective awareness of their shifting terroir in order to protect it, cultivate their soil, and therefore dwell. After all, the Anthropocene is, by its very nature, public. That is, the ills of the Anthropocene very much affect the entire planet, such as the decentralized impacts of unequal CO2 emissions. Furthermore, the negative impacts of climate change, biodiversity loss, ocean acidification and sea level rise will not be evenly distributed over various regions and socio-economic classes.[30] In fact, this possibility only makes it more imperative that the limits of the Earthbound terroir are collectively discovered, defined, and maintained. For furthermore, as Latour insists, the Earthbound

> "need to trace and ceaselessly retrace again the lines made by all those loops, as if the old distinctions between science, public, art and civic space were quickly vanishing. All those obsolete distinctions are much less important than this strong injunction: keep the loop traceable and publicly visible or else we will be blind and helpless with

29 Latour, Gifford Lectureship.

30 Steffen et al conceptual and historical perspectives chapter 6.

no soil on which to settle, strangers on our own land."[31]

Similar to the true plight of dwelling identified by Heidegger (that humanity must *ever learn to dwell*), Latour suggests it is precisely the active cultivation of the compositionist epistemology *in the soil of the Earth* and the relentless charting of the ever-shifting terroir that allows the Earthbound to dwell in the Anthropocene. Both Heidegger and Latour call for dynamic ways of being-in-the-world which require "a change in the very definition of having, holding or occupying a space, of what it is to be appropriated by a land."[32]

Latour claims that the Earthbound's ability to first discover, and then ritually "trace and ceaselessly retrace" the network connections that constitute their terroir in which they dwell comes from "feeling the violent reactions of what they do to modify their ways of life more and more desperately... like ticks on the mane of a roaring beast." However, if it were a joy to actively discover and monitor the network connections that support the being-in-the-world of the Earthbound, I believe delineating "planetary boundaries" would be a much more effective endeavor than if such limits needed to be collided with in order to be located.

In his keynote presentation at the 2014 Environmental Studies Symposium hosted by Lewis and Clark College, Paul Robbins of the University of Wisconsin, Madison, shared what he understands is an important aspect of a successful way of life for the Anthropocene; serendipity. Composed of three parts, serendipity describes a way of being-in-the-world conducive to discovering the terroir of the Earthbound, and subsequently being able to dwell in the Anthropocene. In Robbin's interpretation, serendipity consists of; Wonder understood as an openness to and acknowledgement of unprecedented challenges; Humility which means understanding that influence does not equal control; and, lastly Play which connotes both active engagement with the

31 Latour, Gifford Lectureship.
32 Latour, Gifford Lectureship.

world and a capacity to fail without losing heart. Cultivating and adopting a perspective on life that foregrounds serendipity might just be the best chance the Earthbound have at discovering their terroir and learning to dwell in the Anthropocene. That is, as opposed to Latour's notion of how the Earthbound will discover the limits of their terroir by violently colliding with them, Robbins' conception of serendipity, by virtue of being less painful if not outright enjoyable, is therefore a far more attractive means of dwelling (discovering one's terroir and becoming Earthbound) in the Anthropocene than Latour's alternative. In this way, serendipity fills out what it means to dwell, for we discover and learn about the soil we belong to when we humbly wonder about it and play upon it.

The feeling of homelessness in the Anthropocene results from the modernist epistemology (the certain way of knowing described above that relies on capital S- Science to separate facts from values and presumes that Nature represents a purity of order) attempting to understand the messy, hybrid ontology of the world in the Anthropocene. The compositionist epistemology learned through serendipitous encounters with the myriad "imbroglios" that define life in the Anthropocene seems to be the best way to *think for dwelling* in the human age. Only once we learn to dwell in this new epoch can our species hope to build, cultivate, and safeguard a better world. We can say that the individual who embraces the tenets of the compositionist epistemology (a new way of *thinking*) outlined above is able to explore his or her position in an ever shifting network of connections between human and non-human actors (locations and things, as Heidegger would refer to them), discover appropriate limits, and therefore map his or her soil, or terroir. In doing so the individual becomes of a land, and is *Earthbound.* Finally, the place (and I don't use that word lightly) of humankind needs to be located not only in terms of a set of converging and dynamic systems, but firmly in time. As Karsten Harries reflects in his book, "The Ethical Function of Architecture," "Just

as human beings need to locate themselves in space, so they need to locate themselves in time, find their place in time. If there is to be genuine dwelling we must be able to defeat the terror of time, to genuinely situate ourselves in time." That is, the terror of time — the fear of death and the marching on of history — must be pacified. To dwell is to accept our place in the Anthropocene in networks of human and non-human natures, but also in the flow of time. Only then are we able to dwell, ironically, in this age of us. It would seem then, the answer to my second question about what constitutes a "valid way of life" for the Anthropocene is less of a structured set of values or behaviors, but is defined by entirely new ways of knowing and understanding life on Earth; a new way of *thinking* for *dwelling* in the Anthropocene.

CHAPTER THREE

Architecture, Phenomenology and the Re-Materialization of the Anthropocene

Mind Over Matter & Matter Over Mind

The materiality of the world conditions our experience in myriad ways. That is, we shape the world (it's the Anthropocene after all) and the world (things and locations) shapes us.[33] The idea that 'things,' the everyday and extraordinary objects that humans engage with in their lives, perform a 'socializing function' has been given much thought in the field of Anthropology (and now Cyborg Anthropology) since the 'material turn' of the humanities to include physical objects in attempts to understand social life and culture along with words (semantics). In fact, some scholars such as Christopher Pinney and Daniel Miller, argue that the turn to materiality provides a more robust analytical vehicle than Derridian linguistic philosophy because of the object's ability to "powerfully determine our expectations by setting the scene and ensuring normative behavior, without being open to challenge."[34] In this sense objects can be said to have agency.[35] Susanne Küchler, in her chapter "Materiality and Cognition" from the anthology *Materiality*, explains that "objects have shown to us already that the kind of thought that dwells in the surfaces of things is often abstract, conductive, and connective in nature. It is this connectivity, essential to the art of describing, which has become of vital importance in capturing how things partake not just in thinking, but also in the shaping of knowledge."[36] I believe the way objects function as connective agents in knowledge formation is critical to the Earthbound's compositionist epistemology, that is, it's through engagement with the materiality of things that the human learns to think as a compositionist, feel (map) their terroir, and be appropriated by a land therefore becoming Earthbound.

33 Susanne Kuchler,"Materiality and Cognition." in *Materiality*, pg.
34 Materiality, intro. Daniel Miller
35 Gell, Alfred Art and Agency
36 Susanne Kuchler,"Materiality and Cognition." in *Materiality*, pg. 226

Anthropologist Tim Ingold advances the discussion of materiality further in his book "Being Alive" by arguing that the materiality of things is primarily defined by what they do. Ingold says, "We say the wind blows... But in truth, we know that the wind *is* its blowing." However, to understand the materiality of objects of material culture rather than things like wind or rocks, we must think about how people relate to things in *doing*, as much as by what the things themselves are made of. To use an example from his book, when naming the tool, we don't call it a "thin serrated metal piece with handle" but a saw, because that's what we do *with it* (emphasis on the relationship between material object and person). It is in this way that things can be said to posses some form of agency that arises from relationships between people and things.[37,38]

To understand the materiality of the Anthropocene is therefore to recognize it not only as a historical moment, but to see the world as an "agentic assemblage" of network connections between humans and non-humans from which agency itself arises.[39]Grasping the materiality of the Anthropocene as an agentic assemblage defined by converging human/natural hybrid systems is the compositionist epistemology outlined earlier. The agency of the system itself arises from these network connections and performs a socializing function.[40] In other words, by getting our *minds around the matter* of the Anthropocene, we can begin to be conscious of the matter of the Anthropocene's influence on our minds.

My goal of re-materializing the Anthropocene in such a way (as an agentic assemblage) is to argue that the material culture of our period needs to function accordingly. Right now, the materiality of our relationship to our planet is only being communicated to Global Northerners (remember the postmaterialists from earlier) through a messy process of transcription in which

37 Ingold, Vibrant Matter,
38 Albena Yaneva, Making the Social Hold.
39 Vibrant Matter, Deleuze & Guttari
40 Latour, Bruno. "Reassembling the social." Hampshire: Oxford University Press(2007).

complicated phenomena are measured by instruments and recorded in data sets. The resulting inscriptions possess several advantages that allow them to be employed effectively. To paraphrase Latour; 1) inscriptions are mobile extinct species, melting ice sheets, and oceans can't move, but data sets, graphs, and descriptions can; 2) they are immutable when they move; 3) they are made flat i.e. there is nothing hidden or convoluted, and flat surfaces are easily *dominated* such as maps; 4) the *scale* of inscriptions can be modified at will carbon molecules are drawn next to the trees that sequester them; 5) they can be reproduced and spread at little cost; 6) they can be recombined and shuffled allowing for mental connections between things to be made; 7) they can be superimposed on one another commodity markets can be mapped on top of biomes; 8) they are easily incorporated into written text as seen in Steffen et al; and finally 9) they can be explored with geometry and euclidian space we can't physically go out and measure the sun, but we can put a ruler over a picture of the sun and compare it to the moon or even a house.[41] The process of transcription and the mobilization of inscriptions has enabled humankind to clutch atoms in the palms of our hands and see the carbon cycle in front of our eyes. Without sensitive instruments and keen eyes, and the advantages of inscriptions mentioned above, the world would never know about the Anthropocene. The inscriptions made by scientific inquiry and instruments are undoubtedly material and associated with *doings*, namely the investigations of scientists. As Latour argues, the production of these inscriptions is part of a material culture laden with its own set of values and norms. The problem I take with inscriptions of this kind, as material as they are and even though they can therefore be understood as part of the material culture of the Anthropocene, is that they merely provide *knowledge-that* as opposed to *knowledge-how*. It's important to 'lift the lid off' the process of transcription in order to understand the process for what it is; the reduction of a phenomenon's innate complexity and dynamism which are lost in the transmigration of it's essence

41 Latour, Bruno. "Visualization and Cognition." Knowledge and society 6 (1986): 1-40.

into static representation. I don't wish to belittle the importance of transcription in the development of information and the production of knowledge that has helped humanity overcome a host of diseases and other travesties, I only hope to show that it is quite messy and insufficient to cultivate a deep embodiment of the compositionist epistemology, for such is another way of knowing altogether, or *knowledge-how*.

This distinction plays into the way the Earthbound come to understand their terroir. That is, graphs give us *the knowledge that* the atmosphere is becoming more saturated with greenhouse gases however, as I discussed earlier, Latour argues that in order to maintain liberty, autonomy, and collective decision making humanity must look beyond the inscriptions representing the Anthropocene in order to trace the limits and imbroglios of their terroir.

In other words, the Anthropocene (via inscriptions) hasn't come into our definition of dwelling in terms of *knowledge-how*. To become Earthbound *the knowledge of how* humankind exists within the Anthropocene as an agentic assemblage *must be felt*. That is, our terroir, our soil to which we belong, must be encountered, discovered and rediscovered in its own vibrant and tumultuous materiality. In this sense we shape (or at least play a part in *shaping*) the materiality and agency of the Anthropocene through our implication in the network of relationships that composes it, and more, are in turn shaped by it. It's not that we must only know that the Anthropocene is an agentic assemblage, we must also know how we function within that assemblage.

Phenomenology, Architecture and the Habitus of the Anthropocene

The awareness of being insnared by the agentic assemblage of the Anthropocene can be arrived at through reflection on embodied experience in relation to places and things. The philosophical tradition of phenomenology concerns itself with the analysis of the experiences of the embodied individual in the world where the aggregate of experiences create the ontology of the

"lifeworld." Phenomenology provides a robust theoretical framework I will employ to pull together the concepts I have thus far discussed.[42] Through the framework of phenomenology, my goal is to understand how the relationship between the individual and material culture can convey a sense of being Earthbound. That is, I believe the theories developed by phenomenologists will help me understand how the individual, through experience with material culture, can develop a compositionist understanding of the world. To understand the role of materiality in the formation of the compositionist epistemology, I have chosen to examine architecture as the principal material register. The premise of architectural phenomenology is that "our experience of buildings is inseparably tied to the experience we have of ourselves, or bodies, just as our experience of our bodies is affected by the spaces we inhabit."[43] In fact scholars Tim Ingold and Michael Rowland both argue that movement itself, as part and parcel of our experience of space and in relation to objects, plays a crucial role in the formation of personhood.[44,45] I hope to show how experience with certain built forms can influence the individual's understanding of their lifeworld as composed of converging human/natural hybrid systems. My goal is to show how experiences with material architecture (that is, relationships with buildings) can convey a sense that the individual is fundamentally entangled in the world, and help them map those entanglements and their limits (their terroir) therefore becoming Earthbound. A principal question of architectural phenomenology is "How do experiences of buildings and spaces (materiality of built form) convey a notion of place?" Or, in the context of this thesis, "How can experiences of buildings and spaces facilitate the process of becoming appropriated by a land, a soil, a place? How can buildings help us become Earthbound

42 Seamon, David "A Way of Seeing People and Place: Phenomenology in Environment-Behavior Research," in S. Wapner, J. Demick, T. Yamamoto, and H Minami (eds.), Theoretical Perspectives in Environment-Behavior Research (pp. 157-78). New York: Plenum, 2000.
43 Harries, Karsten. The ethical function of architecture. Mit Press, 1998.
44 Ingold, Tim. *Being Alive*
45 Rowlands, Michael. *Materiality* pg. 74

and express our dwelling in the Anthropocene?"

As a means of understanding the effects of buildings on individual experience writ large, architectural phenomenology is powerful in that it focuses on relationships between individuals and built forms (design and architectural features of a building, spatial organization, and material culture) and specific places. Importantly, as my quote from Karsten Harries pointed out above, to be of a place is also to be of a time, especially because our experience of space and time are inextricably bound to one another. Time, especially in the context of built form, is defined by the movement of light through space and over volumes. Sunlight, in this sense, creates the possibility of architectural form and perception and place itself.[46] As I will discuss later, the specificities of place, as opposed to space, matter in the mapping of the Earthbound's terroir.

One aspect of architecture, architectonics, is relevant to the organizational structure of the Anthropocene. That is, the Earthbound must ever trace and re-trace the imbroglios that constitute their terroir. The organizing structure (the architectonics) of the Anthropocene can therefore be imagined as a dynamic network connecting a panoply of human and non-humans in a series of relationships of shifting scales and intensity. The organizing ability of architecture is altogether different from architectonics. That is, architectonics describes the way in which things are organized, not why or how they are organized in the first place. For instance, we can say the architectonics of social relations is hierarchical, and that the ability of architecture to organize social relations reinforces that structure.[47]

The organizing ability of architecture relies on a widespread canon of forms to mediate social relations; towers, walls, gates, uncomfortable benches, and pedestrian skyways all reify social

46 Lakeman, Sandra Davis. Natural light and the Italian piazza: Siena as a case study. Natural Light Books, 1994.

47 Dovey, Kim. *Framing Places Mediating Power in Built Form*. London: Routledge, 1999.

organization.[48,49] If architecture is an active part of each individual's lifeworld in mediating relationships between people, why shouldn't it be able to mediate the relationship between Earthbound and terroir as well?[50]

I believe it can, and in doing so architecture will play a critical role in the formation of a valid Habitus for the Anthropocene. The popular idea of Habitus refers to the way of being-in-the-world that an individual acquires through the activities and experiences of everyday life; in particular the individual's experience of material culture. Habitus, therefore, is inseparable from phenomenology as both pertain to the experience of the individual in relation to the material lifeworld. The possibility of forming a compositionist Habitus can be found in architecture, for, according to Bourdieu

> "it is the dialectical relationship between the body and a space structured according to the mythico-ritual oppositions that one finds the form par excellence of the structural apprenticeship which lead to the em-bodying of the structures of the world, that is, *the appropriating by the world of a body thus enabled to appropriate the world*... and above all the house is the principal locus for the objectification of the generative schemes. [my emphasis]"[51]

That is, "the structures of the world," I might call them the architectonics of the Anthropocene, are understood and are "em-bodied" by the individual as a result of the physical experience of space. In this sense, the individual can learn to feel the imbroglios of the Anthropocene and become Earthbound by engaging with architecture that cultivates the compositionist epistemology. As Latour says of the Earthbound, "As for the rites and rituals which are necessary to render this people conscious of its vocations, it is to the artists that we would have to turn... The task would require becoming a playwright, a curator or a composer." Or an architect.

48 Ibid. pg. 45
49 Davis, Mike "Fortress LA...," in: M.Sorkin (ed), *Variations on a Theme Park. The New American City and the End of Public Space.* New York: Noonday Press, 1992.
50 Yaneva, Albena "Making the Social Hold"
51 Bourdieu cited in *Anthropology of Architecture.*

In this sense Latour's "rites and rituals"are Bourdieu's "mythico-ritual oppositions" that can be disseminated by material culture. Therefore it is through the experience of the embodied self in relation to built form that the Earthbound, whose vocation is dwelling in the Anthropocene, can be "appropriated" by the architectonics of the Anthropocene (the agentic assemblage), in turn allowing the Earthbound to dwell in their terroir. In other words, the Habitus of the Earthbound is born from the individual's relationship with an apposite material culture of the Anthropocene. It's easy to append the Anthropocene to the end of Victor Buchli's statement, "In many ways buildings are about thinking and working through things that cannot be adequately cognized and presenced in the here and now: the past, the future, ancestors, resolutions of social conflict, and contradiction."[52]

Lastly it's important to remember that buildings, the material result of architecture, are also dynamic, moving projects full of connections.[53] They are material culture whose production and lasting material presence can be mobilized to convey the compositionist epistemology by allowing individuals to serendipitously engage with the myriad systems laid bare in their fantastic convergence that becomes the building itself. That is, the compositionist epistemology is phenomenological in that it is focuses on the relationship between individual and lifeworld as the way of knowing the ontological status (the architectonics) of the world in the Anthropocene. In conclusion, it is in the living in buildings and in the designing of buildings that we experience and are reminded of our deep embedded-ness in a panoply of human and non-human natures.

52 *Victor Buchli. An Anthropology of Architecture. London ; New York: Bloomsbury, 2013.*

53 Latour, Bruno and Albena Yaneva. "Give me a gun and I will make all buildings move: An ANT's view of architecture." *Explorations in architecture: Teaching, design, research* (2008): 80-89.

Mobilizing Public Places for a Cosmopolitical Anthropocene. Or, the Making of a Polity for the Body Politic.

As discussed earlier, without the ability to feel the limits of their terroir the Earthbound cannot become a body politic. That is, without a polity, there can be no body politic. Some architectural theorists, such as John Palmesino, argue that the ultimate purpose of the practice architecture is, in fact, the formation of polities. As he says, "Architecture is not buildings; buildings are mainly stuff. Architecture is an active connection, a practice which activates a relation between material spaces and their inhabitation; and, it structures that relation, it structures what we call the relation between space and polity, as well as the construction of polities themselves."[54] The idea that architecture provides a generative function for the formation of polities is important in understanding how architectural production, alongside the experience *of* architecture, can inform life in the Anthropocene. The Earthbound's relationship to their soil, their terroir, is defined by their relationship to the agentic assemblage of the Anthropocene whose limits and imbroglios are discovered and traced by having embodied experiences in places. Again, the world appropriates the embodied individual as much as the individual calls the world into being.

For these experiences to take place, the proper infrastructure must be in place. The project of designing buildings is often times a very public act involving many individuals from various walks of life.[55] Buildings not only come into being through political process, but are subsequently engaged with (of course, depending on the type of project) by many people.

Architecture, then, can be understood as a sort of intervention in public epistemologies. That is, if the buildings that architects design condition the experiences of individuals in our time of the Anthropocene, the task of architecture, and therefore of architects, is to interpret and express the

---

54 *Turpin, Etienne. Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy.* Ann Arbor, MI: Open Humanities Press, 2013.

55 Yaneva, Albena The making of A Building.

valid way of life of being Earthbound in built form. By providing public instances of material culture that condition individuals into the Earthbound Habitus, architects will be fulfilling what Giedieon has called "the main task of architecture."[56] In so doing, architects will provide the space (the polity) for the formation of the cosmopolitical body politic of vital importance for the future of the human species in the Anthropocene epoch, the Earthbound. The formation of the Earthbound body politic, by the very nature of the Anthropocene as a global phenomenon, must occur in the public sphere, which for Habermas and Arendt constitutes our "common world." The Earthbound, as I have argued, are a people of a global terroir or soil, appropriated by a land so that they become of it and dwell there. The terroir of the Earthbound is a global "agentic assemblage" felt by the Earthbound through relationships with the materiality of the world and specifically material culture. This way of understanding the world (the compositionist epistemolgy) forms a Habitus, or way of being-in-the-world that transcends national borders. Thus, the body politic of the Earthbound is firmly cosmopolitical. The public sphere, consequently, is where the formation of the Earthbound must take place. In this regard, architecture is privileged in respect to other forms of production of material culture for public buildings are experienced by many people, and people experience many buildings every day. Of particular salience are schools, where citizens are socialized and the material and pedagogical circumstances of learning environments condition ways of understanding, and being-in, the world. To socialize the youth to be Earthbound from an early age is, perhaps, the best chance our species has of successfully navigating the tempestuous world of the Anthropocene. As alarming as this may seem, I believe the world needs a generation of leaders who understand their deep entanglement in Earth systems and who can use such an understanding to make decisions with respect to 'planetary boundaries' instead of in spite of them.

56 Giedion, Sigfried. Space, time and architecture: the growth of a new tradition. Harvard University Press, 1982.

CHAPTER FOUR
Finding Life in Living Buildings

Architecture of the Anthropocene

"Ecology and architecture make strange, but star-crossed, bedfellows. The former is the study of how all things in the natural world are related to each other, while the latter is in its essentials the reaction of the human imagination to nature's inhospitality to dwelling."
-Dutton, Thomas A., and Mann, Lisa H.

It's a fruitless endeavor to try and pinpoint a time when humans began building in response to ecological concerns, for the truth is buildings have always been built in ecological contexts whose conditions inform many architectural features and materials. However, architecture's history of engagement with the ecological sciences is perhaps more easy to describe. The Bauhaus movement, a school of thought as well as an institution which flourished in Germany from 1919 to 1933, is in many ways defined by influence from the biological and ecological sciences.[57] Throughout it's history, ecological design has focused on creating buildings informed by cutting edge life-science research in order to reduce the impact of human development on the bio-physical world. From renewable building materials to the solar panels that are a dead giveaway of 'eco-friendly' or 'green' buildings, "the attempt to base design on biology points to the very core of the modernist heritage."[58] As we discussed earlier, it is this self same modernist faith in Science as a means of objectively knowing a true Nature that compositionism seeks to replace.[59] Current sustainability initiatives, such as LEED (Leadership in Energy and Environmental Design), the rating system established by the United States Green Building Council, are arguably no different from the science-guided modernist

57 Anker, Peder. From Bauhaus to Eco-house : A History of Ecological Design. Baton Rouge, LA, USA: Louisiana State University Press (LSU Press), 2010.
58 Ibid.
59 Latour, Gifford lectureship

designs of the Bauhaus school.[60]

Despite the popularity of LEED, the Living Future Institute argues that their Living Building Challenge (LBC), in fact, represents the most rigorous 'sustainability' standard for the design of the built environment, with standards far surpassing even LEED Platinum certification. The main difference that sets LBC projects apart from LEED projects is that the former claim to "go beyond sustainability" to embrace "regenerative design."[61] That is, the LBC argues that typical 'green,' 'high performance' and even 'sustainable' buildings are merely designed "to be less bad" while in Living Buildings "every single act of design and construction make[s] the world a better place."[62] But the LBC's critique of the LEED system is more multifaceted than this first blush. The LBC argues that that the LEED point-based ranking system itself is flawed, as it provides easy cop-outs and work arounds for certification through optional categories. Under LEED, projects earn "points" by including certain features in their design such as bike racks and energy use speculations. However, points are awarded based on design, not post-construction evaluation. Furthermore, opponents of LEED argue that points are unevenly weighted, that is, adding bike racks to a project might receive more points than adding fewer parking places, even if the addition of bike racks does less to reduce the number of car commuters than fewer parking spaces would. The result is, in a classic (and costly!) example of green-washing, that designers can dupe the rating system and achieve a higher LEED point score for a design that may be no more 'sustainable' than current code standards.

Instead of a single point system to achieve a hierarchical ranking (such as LEED's Silver, Gold, Platinum), the LBC sets out three different pathways to certification all founded on a core set of twenty performance-based (i.e. not projected, but evaluated) imperatives organized into seven "petals;" site, water, energy, health, materials, equity, and beauty. The three pathways to certification

60 Ibid.
61 LIVING BUILDING CHALLENGE 3.0 A Visionary Path to a Regenerative Future
62 Ibid.

are; net zero requires that "one hundred percent of the building's energy needs on a net annual basis must be supplied by on-site renewable energy," a building can be net zero certified for water use as well, although this is much less common; petal certification requires a project to meet all imperatives of three of the seven petals (one of those three must be either water, energy or materials); and Living Building Certification where each imperative of every petal is met including net positive energy and water use (a living building must produce more energy and water on-site than it consumes on a net annual basis).[63]

Beyond the rigorous performance standards and small number of projects who have succeeded in gaining Living Building Certification (fewer than 10 projects can claim this distinction as of 2015), my attention was drawn to Living Buildings due to the fact that the LBC sees itself as "a bit of a Trojan horse a philosophical worldview cloaked within the frame of a certification program."[64] It is for this reason that I see Living Buildings as rich with investigative potential. As I hope to show in the following chapters, there is much to be learned about architecture and the Anthropocene by digging a little bit deeper into their 'lives.'

Methodology

In order to understand if Living Buildings might be truly moving beyond sustainability in directions consistent with the framework I developed above, I completed case studies of two certified Living Buildings in the Pacific Northwest; The Bertschi school science wing in Seattle, WA and the Hood River Middle School (HRMS) music and science building in Hood River, OR. Conveniently, part of the 'equity' petal encourages Living Buildings to offer public tours, and each school was eager to provide an expert to show me around their building. I approached each tour and interview with a stable set of research questions that informed my inquiry;

63 Ibid.
64 Ibid.

-How are "living buildings" used as pedagogical tools to teach environmental science and ethics?

-Do Living Buildings help individuals understand their relationship to global systems?

-Do living buildings challenge traditional nature/culture binaries?

Over the course of one week I visited each school in kind, and will detail my findings in the next section. My goal of visiting each building was to identify architectural elements that may function to convey a sense of individual embedded-ness in global systems. As I mentioned earlier, the compositionist epistemology denies the existence of discrete human and natural systems, but instead acknowledges the hybridity of even the most trivial flows of say, the water and carbon cycles. Compositionism asks us to understand the individual as embedded in myriad systems from political and economic systems (and other structures of power such as gender), to socio-cultural, and ecological systems, and furthermore to realize the interconnectedness of these systems themselves. However, it's beyond the scope of this thesis to trace a building's hybridity along so many paths. For the sake of my empirical analysis of the two Living Buildings in my case study, I decided to focus specifically on two systems of paramount importance to life, and consequently whose connections to the individual (and connections between themselves) are most easily observed; the carbon and water cycles. Of course, remaining open to new information and insights was of paramount importance and miscellaneous observations were noted, and will be included in my analysis.

In order to ground my study of how Compositionism might be expressed in built form, I needed to find ways in which buildings laid bare the messy workings of hybrid human/natural systems. Two of the most apparent resource flows through buildings are energy and water. The flow of energy (specifically electricity) through a building is obvious when we turn on the lights or plug in an electronic device to charge. Often times the source of electrical energy is obscure and power lines difficult to trace, while points of output and consumption on the user-end are immediate and direct.

What makes this an interesting system to follow is the typical location of it's "headwaters" at one of two important places; fossil fuel energy or solar energy. Often times the origin of electricity is taken for granted, but when a building is forced to operate on a limited "solar budget" the direct link between energy production and consumption becomes highlighted. The different implications of understanding individual energy consumption in light of not only availability, but limited ability to capture solar energy as opposed to increased carbon emissions are profound. In a solar powered building, limits to energy consumption are driven by a site specific "solar budget" determined both by the availability of sunlight on site, and the building's ability to convert that sunlight to energy via arrays of photovoltaic panels and store it in battery packs for later use. On the other hand, when power comes from a centralized plant the individual must recognize that his or her consumption of electricity means more energy is produced by the burning of fossil fuels such as coal, implicating the individual in anthropogenic climate change as a result of greenhouse gas emissions, such as CO2, in the atmosphere. Both of the schools I visited had "grid-tied" solar arrays, meaning that excess energy produced during times of high output or low use can be sold back into the electrical grid and used as credit to draw energy from centralized electricity providers in times of insufficient output or high use (such as at night or during winter). This system avoids the troubles posed by operating exclusively off solar energy and battery storage, but simultaneously softens the hard edge of the site's solar budget. Ultimately, the goal of each school is to produce more energy with their solar array than they consumed throughout the course of one year. In a compositionist understanding, such a complex system of systems makes perfect sense, and the individual must only expand his or her terroir to include the relevant "boundaries" regarding solar budgets and CO2 emissions alike.

The flow of water through a building differs slightly from the flow of electricity in that water clearly moves on to somewhere else once it's been used. That is, if we understand that the resource

flow of electricity ends at, say, my computer, we must expand our notion of downstream effects when thinking about the resource flow of water; toilets flush, sinks carry off soapy water down drains, and stormwater flows off of impervious surfaces into gutters to sewage treatment plants and eventually into rivers and oceans. Awareness of water availability and conservation methods is increasing as entire states such as California, and entire regions such as sub-saharan Africa, face water shortages that impact millions of lives. Looking past the tap for the source of clean water, and past the drain to find where waste water goes (and its quality as it moves downstream), is one way the Earthbound can link themselves and their actions to their terroir.

In the interest of adding the weight of experience to my argument it was imperative that I met with expert representatives of each building. By conducting interviews with Stacy Smedley, the principal architect of the Bertschi school science wing, and Michael Becker, the head teacher of the HRMS music and science building, I was able to gain perspective on these Living Buildings from two very important perspectives; designer and user. These expert interviews provided information that I could not acquire by simply touring the buildings, especially concerning design intentions and sustained user experience.

Nevertheless, my own experiences and observations of the buildings provide significant material for analysis. Maintaining a keen and critical eye was among my principal concerns when visiting each building, and the discoveries, observations and impressions I gathered not only directed my interviews but will inform my analysis below. When the situation permitted, I took detailed photographs or made sketches of relevant architectural features.

In addition to expert interviews and my first hand experiences in each building I employed a qualitative media content analysis of websites and publications affiliated with each project. I visited websites maintained by the Living Building Challenge, the Bertschi school and HRMS, and Opsis

Architecture the architects behind the HRMS project. Additionally, I read and gathered information from two publications; the LBC's "Living Building Handbook 3.0" and an article entitled "A Building that Teaches" written by Opsis architect Chris Brown about the HRMS building for the magazine *High Performance Buildings*. The goal of interpreting these various media is to understand how these projects are understood and presented to the public by those closest to them.

There are, undoubtedly, several limitations to the methods I have described above. My project would have benefited from access to a wider range of data concerning user experience as well as more in-depth interviews with individuals affiliated with each project such as other design team members, contractors, public and code-enforcement officials, miscellaneous community members, the commissioners of the buildings, students, janitorial and building maintenance staff and more teaching faculty. My personal experience of each building was limited to 1.5 hours due to a range of factors including personal travel time.

Despite the fact that more information could yield statistically meaningful data, for the qualitative approach of this project I feel I was able to acquire the highest quality information about each building from the source most qualified to deliver it.

Results

Bertschi School

Illustration 4: The Bertschi School Science Wing & Ethnobotanical Garden. Credit: Benjamin Bernschneider

According to the LBC website, the Bertschi school "was one of the first projects in the world to pursue the Living Building Challenge v2.0 criteria and the first to achieve it."[65] Considering the fact that today there are well over one hundred projects pursuing LBC certification, points to the pioneering spirit and ingenuity of the design team. The Bertschi school was the first Living Building I visited for this research and I was most fortunate to have my short visit guided by the project's lead architect, Stacy Smedley. During our time together Stacy and I discussed how the design features of

65 http://living-future.org/case-study/bertschiscience

the Bertschi school science wing impact user experience, and my own experience in the building testifies to the fact that in many ways these design features speak for themselves.

The features I'm referring to are myriad, but I would like to focus on several in particular that relate to the energy and water cycles I discussed above. One of the most engrossing and immediately apparent details of the building is the small stream running through the floor of the classroom. This design feature was suggested by students during the project's initial design phase and has become a focal point in the building's design, at least from my perspective.[66]

Illustration 5: A stream runs through Bertschi School Science Wing. Photo Credit: Benjamin Bernschneider

The stream also acts as a locus from which to begin one's exploration of the flow of water throughout the building. The flow of the stream can be followed in two directions; upstream, we find the headwaters on the roof of a neighboring building from which stormwater is diverted into the classroom during periods of heavy rain. Following water as it flows downstream lead's to the buildings cistern, which collects and stores enough water throughout the year to meet the entire

66 Smedley, Stacy Personal Communication. January, 2014.

building's water needs. Currently, due to a regulatory requirement, potable water must come from a public utility line, however the infrastructure to generate potable water from the building's collection cistern has been installed and is ready for use when code changes permit its use. From the cistern, water is either used for on site irrigation or can be pumped into the classroom via hand pump. Greywater from sinks is sent to the building's green wall where tropical plants filter the water on site. Blackwater is managed by a composting toilet system that produces compost for the landscaping.[67]

Further following the resource trail inevitably leads outside of the water cycle itself. For instance, the tropical plants of the green wall not only filter and survive off of the grey water from sinks but consume CO2 and produce oxygen (important for brain function), and through evapotranspiration help humidify the air (making the room more comfortable), therefore performing a suite of ecosystem services for the building.[68]

Outside of the building, plant-life continues in the ethnobotanical garden, where QR codes have been attached to rocks that sit adjacent to particular plants. When scanned on a smart device the code brings up a webpage with information about the species and how peoples have traditionally used the plant in various applications.[69]

Inside the building the use of technology is widespread. Using the same smart devices that provide information in the ethnobotanical garden, students can access a webpage that details the energy consumption and production of the building in real time. The electrical grid is apparent throughout the classroom, and electrical conduits visibly carry the connections between outlets and lighting fixtures. Through the use of their smart devices, students are engaged with system operations and maintenance schedules, providing an opportunity for students to ask questions and

67 Ibid.
68 Ibid.
69 Ibid.

design experiments (such as agreeing to wear sweaters for a week instead of turning on the heat) to see how behavior influences energy use. In our conversation, Smedley mentioned she designed the building to bare its systems in order to show how the individual is implicated in the functioning of the system and larger context. This understanding of the building's design is found on the LBC's webpage dedicated to the Bertschi project, which says, "These natural features represented in [the] classroom show the interconnectedness of the natural world.... students can reach out and touch these relationships from their desks."[70]

Hood River Middle School

At HRMS, "place" has become a key aspect of the new music and science wing's architectural style. The new building features soaring vaulted ceilings supported by reclaimed lumber beams from an old bus barn which previously occupied the site. The building's exterior is designed to reflect the main school building which, built in the 1920s, is on the National Register of Historic Places. Above the main entrance to the music and science building a large Sun dial marks time and tracks the passage of the sun through the sky.

70 http://living-future.org/case-study/bertschiscience

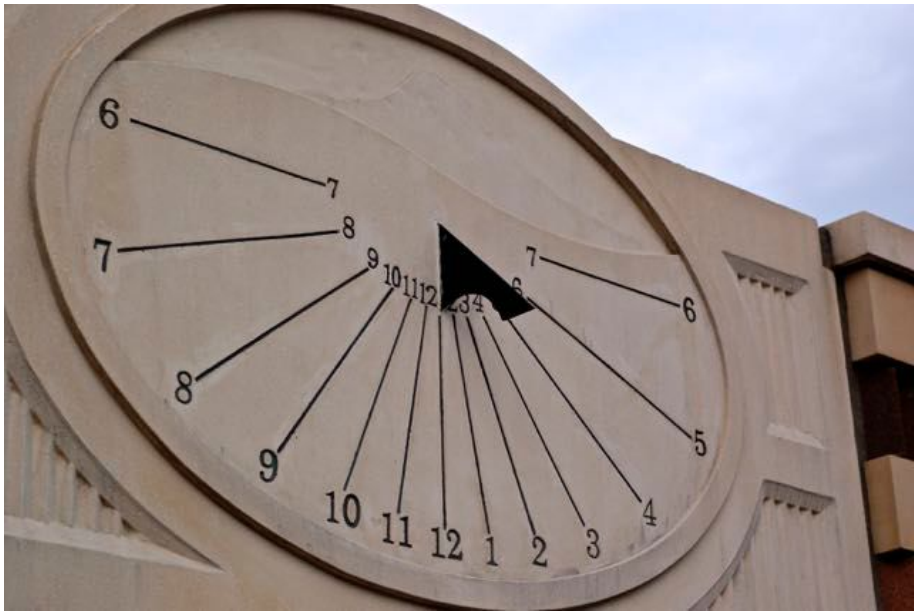

Illustration 6: Sundial at HRMS. Photo Credit: Author

Students manage an extensive permaculture garden which relies on wastewater from the building, filtered by a living-machine system complete with fish and species of wetland plants, for irrigation. Produce grown in the garden is sold by students at the local Gorge Grown farmers market hosted at the school. In the surrounding garden and landscaping zones, students are encouraged to participate in building projects (thus far they've built an impressive timber-frame tool shed and cob pizza oven) which, according to Michael Becker, gives them ownership over the place. It's hard to describe Michael Becker's role at HRMS. Not only is he an educator who teaches a range of subjects from food preparation to chess to life sciences, he's also the "steward" of the science building. Mr. Becker had been developing a permaculture-based curriculum at the school for years, and was very involved in the music and science building's design and fundraising processes. During our time together, Mr. Becker shared his wisdom, knowledge, experience and expertise with me regarding his involvement with the HRMS project. Not only did Mr. Becker take me on a tour of the buildings numerous systems, he shared with me his philosophy of "transparent educational design" which describes the

way the buildings features lay bare their inner-workings, giving students the ability to synthesize knowledge directly from the building. For example, a window seat in the hallway is framed by the exposed contents of the walls, allowing a student to see the layers of concrete, insulation, and brick that constitute the wall.

Illustration 7: HRMS Wall Section. Photo Credit: Author

Throughout the building, signage and diagrams educate users about flows of various resources through the building. A digital display presents the building's energy and water use and production in real time for all to see. In addition to this energy monitoring systems, several other features augment the user's ability to monitor environmental conditions and make management and/or behavioral decisions. That is, our senses can tell us when the indoors are hotter or colder than the outdoors, or when it's daytime or nighttime, but in the HRMS building an additional suite of instruments and sensors measures interior lighting conditions, temperature, and concentrations of CO2. A panel of LEDs affiliated with these instruments indicates when outdoor lighting, air quality & temperatures are favorable, therefore informing ventilation, heating and lighting decisions.

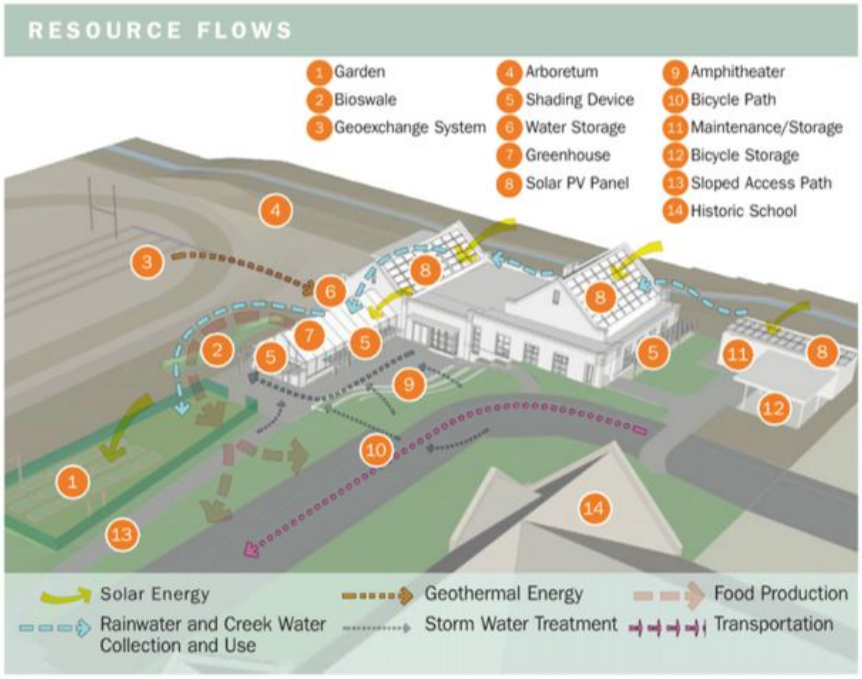

Illustration 8: Resource Flows at HRMS. Diagram found in building and photographed by author.

Not only do design features like the those described above expose the nuts and bolts of the buildings systems occupants rely on, they possess a narrative quality that invites participation and exploration. Mr. Becker has hopes for how occupants interact with the building and its design features, he says "What we want is connectivity after your experience of this building. We can't always pick what that interaction is going to be, but we can know that it is going to be an experience with an interconnected system."

CHAPTER FIVE
Life and Death of Living Buildings

Learning from Living Buildings. Or, the Social Lives of Living Buildings.

The complexity of design features and operating systems within Living Buildings in is impressive, but can we conclude that these aspects enable them to perform a socializing function for the Earthbound? This will be discussed below. What we can begin to say now, at least, is that the incorporation of the building and the operation of its systems into the formal pedagogy of the curriculum is important. Having said that, it's important to maintain a distance from pedagogical critiques here; that is not the goal of this thesis, nor am I qualified to pass such judgements. By enlisting the phenomenological and material focused approach I have previously described, my analysis broadens pedagogy to examine the implicit effects of the active, we could even say agentic, material environment of architecture that influences learning. That's not to say that these buildings aren't related to formal pedagogy through employment as pedagogical tools, as both Becker and Smedley expressed. However, as I detailed in my analysis of materiality and built form, the individual experience in relation to material culture performs a socializing function conditioning the individual into a Habitus. As a result, it's not necessary to evaluate what constitutes a successful pedagogy for environmental education, rather, I can focus on the materiality of built form and its more intrinsic ability to convey the framework for life in the Anthropocene enumerated above.

Several aspects of these living buildings seem to cultivate the formation of the compositionist epistemology. For a design feature to be successful in conveying the hybridity or entanglement of any human-natural system it must first of all welcome exploration. If we recall the principle 'virtue' for life in the Anthropocene as described by Paul Robbins, “serendipity,” we'll remember that wonder, play, and humility all matter in regard to undertaking the compositionist philosophy. That is,

to map their terroir, the Earthbound must trace and ceaselessly retrace the imbroglios that bind them to their soil. Instead of feeling like "ticks on the mane of a roaring beast" painfully crashing into the boundaries of the Earth, with Robbins' idea in mind the Earthbound serendipitously trace the imbroglios that define their world and discover their limits with a humble sense of wonder and capacity to fail. By playing in these systems, we learn about them. In both schools the use of digital technology allows students to monitor energy use and production. By designing experiments that test the relationship between themselves and the carbon cycle, students can learn what behaviors are possible on the limited solar budget of the Pacific Northwest. If students demand more heat on cold, dark days like the one that started this thesis, they'll watch as their energy consumption to production ratio skyrockets, showing that they are exceeding the boundaries of their system and their solar budget. Inversely, when the students decide to wear sweaters indoors, they'll see that such an agreement to change their behavior keeps their energy use within the limits of their limited solar budget.[71] Coupled with pedagogy, students can learn that the more fossil fuel energy they consume, the more they contribute to increasing levels of anthropogenic CO2 in the atmosphere. The consequences of more CO2 in the atmosphere might mean climate change and drought that would impact the stream in their classroom.

Such an understanding of the human entanglement in natural systems (and vice versa), is the first step in acknowledging the fragility of the nature/culture binary so problematized in current academic discourse. The notion that humans and non-humans are inextricably bound in one another has reached an unprecedented scale in the Anthropocene. However, the idea that the entire planet is now a thing shaped by 'culture' might be hard to internalize. On a more immediate scale, when a wall of the classroom is literally made of living plants that provide real and tangible services

71 This is explicitly *political*; by engaging with their building and its systems each student dwells in the space and feels they have a voice in decision making processes. Therefore, we see the building function as a polity for the creation of a body politic.

to the building questions such as "Is this building nature or culture?" just don't hold up. Outside the classroom, the hybridity of things continues to be revealed. In the ethnobotanical garden, QR codes on rocks link to plant descriptions and their uses by various peoples. Even the very word, *ethno-botanical* denotes the hybridity of the world; *ethno-* from the greek *Ethnos* for "people" or "nation," and *botanical* from the greek *botanikos*, originally *botanē* for "plant."[72]

At HRMS, students feel a connection to a place defined by a coherent narrative. Not only is their science building rooted to time and place in that it's materials and architectural styles reference older structures, but their garden, sundial, and solar array all affix the buildings in time and *place*. The feeling of ownership that results from this narrative is Heidegger's dwelling. That is, the students at HRMS have truly been appropriated by the place, and evidence their dwelling with building projects and gardening. These ways of safeguarding (building, cultivating), as I mentioned in my discussion of Heidegger, only result as a product of dwelling.

By wondering about the complexity of these systems present in their own classroom, playing and experimenting with their behavior, and humbly accepting the results, the users of Living Buildings are developing an awareness of the world that we can call compositionist. The almost ritualistic repetition of experiences such as making ventilation, heating and water use decisions condition or socialize the individual into a Habitus, or way of being-in-the-world, that acknowledges the 'agentic assemblage' of the planet. This very process of discovery is the *thinking for dwelling* that Heidegger argues is the only way to address the true plight of dwelling, that is, that humankind must ever learn to dwell. As the users of the Living Buildings give thought to their status in relation to the materiality of the built forms, their sense of self as entangled within myriad systems becomes apparent. The compositionist epistemology becomes ratified in dwelling when the individual

72 "ethnobotanical." *Collins English Dictionary - Complete & Unabridged 10th Edition*. Glasgow: Harper Collins Publishers, 2012.

expresses their dwelling by safeguarding, cultivating, and building on the Earth, as evidenced in the projects at HRMS.

Death of Living Buildings

The future of living buildings is certain: they'll die. Just like all that lives. And that is a good thing. That's how evolution occurs, of genes, and of buildings. As hard as it may be to imagine, established truisms such as the idea that the world is flat or that humankind must strive for a more 'sustainable' or even 'regenerative' built environment die, or become obsolete, and are replaced by new and better things.

As successful as I find Living Buildings, my principle critique is that even though such projects broaden public understanding of buildings as active participants, the LBC still rests on the weathered staff of efficiency, which many will recognize as problematic due to the Jevon's Paradox that shows as efficiency increases, resources are, in fact, consumed at a higher rate.[73] Increasing energy efficiency to meet the constraints of a solar budget focuses disproportionately on one side of the equation. For too many in the world, the privilege of 'scaling back' is not an option.[74] Not only should Living Buildings want to be "regenerative" (which again hints to the idea that there is still a capital N-Nature 'out there' capable of being regenerated), they should also want to be productive. That is, by focusing on the production side of the equation, instead of increasing efficiency and limiting use, Living Buildings should be asking how to maximize productivity. The questions that architects and designers of Living Buildings should be asking are, "How can our building harness

73 Jevons, W.S. *The Coal Question: An Enquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal-Mines*. Macmillan, 1865.

74 I also acknowledge that Living Buildings, along with the technology and design theory that go with them, are a product of the United States and might only be relevant projects for the Global North. This isn't to say that the 'lessons' Living Buildings teach are only important for Global Northerners to learn, but to say that perhaps the design, capital and other resources demanded by Living Building projects could be put to better use (more appropriate building projects) in developing countries as yet.

more energy from the Sun? How can our buildings produce more food? How can our buildings produce more in order to raise the standard of living of all to the level we in the Global North currently enjoy?" The tired shibboleth of postmaterial environmentalists has always been "Less less less! Back back back! Restore, regenerate, return to the way it was!" The mantra of the compositionist is "More more more! More attachments, more dialogue, more production!" For to say any less in the context of the Global North is to ignore one's privilege as well as the plights of many of the Earth's citizens who don't enjoy the same standard of living. In the Anthropocene, the problem is compounded by the fact that the majority of the people chanting "less" are sheltered by the fact that they have "more" to shelter them from the consequences their "more" produced in the first place, while those with "less" bear the brunt of the repercussions.

Therefore, the task of academics and architects concerned with the status and function of the built environment in the Anthropocene is to design for more. More production, more flexibility, more evidence of the deep imbroglios that bind the Earthbound to their terroir. That is, designers and builders must be willing to let their projects die in order for evolution to take it's course. As Heidegger said, "we must ever learn to dwell."[75] To do so requires that we have the ability to let go of previously held definitions of dwelling, no matter how valid they felt. This is a brave move, and may require architecture to become less permanent, more nomadic, more playful and more humble. How paradoxical, the bold move is to become humble! Especially in the age of humankind, where the world is increasingly shaped by human action, it's important to remember that our influence does not equal control. The Anthropocene epoch is the age of us, but not yet by us. An era of our creation, but not of our design. Whether or not we can design a "good" or "better" Anthropocene, from here the question becomes, "How will we *make* our way through the Anthropocene?"

75 Heidegger, Martin. "Building, Dwelling, Thinking." In *Poetry, Language, Thought*, translated by Albert Hofstadter. New York: Harper Colophon Books, 1971.

Bibliography*

Anker, Peder. *From Bauhaus to Ecohouse a History of Ecological Design*. Baton Rouge: Louisiana State University Press, 2010.

Collins English Dictionary - Complete & Unabridged 10th Edition. Glasgow: Harper Collins Publishers, 2012.

Crutzen, Paul J. "Geology of Mankind." *Nature* 415, no. 6867 (January 3, 2002): 23.

. "The 'Anthropocene.'" In *Earth System Science in the Anthropocene*, edited by Professor Dr Eckart Ehlers and Dr Thomas Krafft, 13 18. Springer Berlin Heidelberg, 2006.

Davis, Mike "Fortress LA...," in: M.Sorkin (ed), *Variations on a Theme Park. The New American City and the End of Public Space.* New York: Noonday Press, 1992.

Dovey, Kim. *Framing Places Mediating Power in Built Form*. London: Routledge, 1999.

Giedion, Sigfried. *Space, Time and Architecture: the growth of a new tradition.* Harvard University Press, 1982.

Harries, Karsten. *The Ethical Function of Architecture*. Cambridge, Mass.: MIT Press, 1997.

Heidegger, Martin. "Building, Dwelling, Thinking." In *Poetry, Language, Thought*, translated by Albert Hofstadter. New York: Harper Colophon Books, 1971.

Ingold, Tim. *Being Alive : Essays on Movement, Knowledge and Description*. Hoboken: Taylor and Francis, 2011.

Jevons, W.S. *The Coal Question: An Enquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal-Mines*. Macmillan, 1865.

Lakeman, Sandra Davis. *Natural Light and the Italian Piazza: Siena, as a Case Study*. 2nd edition. University of Washington Press, 1995.

Latour, Bruno. "Facing Gaia: Six Lectures on the Political Theology of Nature." Invited Lecture presented at the Gifford Lectures on Natural Religion, Edinburgh, Scotland, February 2013.

and Albena Yaneva. "Give me a gun and I will make all buildings move: An ANT's view of architecture." *Explorations in architecture: Teaching, design, research* (2008): 80-89.

. "Reassembling the social." Hampshire: Oxford University Press, 2007.

. "Why has critique run out of steam? From matters of fact to matters of concern." Critical inquiry 30, no. 2 (2004): 225-248.

. "Visualization and Cognition." Knowledge and society 6 (1986): 1-40.

– – –. "Love Your Monsters: why we must care for our technologies as we do our children" in Shellenberger, Michael, and Ted Nordhaus, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute, 2011.

"LEED-Certified Buildings Are Often Less Energy-Efficient Than Uncertified Ones." *Forbes*. Accessed February 24, 2015. http://www.forbes.com/sites/realspin/2014/04/30/leed-certified-buildings-are-often-less-energy-efficient-than-uncertified-ones/.

Miller, Daniel. *Materiality*. Duke University Press, 2005.

"Puberty on the Scale of a Planet." *Dot Earth Blog*. Accessed February 15, 2015. http://dotearth.blogs.nytimes.com/2009/08/07/puberty-on-the-scale-of-a-planet/.

Reconstructing Architecture : Critical Discourses and Social Practices. Minneapolis, MN, USA: University of Minnesota Press, 1996.

Revkin, Andrew C. "A Darker View of the Age of Us - the Anthropocene." *Dot Earth Blog*, June 18, 2014. http://dotearth.blogs.nytimes.com/2014/06/18/a-darker-view-of-the-age-of-us-the-anthropocene/.

. "Exploring Academia's Role in Charting Paths to a 'Good' Anthropocene." *Dot Earth Blog*, June 16, 2014. http://dotearth.blogs.nytimes.com/2014/06/16/exploring-academias-role-in-charting-paths-to-a-good-anthropocene/.

Rockström, Johan. "A Safe Operating Space for Humanity." *Nature* 461, no. 7263 (September 24, 2009): 472 75. doi:10.1038/461472a.

Seamon, David "A Way of Seeing People and Place: Phenomenology in Environment-Behavior Research," in S. Wapner, J. Demick, T. Yamamoto, and H Minami (eds.), Theoretical Perspectives in Environment-Behavior Research (pp. 157-78). New York: Plenum, 2000.

Shellenberger, Michael, and Ted Nordhaus, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute, 2011.

Smith, Bruce D., and Melinda A. Zeder. "The Onset of the Anthropocene." *Anthropocene*,

When Humans Dominated the Earth: Archeological Perspectives on the Anthropocene, 4 (December 2013): 8–13.

Steffen, Will, Paul J. Crutzen, and John R. McNeill. "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature." *AMBIO: A Journal of the Human Environment* 36, no. 8 (December 1, 2007): 614–21.

Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill. "The Anthropocene: Conceptual and Historical Perspectives." *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences* 369, no. 1938 (March 13, 2011) "The Delusion of the 'Good Anthropocene': Reply to Andrew Revkin @ Clive Hamilton." Accessed February 15, 2015. http://clivehamilton.com/the-delusion-of-the-good-anthropocene-reply-to-andrew-revkin/.

Turpin, Etienne. *Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy.* Ann Arbor, MI: Open Humanities Press, 2013.

Victor Buchli. *An Anthropology of Architecture*. London ; New York: Bloomsbury, 2013.

Yaneva, Albena. "Making the Social Hold: Towards an Actor-Network Theory of Design." *Design and Culture* 1, no. 3 (November 1, 2009): 273–88. .

*** A note on images. All images are used under creative commons and are for educational purposes only and are attributed as necessary.**