The Productivore's Dilemma: Extinction or Extermination?

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Abstract

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In *the Productivore's Dilemma* three overarching claims are explored in a manuscript of chapters split into two parts: First, that human and more-than-human life is not only threatened by extinction but is more importantly threatened by *systemic extermination.* Second, utilizing the coast redwood tree (*Sequoia sempervirens*) as an object for analysis, I seek to show that one of the largest known plant species is not only threatened by extinction, but by *negative production of space,* a concept theorized throughout the manuscript. The coast redwood tree is a remarkable example of the fact that there are important differences between extinction caused by natural processes and extinction caused by Anthropogenic systems. Third, using the analytical apparatus of *systemic extermination* helps to clarify a long-unfolding and intensifying species-level crisis, which I identify as *the Long Extermination*, an historical event – highly stretchable in its temporal coordinates. At the center of this critical re-framing of the debate about the so-called *sixth mass extinction* and its epochal designation *the Anthropocene,* is what I refer to as the Productivore's Dilemma: born of the realization that the main difference between the human species and all other species on the planet is not merely that we can consume and use for fuel a wide variety of plants, fibers, and animals, due to our *omnivorous* nature*,* but that we can consciously produce our habitats and our food. Hence, we are *productivores.* A dilemma then arises: are humans destroying the planet or are the systems that direct our productive

capacities destroying the planet? If it is the latter, then we are witnessing systemic extermination. If it is the former, we are causing a mass extinction. The answer will please nobody, and thus it is a dilemma. That said, there is an answer. In providing an answer, this manuscript, while broad and synthetic in its structure and scope, takes aim at a set of ideas and historical processes that deserve to be critically interrogated. Critiques of the Anthropocene and the sixth mass extinction move freely between the internal and external, leading to one central counterpoint: That we are not witnessing the sixth mass extinction, but the maturation of a long-term extermination event that is systemic much more than it is species oriented.

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Part One: Theorizing Systemic Extermination

Chapter 1: Introduction

We are living amidst a dilemma: *Humanity* – often understood to be an undifferentiated whole – is destroying the Earth system, bringing about the *sixth mass extinction*. Or the subjects of this mass extinction – human and more-than-human – are being exterminated. As with all dilemmas, neither proposition is desirable. In both cases, the ways in which environments are produced are at the center of the question. I am suggesting that what binds the two ends of the dilemma into a dialectical relationship is the role of the production of space. A key thing that sets *Homo sapiens* apart from other animals is our ability to consciously produce space and place[1] in ways that ensure the ongoing reproductions of the means of subsistence. This makes us what Lewontin and Levins call *productivores*.[2] Our omnivorous nature would exist regardless of the systems under which we live. But the way we produce is highly dependent on those social, political, and economic systems. We humans produce our environments in differentiated ways that are mediated by the holders of capital and power – an ever-shrinking proportion of the global population. The system of capitalism depends deeply upon this concentration of power and capital. Production (and production of space in particular) is as uneven and differentiated as is the human species itself. It is from that point of view that I ask the question "extinction or extermination"? My question originates from thinking about human beings, but it evolved into a question applicable to more-than-human aspects of the capitalist world-ecology.[3] It is important to discuss this at the outset.

[1] Not all humans of course possess the same abilities to 'produce' in this sense. It is impossible to write of the human – at the species level – and adequately represent the vast difference that exists across place, space, culture, gender, race, and ability. Nevertheless, humans – despite these differences – collectively produce their means subsistence.
[2] Lewontin and Levins 2007: 103.
[3] This term is taken from the work of Jason W. Moore and many others who are part of a growing global network of researchers who examine the environmental history and expansion of capitalism as a world-ecology of power, production, and value. See Moore 2015 for a thorough overview of this framework for analysis.

Early in my career as a PhD student, I was looking into the history of the Sinkyone Indians, a tribe whose historical territory is found on the remote Northwestern tip of California, or what is today called the Lost Coast.[4] I met a man[5] who is of Sinkyone heritage, as well as other Indigenous lineages, and we had a long discussion about an area of land that was being reclaimed from state ownership, land that would later become the property of the Sinkyone Inter-Tribal Wilderness Council.[6] I had originally contacted them because I was interested in studying how the ITWC was suing the US Navy for the adverse effects of the munitions practice they were doing along the Pacific Coast.[7] For legal reasons I was not able to pursue that work, but within the course of conversations, I learned something tragic. The Sinkyone Indians were supposedly an "extinct" tribe. I was literally talking to a person of Sinkyone blood, so how could they be extinct? Further, I thought to myself, if they are extinct, what was the species who wiped them out? What competitive aspect of the community beat them out of their place in the ecosystem? Isn't this a key element to what Darwin, Cuvier and all the others argued in their analyses of extinction? In short, with a few days of deep reading, I was able to make a pretty good case for asserting that then living Sinkyone Indians were systematically exterminated by settlers intent on removing all traces of them from the land that they wanted to settle and use for commercial purposes, primarily for the taking of Tanoak trees for leather dye, as well as the creation of logging spits near beachheads. I quickly moved toward asking "extinction or extermination" about other tribes, as well as about animals and plants that had disappeared over the past 200 years. It was not clear to me what it meant for a community of human beings to be "extinct," nor was it clear whether something could, or should, be classified as extinct if it were exterminated, as opposed to defeated by

[4] See Chapter 3.
[5] The man's name is Hawk Rosales.
[6] See Chapter 6.
[7] They were detonating underwater bombs along the coast, a practice that had been shown by animal scientists to be extremely dangerous to all of the marine life there. This had a direct impact on the traditional foraging and spiritual practices of many tribes along the Northwestern Pacific Coast. See https://www.culturalsurvival.org/news/tribal-navy-consultation-results-exemption-Northern-california-marine-waters-navy-training-and.

another species. The IUCN (International Union for the Conservation of Nature) operationally declares a species as 'extinct' "when there is no reasonable doubt that the last individual has died."[8] How a community of people could possibly be included in this definition is still unclear and troubling. Nowhere in the IUCN do they address the extinction of a people, only animals and plants.

If humans caused the death of the last living Sinkyone Indian, is it "humanity" that caused that extinction, or was it the political economics of a system put in place to privilege the lives of one group of people over another? Some have referred to these politics of social and physical death as 'biopolitics'[9] and its more socially accepted branding of 'biocapital,'[10] but capital cannot survive by simply providing the basic infrastructural needs of a society. The production of those basic needs[11] is always already one of environmental destruction of varying degrees. This implicates capitalism as the central obstacle to providing the basic means of survival, increasingly so for the poorest portion of the world's population. Capital's need to provide food, labor, energy, and raw materials in a way that maintains endless profitability thus creates the same conditions of scarcity it is supposedly trying to lift the world out of.[12] Mbembe's critique of Foucault was to suggest that biopolitics is really a 'necropolitics', or a politics of who gets to live and die, socially and physically in the process of endless capital accumulation.[13] All of this points to the faceless system we call capitalism. Curiously, however,

[8] IUCN 2001: 14.
[9] Foucault 2003.
[10] Rajan 2006.
[11] Here we can think of clean water, basic education, food, and healthcare, among perhaps other governmental services. The production and delivery of all these needs requires an available set of resources.
[12] On the one hand, the Developing World is a way of naming the part of the world where the poorest among us live and hence the part of the world most in need of the advancement of the necessities of life. On the other hand, this is also the part of the world that the Developed nations have historically depended upon to provide, cheaply, many of the resources necessary to ensure the continued development of the already-Developed nations. Arif Dirlik (2014) pointed to the religious-like belief in the consistency of development as "developmentalism," which he argued was the larger problem beyond capitalism itself. I return to that argument at later points in the dissertation. See also Escobar 1995: 63. For analysis of the 'steady state theory' Schumpeter 1954; Dobb 1946, 1973; Blaug 1978; Deane 1978, and to some extent also Foucault 1973: 261, who wrote about the 'suspension of development in economics'.
[13] Mbembe 2003, 2019. See also the work of Justin McBrien 2018.

it is 'humanity' that is pointed to when attempting to assign blame for the endless list of crises associated with this historical moment, what some refer to as the Anthropocene, or the "age of man."

Eventually, in a conversation with an important researcher of forests from a Marxist perspective[14] I was alerted to the fact that the coast redwood trees that I grew up with in my back yard are considered endangered by the IUCN Red List. Immediately, I began to ask myself if the trees, just like the Sinkyone Indians, were perhaps *not* the subjects of the classical understanding of biological extinction, but instead, extermination. In the succeeding several years, my research led to this manuscript, in which three overarching claims are explored:

1. human and more-than-human life is not only threatened by extinction, but is more importantly threatened by *systemic extermination*;
2. the coast redwood tree (*Sequoia sempervirens*), a case study which serves as a window to viewing larger phenomena, is not threatened by extinction, but by *negative production of space*, or the historic and ongoing civilizational tecnhic of appropriating existing life in *place* in order to produce *space* that works for the expansion of capital. I engage in a detailed history of the development of *silviculture* (or scientific forestry) as an example of *negative production of space*, as well as specified technique of systemic removal of meaning from existing place.
3. the analytical apparatus of *systemic extermination* helps to discuss a long-unfolding and intensifying multi species-level crisis, which I identify as *the Long Extermination*, an historical event – highly stretchable in its temporal coordinates – that contains within its orbit many of the key events that Earth scientists have begun to point to as the inflection points at which humanity becomes the key driving force of Earth's major climate and biodiversity crises. The

[14] At a conference in Chicago, Illinois in 2015, I met with Scott Prudham to discuss the concept of the 'subsumption of nature,' as well as my early development of this dissertation. In our conversation, he flagged for me the relative absence of writing on the California redwoods in the geographical literature. Partially thanks to that conversation, I began thinking about the *Sequoia sempervirens* as a potential case study for my research.

> Long Extermination attempts to provide, predictably unacceptable as it is, one plausible answer to the productivore's dilemma.

Some popular scientific narratives suggest[15] that planet Earth is amid the *sixth mass extinction*,[16] and the cause is *humanity*.[17] This presumes at lEast two things: First, that a singular "humanity" exists, and second, that this humanity is relatively undifferentiated across class, race, gender, and all other measures of variance among populations. As discussed above, the aspect of our beingness that we can claim is almost uniquely ours is not merely that we can consume and use for fuel a wide variety of plants, fibers, and animals, due to our *omnivorous* nature, but that we can consciously produce our habitats and our food, thus we are *productivores*. As omnivores we are like bears and salmon.[18] As productivores, we are like tractors, chainsaws, and shopping malls. However, this only remains explanatory if we assume that all humans behave and are motivated by the same things; that culture, space, place, religion, gender, and race – among a myriad other social consideration – are relatively static. Presuming that humanity is the cause of the sixth mass extinction event, scientists claiming validity of the sixth mass extinction thesis are either assuming there are no major differences between peoples and how they produce space and place, or they are assuming there is a great deal of difference and actively avoiding the complexities, some of which are outlined throughout this manuscript. If, on the other hand, we accept and acknowledge that there are massive (literally and figuratively) differences in how space and place are produced within humanity, then it becomes empirically and rationally

[15] It is increasingly the case that in popular scientific media and to a large degree in academic institutions, the notion that humanity itself is the cause of the sixth mass extinction is being taken quite seriously.
[16] Glavin 2007; Dunn et al. 2009; Amato and DeSalle 2012; Pievani 2014; Kolbert 2014; Plotnick 2016.
[17] Leakey and Lewin 1995; Kolbert 2014.
[18] It should be noted that salmon, especially in the region where I focus a lot of my analysis, as well as bears, do much to engineer their surrounding environments. However, the key difference here is that in humans it is consciously done, at lEast since settled agriculture, with ulterior motives of expediency, efficiency, profit, and safety, among many other rationalizations.

impossible to point to humanity as the cause of the sixth mass extinction.[19] Scientists and other intellectuals engaged in the debate about the Anthropocene and the sixth mass extinction cannot have it both ways. This is a major indictment, and in the following chapters, these arguments, presented from multiple angles, will be criticized both internally and externally.

Many of the claims made in this dissertation converge on one main conclusion: that contrary to so many popular scientific and journalistic narratives, we are not amid the *sixth mass extinction,* but that we are witnessing the maturation of a long-term extermination event, which began to unfold in harmony with the rise of the capitalist world-system itself toward the end of the long sixteenth century, or roughly in 1650. Crucial to the arguments put forward in this manuscript is the idea that this extermination is not one enacted by humans against the entire planetary ecosystem. It is, as I will argue throughout the manuscript, an extermination event that was initiated by the inherent demands and characteristics of the system of capitalism itself. This is precisely why the focus here is upon the history of capitalism as a world-system that in fact also has its own world-ecology – a moving knot of relations of power, accumulation, appropriation, and exploitation.

The systems[20] approach I take in breaking up the chunks of time being analyzed in this dissertation runs the same risks that Braudel and Wallerstein ran, mainly that when we apply the model of a world-systems framework, or in the case of Jason W. Moore, capitalism as a world-ecology, there are historical moments that do not fit the pattern. Braudel, for example, reminds us that the 'periphery' of England (i.e. Scotland) did not actually "take off economically" until late in the eighteenth century,

[19] It is worth mentioning that the past five mass extinctions point to rapidly developing ice ages, followed by rapid meltings in the *End-Ordovician*; pre-human rapid climate changes in the *End-Devonian*; Siberian volcanic eruptions in the *End-Permian*; Atlantic volcanic eruptions in the *End-Triassic*; and combinations of giant asteroids and volcanic activity in the *End-Cretaceous*. While there are many ongoing debates about some of the details of these mass extinctions, few if any of those theories point to a species as the cause.[19] In other words, this is not the *sixth* of anything, but likely the first of something.

[20] I choose not to call it a "world-systems" approach because that is too limiting in terms of how to break up systems operating within other systems. Braudel, interestingly, describes his 'world-economy' idea as systems operating within other systems. To this degree, Wallerstein did expand Braudel's model by suggesting the very idea of the 'world-system', which includes within its orbit, these world-economies of scale that are always fluctuating in different ways and different tempos across the planet.

while what we today understand to be England, Northwestern Italy, Belgium, and other 'world-economies' were already trading with remarkable rapidity in the late sixteenth century.[21] Much of this, for Braudel, is couched within the historical data on prices, which he argued moved in similar patterns. "Europe in the fifteenth, sixteenth and seventeenth centuries, although far from presenting a unified picture, was already clearly obeying a general series of rhythms, and overall order."[22] Even though Scotland, to stay with the peripheral example, was much less developed in comparison with, say, England and Antwerp, the general cycles of rise and fall in prices remained quite uniform. Braudel clarifies: "these prices that rise and fall in unison provide us with the most convincing evidence of the coherence of a world-economy penetrated by monetary exchange and developing under the already *directive hand of capitalism*."[23] Fluctuations of price in one place had direct, albeit often very lagged, effects upon prices elsewhere. Inflation in the European world-economy in the sixteenth century would show up in India twenty-odd years later. The same could be said for New Spain and Brazil in America, following fluctuations in the same European core locations.[24] What Braudel is telling us here is both extremely complex and frighteningly simple, in that it paints a very clear picture of a globally dangerous regime of accumulation by dispossession and appropriation, one that has its roots stretching back long before the late industrial revolutions in England. Seemingly unacknowledged by the popular Anthropocene narratives is the challenging reality that over the past several hundred years, the system of capitalism expanded far beyond the boundaries of states, institutions, and people. It became a system that affects the entire Earth system, and thus constituting its own self-inflicted ecology, a world-ecology. Importantly, the capitalist world-system/ecology[25] does not originate with the late English Industrial Revolution of the eighteenth century.

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[21] Braudel 1979: 70.
[22] Ibid: 75.
[23] Ibid (emphasis added).
[24] Ibid: 76.
[25] I feel it is useful to write it this way here, because I am in fact pointing to a starting point that marks not just Wallerstein's 'world-system' but also Moore's 'world-ecology.'

The Dutch can be pointed to as the first great capitalists, beginning their work long before that.[26] As far back as the middle of the seventeenth century, Amsterdam was the center of "a system that could only be maintained by constant vigilance, by a policy designed to thwart all competition, and by subordinating the whole of the Dutch economy to this essential objective,"[27] what was to be "the Carryers of the World, the middle Persons in Trade, the Factors and Brokers of Europe."[28] Amsterdam retained its dominance over large swathes of the global economy for many decades to come, most notably in that of ship-building and all the wood associated with it. For this reason, as well as the material reality that Amsterdam was erected atop an ancient Norwegian forest, it was a popular saying in the Dutch Republic of the seventeenth century to proclaim, 'Amsterdam is standing on Norway.'[29] Amsterdam was in fact standing on much more than Norwegian wood. As Moore argues, using Amsterdam as the example, the capitalist world-economy could be witnessed "whether one was frequenting the markets or prowling the bawdy houses of Potosí or Amsterdam, one inhabited different places in the very same place, *all at the same time*."[30] Even following the rise of the Dutch capitalist empire, there was already a wood shortage in Germany early in the eighteenth century, which came on the heels of the advancement of liberalism in most of Europe. The forests had been brought into the orbit of competitive wood production based on speculation of future pricing as early as the middle of the eighteenth century.[31]

The point being made is that wood has been at the core of the advancement of capitalist commodification frontiers since they first began to expand. Capitalism can only grow with a constantly

[26] To be more specific they were still essentially mercantilist and engaged mostly in the circulation of commodities, in that they sold commodities in order to amass the money necessary to buy more commodities, what Marx called the 'commodity-form'. However, it might also be said that the Dutch, very early on, were engaging in the 'money-form' of circulation, in that they went to far-off places, acquired commodities – in this case wood – and then ultimately sold those commodities for more money. See Marx and Engels 1967: 148-9.
[27] Braudel 1979: 239.
[28] Defoe 1728: 192.
[29] Sögner 2004: 47, quoted in Moore 2010.
[30] Moore 2010.
[31] Radkou 2012: 61-64.

expanding frontier of raw material (among other resources that must remain free or cheap to the capitalist),[32] and wood likely appeared to be a nearly endless one at that. Interestingly, wood both remains within and extensively outside of the capitalist world-ecology because its reproduction requires little more than the absence of extraction. Nevertheless, because of capitalist productions of space (what I will refer to as the *negative production of space* later), the reproduction of wood is more costly than it was hundreds of years ago, even for the Dutch, who would sail across oceans to expropriate it.

This interpretation of the rise of capitalism at the global level also coincides with the beginning of what Karl Polanyi focused the bulk of his intellectual work on, *the Great Transformation.*[33] Polanyi's work, depending upon how one interprets it, opens the door to thinking about how the work of atmospheric scientists may be connected to the Anthropocene narrative as intertwined with this transformational period. To be clear, Polanyi's work was not in any way connected to atmospheric science or public intellectual debates about the role of the human species upon the planet. Where his thinking helps develop, and in some ways challenge the temporal coordinates of the Anthropocene discussion, is that it centers the changes in the ways agriculture was organized after the fall of feudalism and the rise of capitalism. The *Great Acceleration,* as it is routinely referred to in the discourse of the Anthropocene, is marked at roughly 1950, where we begin to see massive increases in the rates of release of CO2 into the atmosphere unlike any time in human history.[34] The timeframes of the Great Transformation and the Great Acceleration could not be more different. However, the two concepts both serve important purposes in attempting to understand when the Anthropocene, or the Capitalocene, or any of the other many alternatives, should be placed within the calendar of human

[32] Patel and Moore 2017.
[33] Polanyi 2001. It is important to note that I deploy a nuanced interpretation of the Great Transformation and in many cases I depart from Polanyi's own deployment of the concept. This will be fully fleshed out later.
[34] Steffen et al. 2004, 2015.

and Earth history. This will be discussed at length in chapter 6. Of central importance, however, is the system of capitalism, for this is what I argue that the popular narratives of the Anthropocene and the sixth mass extinction almost unilaterally avoid contact with.

Using the cultural construct of the Redwood Curtain[35] as my example, I show in some historical detail how capital's exterminism, reaching out from the European core, eventually sawed its way through one of the oldest and tallest temperate rainforests in the world. Importantly, this manuscript is not only about the coast redwood and the Redwood Curtain. The connection between capital's exterminism and its origins in Europe are explored throughout, but especially in chapters 4-7. While the Redwood Curtain is typically understood as a lens through which to view the cultural isolation of the communities of people who live in the far Northwestern edge of the state of California, primarily in Humboldt County, I seek to reinterpret the "Redwood Curtain" through the lens of *socioecological isolation,* by which I mean an isolation that is both social and ecological. In doing so, we can gain more historicized understanding of how the space of Northwestern California's temperate redwood rainforest was invaded and thoroughly re-organized in service to capitalism and white settler-colonial imaginations of power and property. The nearly annihilated old-growth coast redwood trees are evidence of this re-organization of space.

Due to the diversity of interconnections being addressed in this dissertation, the focus is kept upon one key civilizational technique[36] of extermination, extensively utilized in the settler-colonial invasion and occupation of Northwestern California. Importantly, I am not writing about settler-colonization in its entirety or even at the level of the North America. At times, I refer to settler-colonial invasion in a general sense, but for the most part, the assumption is that I am referring specifically to

[35] This is a popular cultural naming of the relatively isolated area to the North and West of the border of Humboldt County, California. Along with the geographical isolation comes a significant amount of social differentiation, usually in the form of counter-cultural currents, including but not limited to the high successful cannabis industry of Northern California. Much more is explored in this regard in Chapters 3 and 4.

[36] I take this word from the work of Lewis Mumford.

the settler-colonial invasion of Northwestern California, which I argue did not really begin until the mid-19th century. This aspect of capital's exterminism is defined and theorized as *negative production of space*. The suggestion is that *humanity* did not kill 96% of the old-growth coast redwood on the planet,[37] but the systemic exterminism that is endemic to the capitalist world-ecology most certainly did.[38] Human beings did, of course, physically implement and put into practice many of the social, economic, and political regimes necessary to create these systemic outcomes, but they did not do so as individuals acting upon self-interest. In making this claim, it can then be argued with more clarity that we may not be experiencing the sixth mass extinction at all, but something demonstrably different and equally bleak.

This dissertation is at once historical place study, theoretical intervention, and geophilosophical event analysis. Production of space and place are interrogated extensively in relation to the landscape of the temperate redwood rainforest, and extensive attention has been paid to historical event analysis in relation to the themes presented. In addition to its more empirical arguments, the work also contributes theoretically to a speculative vein, suggesting plausible abstractions and interpretive concepts that should be suggestive of directions for additional empirical and theoretical research. Finely tuned data sets and measuring tools would not have been able to address with sufficient breadth and depth the social, cultural, and ecological questions contained in the work. In the end, it is hoped that the reader will develop a long list of further questions for much deeper analysis, questions that cannot – both for reasons of length and intellectual modesty – be fully addressed here, leaving much more work to engage for future intellectual endeavors.

The manuscript is divided into two parts. In *Part One*, I seek to outline some of the ways in which the system of capitalism has contributed to the systemic extermination of those humans, plants,

[37] Farjon and Schmid 2013.
[38] This will be examined in detail in the rest of the document.

and animals that stood in the way of its own frontiers. I begin with the case study of the work, which is the coast redwood tree, the last living *Sequoia* species *Sequoia sempervirens*. Split over two chapters, I describe the historical geography of how the coast redwood came to be considered an "endangered species," challenging the central argument. In so doing, I also outline what I call the 'expropriation of meaning,' which I show in the ways Indigenous communities (human and more-than-human) were 'removed' through settler-colonial property regimes and genocide. From there, I extend the discussion to a theorization of what I call *negative production of space,* which allows for a more visceral understanding of how capitalism – always understood as more than simply an economic system – helps to conduct the production of space in ways that require the annihilation of existing place. Expropriation of meaning and negative production of space are both expressions of what I refer to as *systemic extermination*.

In *Part Two*, I zoom out from the case study and into a philosophical and critical theoretical framing to make the argument that we are not in fact in the Sixth Mass Extinction, as some have claimed, but that we are instead witnessing the maturation of a very long-term event, which I call the *Long Extermination*. To explicate this argument, I rely heavily on the work of Karl Polanyi and various scientists associated with the Anthropocene. Ultimately, after a discussion of the various critical narratives and rebuttals to the Anthropocene, I settle on the *Capitalocene,* moving from the 'age of man' to the 'age of capital', which then opens the door to a different interpretation of the historical crisis moment we find ourselves today. Finally, in the Conclusion, I offer an "answer" to the Productivore's Dilemma. *Homo sapiens* is not inherently the cause of the demise of the Holocene and the rise of the Anthropocene, nor the Capitalocene. Instead, the system of extermination for profit that we call capitalism is the mechanism through which this ongoing extermination event unfolds. It is an unsurprising idea, for variants upon the cry of "it's the system" are common among rebellions all over the planet in contemporary times. However, what is offered herein is an attempt to substantiate the

claim. It should also be stated that the word "rebellion" can take on a multitude of meanings in existing life. Not all rebellions are anti-systemic. Some are focused upon specific challenges that specific groups of people are faced with. For example, many struggles engaged by economically and racially oppressed communities, particularly in the United States, are fought not against capitalism, but against racism, environmental justice, and oppressions of many other sorts.[39] While this dissertation takes aim at capitalism as the ongoing primary engine for all these continuing oppressions, these struggles are all understood to be valid and necessary, regardless of whether they challenge capitalism directly.

Wherever possible, throughout this work, I have sought to write in a language that is legible to readers who may or may not be familiar with the literature in the areas I am writing within. This can also be interpreted as an effort in laying the groundwork to eventually contribute to public scholarship[40] that connects to anti-capitalist and Left environmental movements that are expanding around the world. I also recognize the very broad and synthetic writing in this manuscript and the work that it demands of the reader. My overall aim is to encourage further discussion of the spatial, temporal, and theoretical implications of the knowledge we hold about the impending collapse of crucial elements of the Earth system, and potentially the human species itself. What remains clear, however the science is produced, is that capitalism will continue on, unless it is stopped.

There is no central adversary in this work, but at times I am writing back critically to scholars of many persuasions. In some cases, I am speaking to traditional Marxists who tend to allow the connection between capitalism and settler-colonialism to fall under the radar of the historical materialism of the environments they address. Several Indigenous scholars directly unsettle the unfounded notion that Marxism is somehow irrelevant to analyses of settler-colonial invasion. Glen

[39] Importantly, capitalist class antagonism is also at the heart of the making of human divisions (race, gender, color, etc.) into profitable structures for the global capitalist elite.

[40] I must add that while I make this effort, there are times when I have not been able to accomplish this at the level I would like to. Public scholarship is nothing if not actually much more difficult to write.

Coulthard, for example, draws upon the work of Franz Fanan, who argued that "Marxist analysis should always be slightly stretched when it comes to addressing the colonial issue."[41] Taiaiake Alfred writes that "capitalist economics and liberal delusions of progress" are used as "engines of colonial aggression and injustice."[42] This idea speaks directly to concept of settler-colonialism not as an event, but as an enduring structure, which is addressed at points throughout the manuscript. Crucially, there is a great deal of Indigenous scholarship, both in settler-colonial studies and in decolonial work that does not look at things through a Marxist lens. My connection with Indigenous scholars that do see Marxism as a useful tool for analysis of settler-colonial history is not merely one of convenience. In my own right, I have come to the conclusion that historical materialism, as well as other critical Marxist aspects of modern scholarship, is very useful in understanding the historical tools of capitalist appropriation, exploitation, and production of space.

In other cases, far more frequent I should add, I am writing back at climate scientists who have decided – and I use that word on purpose, because I do not think the scientific method automatically excludes the social – to jettison any critical discussion of the social systemic drivers of environmental outcomes they are describing and analyzing in their work. While I recognize the soundness of much of the climate science, I also recognize that it is all contingent. In other words, my goal in this work is not to paint the science as less important because it does not interrogate the role of capitalism (although I am quite sympathetic to that argument), but it is to argue that there are elements of the scientific and geographical interpretations of this crisis-prone historical moment that intellectually pave over many actions that can be attached to systems and not "humanity." Valid scientific claims made in the absence of critical social analysis are, in my view, made significantly less valid.

[41] Fanan 2004: 5.
[42] Alfred 2005.

In the pages of what remains, it is hoped that the coast redwood tree and the historical modes of production of space that made inevitable its 'endangerment' will urge the reader to question the structural impact[43] of the capitalist system in tandem with the uneven impact of *Homo sapiens*. Human impact on the scale of the planet is only possible with a system capable of organizing human activity upon the surface of the planet at such a scale. The answer provided to the dilemma of the productivore in this manuscript is not a pleasant one, but it is no less pleasant than assuming that all human beings are somehow inherently desirous of a ruined world. Science, unwittingly at times, logically leads to just such a conclusion, though I argue it is clearly false. There is more than enough evidence to suggest that ecosystems, even those with human beings in them, can regenerate in new and different ways. As I hope to show in this manuscript, capitalism is the problem, not humanity. Landscaping a new path forward requires understanding the systems that brought us here and the roles they play in entraining us to behave upon the surface of the earth in ways that ensure our own destruction.

[43] Here, I am thinking not of 'agency' per se, but of what Althusser referred to as "structural causality," or the ways in which a dominant structure can create and thus alter other structures and even whole systems. See Althusser and Etienne 1977.

Chapter 2: Search for a Method[44]/Method for a Search

Searching for a Method

"Research" is a loose expression. Nevertheless, there are some dominant views of what research is, or ought to be. One particularly dominant Western view is that *research* must be done in service to the goals of legibility, rationality, and ultimately standardization.[45] These are some of the roots of the reductive and often dualist thinking that drives this dominant Western technocratic view[46] of scientific research, as well as some strains of social scientific thought. The roughly five-hundred-year history of capitalism has rested upon this ever-shifting foundation of techno-scientific dominance.[47] Keeping in mind the rather interpretive research questions contained in this manuscript, it is very important that the methods I employ are adequate to questions that cannot always be attended to in modern scientific thinking frameworks.

What follows is a narration of the process of exploration (the method) involved in this work. Within the confines of the study, *method* refers to **the combination of procedures undertaken to address the central problem this work considers as well as the suite of frameworks for analysis used to interpret this problem and then suggest an alternative.** These frameworks consist of *World Ecology,*[48] *dialectical materialism,*[49] and a modified version of what some have called *historical discourse analysis,* all of which will be outlined in the rest of this chapter.

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[44] This term is taken from John Paul Sartre's book of the same title. See Sartre 1968.
[45] Scott 1998: 3; Calinescu 1987; Harrison 1992; Merchant 1980.
[46] Sismondo 2004; Lewontin and Levins 2007: Ch. 3.
[47] Lewontin and Levins 2007: 90-1.
[48] This is a relatively new method of historical analysis, but it is born from a long legacy of Marxist geography, world-history, and environmental history and sociology. The key contributors of this method come out of geography, sociology, anthropology, critical literature studies, history, and critical social theory, among others. See especially the works of Jason W. Moore, Sharae Deckard, Michael Niblett, Kerston Olaff, Raj Patel, and Christian Parenti, as well as a long list of PhD students at universities all over the world, who are beginning to seriously engage the central presuppositions of the world-ecology framework.
[49] From here on, it will be referred to simply as "the dialectic." It should also be noted that world-ecology is a dialectical method itself, so they are essentially co-constitutive systems of thinking. However, one could argue that the dialectical is a method within the suite of methods that world-ecology puts to work.

It is, above all, a qualitative study. First, it is *holistic*, meaning that at all scales of abstraction, that the whole is greater than the sum of the parts. This is precisely the opposite of the reductive model that isolates and measures specifically defined variables with the aim of prediction and control. Second, it is *inductive* in its approach to observations and the way it uses case studies,[50] which are utilized to re-conceptualize existing relations. Thirdly, it is a *naturalistic* inquiry in the broadest sense, although I have many reservations about this term. The common understanding of 'naturalistic' is that it is a "discovery-oriented approach in the natural environment."[51] However, it is absolutely crucial that I state that in my understanding, observing phenomena in their 'naturally occurring states' is quite disruptive of the more commonly accepted notions of what a 'natural state' is. The *dialectic,* as deployed in this study, also assumes that any 'naturally occurring state' is a still-unfolding state of occurrence that is molded by the perceptions of the individuals involved in the historical production of that state, or historical moment. In short, a dialectical outlook requires the acceptance of the basic presupposition that intellectual constructs construct actual environments. In that sense among others, this study is Marxist, for as Marx wrote, "The way in which (wo)men produce their means of subsistence depends first of all on the nature of the actual means of subsistence they find in existence and have to reproduce."[52] It is also Marxist in that I view capitalism as a totality, and this is because I am implicating the *system* of capitalism as the main actant in the Long Extermination. Marx wrote that "the circumstances under which a relation occurs for the first time, by no means shows us the relation either in its purity or in its totality."[53] This can be extended to say that relations change over time and space, because the systems under which those relations are occurring also change. The 'totality' is thus the totalization of various totalities. I am not the first to view it this way. Sidney Hook, for example,

[50] There is reference to several cases in the study, but there is one full chapter devoted to the Yurok Indians, and in that case study, I am seeking to understand the historical unfoldings of forest management of forests by the state, from the perspective of the indigenous groups that occupied the space long before there was a state to manage it.
[51] Rudestam and Newton 1992: 32.
[52] Marx, *The German Ideology,* in Tucker 1978: 150 (alteration added).
[53] Marx 1973: 205.

claimed that "the Marxian totality is social and limited by other totalities," leading to a view that there are "wholes not the whole."[54] So, for Hook, the totalization of totalities might be considered the whole.

This is also a study that is fundamentally *hermeneutic,* for it returns again and again, throughout the study, to its key sources, each time exposing different meanings, about the critical arguments being driven at. Winograd and Flores put it this way, "New or changed meanings arise from the active encounter of the text and its reader."[55] Bouncing back and forth between current analysis and original textural source, is not only hermeneutic, but potentially dialectical as well, providing the researcher is willing to abstract different categories of reality to get at some questions that the original thinkers may have not placed emphasis on. Some have suggested there is an ongoing debate within the hermeneutic tradition between the "objectivists" and their critics. The former seeks to play the role of objective observer, while the latter instead propose that the very act of interpretation taints objectivity and is in fact "primary to all understanding."[56] I am here most assuredly in alignment with the post-objectivist position, for I believe objectivity is a fruitless venture, even if one is looking supposedly static phenomena. Ecosystems are prime examples of complex systems, which are by the very nature non-static and chaotic. Tree stands, the physical objects of the study and application of silviculture, are in fact ecosystems of scale.[57] If ecosystems are understood to be complex, or open,[58] then it is highly unlikely that the logic of simple systems[59] can be applied to the problems of a complex system in ways

[54] Hook 1962: 62, quoted in Ollman 2003: 38.
[55] Mahoney 1990: 93, quoted in Rudestan 1992.
[56] Winograd and Flores 1986.
[57] Tappeiner II et al 2015: 41.
[58] Blauberg 1984: 49-61; Berkes 2009; Capra 2008; Laszlo 1972.
[59] Even so-called "simple" systems are anything but simple when placed within the social context. Is a system simple when it can be governed by laws and norms from systems outside of it? International relations, for example, is highly complex, not lEast in part because nation-states are seeking cooperation to achieve solutions to complex problems that affect both entities involved in the negotiations.

that match its needs. Silviculture is, if my reading of it is accurate, a simple system, because its internal laws are dictated by other systems (i.e. law of value, rate of production, supply and demand, etc.).[60]

Before moving on, let us be reminded of what the central problem this manuscript presents: The rising rate of species extinction, globally, is frequently argued to be the outcome of a series of environmental/ecological crises brought about by the activities of the human species, sometimes referred to as the sixth mass extinction.[61] *Sequoia sempervirens* is one species that is 'threatened' by the prospect of extinction, because "the proportion of redwood in commercially exploited forests containing this species is still declining, due to deliberate or accidental replacement by more competitive species in the early phases of succession after clear-felling, especially *Pseudotsuga menziesii* (Douglas fir)."[62] I argue in this manuscript that the account does not take us nearly far enough toward understanding the 'bringing-to-endangerment' of the coast redwood, for it does not also center the less-than-visible relations between capitalism, settler-colonization, and scientific forestry, or silviculture. This manuscript considers these relations as formative of the determinations (outcomes) that the scientific narrative of the endangered status of the coast redwood commonly adheres to.

This dissertation qualifies as 'research' in these senses, but it is just that, *re-search*, and I am deploying it in a way that is akin to the notion of *critical analysis* of an existing problem that I am asserting is not properly accounted for in the determination that the coast redwood tree is threatened by extinction. Following in the tradition of the *dialectical method*, the fundamental approach taken in the dissertation is to (1) locate the 'internal relations' between the 'abstracted units' I am seeking to better

[60] This is not to say that silviculture is "simplistic." It is a 'simple system' only in the sense that I have argued here. Further, there are probably – though this is beyond my knowledge of systems theory – many scales of simplicity and complexity that could be applied to various systems. Silviculture would, I argue, not be the most simplified of systems, because there is inherently a built-in mechanism for changing the operation of its parts, according to the specifications of the management job at hand.

[61] Leakey and Lewin 1995; Wake and Vrendenburg 2008; Glavin 2007; Kolbert 2014.

[62] IUCN 2015. To be fair, many other reasons are listed, and those will be addressed in the study. However, all the reasons pointed to, with a few small exceptions, are neatly nestled under accepted scientific rhetoric that is designed to avoid discussion of the less visible relations internal to capitalism, settler-colonialism, and scientific forestry.

understand, and (2) use the exposition of those relations to highlight the 'hidden substratum'[63] that links, in our case, capitalism with settler-colonialism and scientific forestry in the bringing-to-endangerment of the coast redwood tree. World-ecology is well-positioned here, as an intellectual tool, to put the dialectic to work in exposing these connections, so that they can be more closely attended to.

Putting the Dialectic to Work[64]

Nothing I am presenting in this chapter is "new," but some of the interpretations are original. Utilizing the dialectical method *as inquiry* thus far has already yielded the benefit of understanding capital not as a 'thing' but a 'relation'. It is important to remember that Marx referred often to "things themselves" as "their interconnections."[65] If we are to understand all 'things' as composed of their internal relations, then what we constitute as a 'thing' becomes central to the discussion. In this sense, the dialectic is perfectly suited to think through the complex internal relations of a structure – capitalism – as a thing. One of the most misunderstood aspects of Marx[66] is that the methodology that he used was one dependent on *abstraction*, but it was not 'abstract', as so many critics would assert. What some have interpreted as being obtuse and unclear, I interpret as a radical form of relationality that forms the foundation for a great deal of poststructural analysis.[67] As Ollman rightly points out, and it is worth

[63] This is a descriptive term that Bertell Ollman uses to identify the matrix of internal relations that are not visible from the surface of such systemic categories, but when abstracted can be adequately interrogated. I think this is Ollman's attempt to explain what Marx treated as the generally hidden, but very real, relations of capital, relations that could be better understood when abstracted and related back to the whole. See Ollman [1971] 1976: Ch. 5 especially.

[64] This phraseology is barrowed from Ollman 2003.

[65] I was able to understand this through reading Bertell Ollman's analysis of Marx and Engels' *Briefwechsel,* Vol. 3 (1950: 488) in Ollman 2003: 69.

[66] I prefer, in most cases, not use the word "Marxism" because it is far too frequent, in my view, that the actual methodological approach of Marx is jettisoned by a great deal of so-called Marxists. While this study is not meant to rescue the lost art of dialectical analysis, it is indeed meant to take that method seriously.

[67] It is frequently argued that Marxism and postmodernism/poststructuralism are diametrically opposed. I find this simply illogical. It is quite well-documented at this point that Foucault, for instance, was indebted to Marx and became more so, not less so, over the span of his teaching and writing career. The dialectical aspects of Marx's thought are precisely the elements that gave root to the critical social critiques that have come alive since the 1960s.

quoting him at length here: "Marx claims that his method starts from the "real concrete" (the world as it presents itself to us) and proceeds through "abstraction" (the intellectual activity of breaking this whole down into the mental units with which we think about it) to the "thought concrete" (the reconstituted and now understood whole present in the mind)."[68] In many cases throughout this study, the goal is to break apart the 'thought concrete' and find the elements that made it stick together in the first place. Often, it seems, those sticky elements are also the internal relations that animate capital's lust for appropriation, exploitation, and ultimately extirpation: capital's exterminism.

There are manifold aims of this analysis, including, at times, correcting the historical record; re-conceptualizing important conventional wisdoms; re-centering issues of social and ecological impact; and emphasizing system over individual actor/whole over the sum of parts. Of course, this is problematic, because in the traditional scientific sense, and increasingly even the 'social scientific' sense, the analysis is only meaningful after necessary and sufficient 'data' has been collected, measured, and evaluated for reliability and replicability. To this, I ask what if one's 'data' is a rough collection of differing ways of understanding the 'endangered' status of a charismatic megaflora? What if those 'ways of seeing', or theories, do not work together? This is frequently the case when reconciling indigenous knowledge with Western scientific knowledge. I recall a very uncomfortable conversation with a colleague who sought to warn me, as though it was something I must be cognizant of if I was going to pursue this research, that indigenous knowledge is hard to use because it is not considered 'scientifically accurate'. A separate dissertation could be written on the hidden meaning of that all-too-common understanding of knowledge as the outcome of the application of data added up over time. I reject that determinist notion without hesitation, as do many scholars consulted in this work,

[68] Ollman 2003: 60

particularly those with indigenous backgrounds and those who employ 'systems thinking'.[69] In fact, I will push back and suggest that indigenous knowledge, particularly ecological knowledge, is based on thousands of years of 'field research', to use the Western terminology.[70]

In many ways, this study is a critique of capitalist scientificity—meaning it pushes against capitalist notions of what it means to be 'scientific'. Lewontin and Levins:

> "On the other hand, as a product of human activity, science reflects the conditions of its production and the viewpoints of its producers and owners. The agenda of science, the recruitment and training of some and the exclusion of others from being scientists, the strategies of research, the physical instruments of investigation, the intellectual framework in which problems are formulated and results interpreted, the criteria for a successful solution to a problem, and the conditions of application of scientific results are all very much a product of the history of the sciences and associated technologies of the societies that form and own them."[71]

Thea above quote is deeply relevant to the ways in which I have formulated the questions of focus in this study. The act of doing science, whatever it may look like in concrete, is specifically dependent upon the actions of humans, thus the science that is produced is based in part upon the social and

[69] The interpretation of 'systems thinking' I am employing in this study is derived from the work of dialectical biologists Richard Lewontin and Richard Levins (1985, 2007), Marxist dialectician Bertell Ollman (1971, 2003), and the entire Marxian library, which is run through with the messiness of dialectical thinking applied to the goal of interrogating the operation of the capitalist system *in* nature.

[70] The work of M. Kat Anderson 2005 has proven to be indispensable in thinking about the many thousands of years of experiential field research Native Americans have done to both understand and crucially, to tend, the management of what we now think of as California's natural resources. Anderson writes: "Through twelve thousand or more years of existence in what is now California, humans knit themselves to nature through their vast knowledge base and practical experience. In the process, they maintained, enhanced, and in part created a fertility that was eventually to be exploited by European and Asian farmers, ranchers, and entrepreneurs, who imagined themselves to have built civilization out of an unpeopled wilderness" (2). It is, in my view, absolutely astonishing that scientific analysis of environmental change in forested spaces has so seldomly taken this viewpoint seriously.

[71] Lewontin and Levins 2007: 90.

economic limitations of the given society that said scientist lives within.[72] The long-historical patterns of scientific knowledge and of ignorance about those 'regimes of truth'[73] are not dictated by nature, but instead structured through networks of interest and belief. Native American Indians were considered by the European scientific establishment of the eighteenth and nineteenth centuries to be uncivilized savages in need of saving from their own inevitable extinction, and extinction that would come from their lack of modern technological prowess.[74] Also important in the above quote is the acknowledgement that some are excluded from the ranks of those who are considered to be doing 'science', and that is frequently because they are doing science that is not easily quantified or modeled. Scientists, like all other humans, reflexively impose their own worldview upon those they seek to study, while sometimes claiming all along that they are "objective." Huge and important libraries of measured data exist as massive extractions of information meant to describe certain people, actions, systems, and processes systematically and often dogmatically as one thing and not another, playing deeply into the hand of the Cartesian view of the world. Descartes and his scientific minions spent much ink and energy challenging the problems inherent in unpredictability by creating a tidy dualism that placed free will and systemic stochasticity, or the negation of systemic complexity, into the nonphysical realm, which he claimed was the 'soul'.[75]

This manuscript pushes, methodologically and philosophically, against Cartesian dualism by employing the dialectical method to the question of the human-nature relation, rendering both categories as always already made by each other, existing separately only as pure abstractions. This necessitates a view that humans are acting *in* nature, as opposed to over and against it, and thus capitalism is as well. This should not however be taken to mean that capitalism and humanity should

[72] Haraway 1997; Sismondo 2004; Lewontin and Levins 2007; Scott 1998; Williams 2011; Althusser 2011.
[73] Foucault 1977.
[74] There is an endless amount of literature that displays this powerful notion. I address some of that literature in chapters below. For now, I note the work of Prucha 1986 was indispensable to my goal of understanding this more directly, as was the work of Brantlinger 2003.
[75] Lewontin and Levins 2007: 53.

be equated. To the contrary, as mentioned above and throughout the rest of the manuscript, understanding humans as always already a part of nature is intrinsic to understanding capitalism as such. If we cannot look at capitalism as a system working in and through nature, we cannot understand it. Before I outline the ways in which I interpret and use this method, it will be important to stress that the dialectic is employed not only in the interpretation of the knowledge I have accumulated herein (call it data if you must), but in the actual collection of that knowledge. Dialectical thinking transcends not only the traps of determinism and reductionism, but most crucially, it transcends the unnecessary dualisms that form the socially constructed lines between what is considered *real* and *abstract*. Again, the human-nature relation is at the center of questions about, for example, the agency of a system in comparison with the agency of a species. At times, this study deals with very abstract notions, such as the "redwood curtain," the "Capitalocene," and the relationships between *space, place, extinction,* and *extermination.* The only usable models for this kind of thinking are conceptual models that are not easily employed by the likes of computers or made 'scientific' via statistical modeling. At the same time, computers are becoming more capable of being programmed to run models that are increasingly complex and experimental. This is far beyond my own intellectual reach, but perhaps in the future, the models that I introduce in the following chapters may in fact be "ran" in some empirical fashion.

Further notes on the Dialectic

Marx famously pointed out (as the foundation for what eventually became known as 'dialectical materialism') that "the mode of production of material life determines the social, political, and intellectual life process in general."[76] Some have taken this to mean that Marx and by extension, Marxism, is based upon a kind of determinism of change over time, where capitalism does not, as a

[76] Marx 1904: 11.

system, possess the agency to 'make nature'. Where Moore argues that capitalism operates *within* nature (thus making 'nature' a non-Cartesian category), Malm argues to the contrary, that "Capitalism emphatically does not make nature; nature most definitely does not make capitalism."[77] The dialectic, as I interpret it, rids itself of any such strict determinism. The word "determines" in the above quote by Marx, for example, points to the reality, seen from the historical materialist perspective, that the ways in which a society produces and reproduces the means of subsistence causes the social and material characteristics of that society. In other words, for something to be 'determined' simply means that an outcome, which is temporary and contingent, resulted from a set of relations. Where Malm, as well as Foster et al. think of society and nature involved a metabolic interchange – based upon Marx's notion of the 'irreparable rift the metabolism' between town and country[78] - Marxism, as described by Ollman,[79] "treats its entire subject matter as "different sides of the same unit."[80] Hence, the relations are what produce the determination, and those relations are not pre-destined in any way, thus 'determinations' remain only temporary. This manuscript takes as its most basic methodological position, that relations – both physical and social – when combined with power and knowledge, produce material outcomes unevenly. Simply put, the way one thinks about nature changes nature. The way one manipulates the soil determines which, and how, plants will grow. The way communities of humans think about their position within the rest of nature determines how nature will be produced and reproduced, and dialectically, how society will be organized. Capital, in Marx's own thinking, is one such relation *in* nature.

[77] Malm 2018: 182. Malm places this polemic in within the ongoing debate between the 'metabolic rift' school of thought and the 'world-ecology' framework that is clearly utilized in this manuscript. To some degree I think Malm has offered the most to this debate, while at the same time falling into a very non-dialectic trap, which is to force 'society' and 'nature' to remain always already discrete categories.

[78] Marx's treatment of the 'metabolic relations' between town and country, as an example of the 'irreparable break' (or 'rift' depending on translation) "in the coherence of social interchange prescribed by the natural laws of life" (Marx 1967: 813), forms the entire foundation upon which Foster et al. developed the 'theory of metabolic rift'. See especially Foster 1999, 2000; Foster and Clark 2010.

[79] Ollman 2003: 27.

[80] Marx 1904: 291.

What follows is (1) and overview of the ways in which I collected the historical knowledge necessary to address the key problems this dissertation is concerned with, (2) an overview of the dialectical method as it was employed in the study, and (3) a concluding discussion of the inherent weaknesses and strengths of the study's methodology, which hopefully opens some doors to thinking about the methods arising from this study.

Methods of Data Collection

The empirical seedbed of this study is made up of data collection and observations conducted over the course of roughly two years of work within libraries and archives, physical and digital. I use the phrase 'archival research' in a modern sense, as even when I have consulted archives, they have mostly been online sources that do not require any special permissions or processes, which is a bit different than earlier analog methods. I have visited the archives at the Redwood Room at Humboldt State University; yet the primary benefit of those visits has been the person-to-person meetings with the archivist there. It was through her extensive knowledge of the existing literature and historical documentation of the redwood region that I began to understand the extent of historical knowledge about early and ongoing forest management regimes in the region, the clear majority of which are available online through various resources, which are listed in the Appendix. Methodologically, there was no single rigid approach that was utilized in recording data, as the 'data' came in a variety of forms, such as early governmental policy, written historical interpretations of Northwestern California's colonization, and deep readings of American Indian scholarship about redwood country. This does not mean, however, that I did not deal with established quantitative aspects of this history, such as population statistics, land purchases, early logging metrics, and quantitative estimations of coast

redwood density and range. In that sense, this study deals in data, but it is not actually collecting new primary data.

The collection of important quantitative and qualitative data for analysis in this study was made through unobtrusive methods, consisting mainly of historical discourse analysis,[81] indigenous historical-ecological knowledge,[82] and the historical geography of state and federal forest policy in Northwestern California.[83] The other "data" I have collected through a particularly messy process of connecting the dots of the historical geographical movement of certain foundational presuppositions of the dominant social systems and their relationships to the bringing-to-endangerment of the coast redwood tree.[84] For example, I spent a considerable amount of time reading the earliest known works on American forestry and forest policy,[85] and in some cases, works on forestry written outside of the

[81] See Given 2012; Derrida 1978; Foucault 1975. These writings offer a good overview of this methodology used in a variety of ways. In all of them, one of the key attributes is that it is a 'poststructuralist' (I prefer the term 'relational') narration of history, such that the goal of the historian is to "uncover and critique the technologies of power that have come to legitimate certain ideas as truths" (Given 2012: 2). This harmonizes extremely well with the World-Ecology framework, which also takes as a guiding principle, the idea that that history is a deeply relational and interpretive enterprise (Moore 2015), more akin to what the early geographers called "earth writing" (Springer 2016). There are some aspects of this method that are a bit unsettled by a dialectical approach, but in my view, it only adds value to the method, as opposed to taking away from it. For example, it is argued that historical discourse analysis is a methodological technique of pushing back against historical narratives that paint the practice of writing history as being hierarchically outside of "literature, fact, and interpretation" (Given 2012: 3). This is important, and part of the reason that I chose to use this method, but as a geographer and a dialectician, I cannot leave it at that. As Marx and many others have pointed out, the goal is not to simply describe the world, but to change it! The ongoing description of historical discourse analysis is one that limits its reach into a more radical, change-inducing mode. My goal is to use that method to aid my further dialectical analysis of the relationship between knowledge production and environmental change.

[82] This is a phraseology of my own, meant to encompass what is commonly referred to Traditional Ecological Knowledge (TEK), but in a more relational, historical sense. I, like some Native scholars, take issue with TEK, because it is not a nomenclature that is directly associated with indigenous people's knowledge systems, so much as a name for those systems, given by what are ostensibly Western academics at colonial institutions of higher learning. Nevertheless, for extensive discussions on TEK, see Inglis 1993 (specifically for a great definition of the term); Berkes 2012, 2015; Ford and Martinez 2000; Nazarea 1999.

[83] In this case, I am looking at very early forest policy, going back as far as the colony at Plymouth, when forest policy was still being handed down from the European metropole. There is not much quantitatively that I take from this part of the research, save for a few choice measures. Instead, what is of interest to me is how these early policies laid the foundation for future policies. In some cases, the early policies were in fact far more stringent than those that would ultimately be implemented by federal foresters. This is highlighted in Chapter 3.

[84] This is where the World-Ecology framework comes into play most directly, which I will explore in the next section. From a purely utilitarian perspective, this method involved taking extensive hand-written notes about 'relationships' between different factors of the supposed endangerment of the coast redwood, and how they were/are involved in the ongoing historical unfolding of the capitalist system.

[85] Ise 1920; Ford 1910; Cook 1941.

United States.[86] I then took detailed notes on the ways in which these writers described the role of forests in society, the ways in which they described the goals and methods of managing forests, descriptions of the relations between settler culture and the use of trees, and other social and ecological relations, and then compared them with more recent writings on silviculture and forest management more generally.[87] For example, I might simultaneously read a silviculture text from our current historical moment and another from the late eighteenth or early nineteenth century about forestry, which would often include a section on 'silvics', which was the term used before roughly the 1920s. The point was to then take these differing, or in some cases interestingly similar, viewpoints, and put them through a dialectical treatment that places emphases on both system and individual actant; approximate and perspectival knowledge over certainty or objectivity; and finally, historical processes over outcomes.[88] Many important pieces of knowledge came to light through looking at these arguments dialectically.

Wherever possible, I sought to rely upon a broad range of documents to outline the established scientific consensus or debate on any given idea. In some cases, a clearly dominant viewpoint is evident in the early literature (both primarily and secondarily), but then becomes significantly nuanced over the course of history, providing different conceptualizations for what are central ideas within the practice of silviculture, for example. This was a crucial and ongoing process, for the key concepts in

[86] Schlich 1895 and Radkau [2007] 2012, which is a remarkable work on the history of forest management in Germany (silviculture) and its eventual exportation to countries all over the world.

[87] These included extensive readings of silviculture texts, including Smith et al 1997; Tappeiner II et al [2007] 2015; Spies and Duncan 2009; Puettmann et al 2009.

[88] This is a melding of both *historical discourse analysis* and what Capra calls "systems theory," which will be discussed shortly. Importantly, it must be noted that I am in no way suggesting that one of the two in each pairing is *objectively* more important or more explanatory than the other. To the contrary I am simply privileging these conceptualizations of the problems I am examining over the long-established Western scientific, and often technocratic, conceptualizations of the same social and ecological phenomena. So where I point to the system over the individual actor, for example, it is not to say that that the individual actor is of less importance than the system, I am suggesting that the workings of the system are explanatory of the conditions that caused the individual actor to make their decision as to how to act. Where the individual is at a very low level of abstraction, the system is at the highest level of abstraction, but as so many thinkers have shown us, abstraction does not entail less meaning. It is only through abstraction that we can attempt to understand the internal laws of motion of complex systems like capitalism and ecosystems.

both silviculture and species extinction debates have changed over the past 100 years. I believe that the arguments presented in the work clearly show where I am intervening to re-interpret the historical record, or to intentionally unsettle otherwise accepted wisdoms. Another way to understand this is to say that there are points where I have chosen to narrate a historical process differently from how it was presented in the majority of the texts I encountered. Further, there are text that I rely heavily on that are themselves very strong rebuttals to the historical episodes they are concerned with. To the degree a white settler like myself can, this is a practice of 'decolonization' as "writing back" that Tuhiwahi-Smith outlined in the very important book *Decolonizing Methodologies*.[89]

Finally, I also sought to embed myself into the territory that I was studying. Due to very limited financial stability, I was only able to do that for about 45 days during the summer of 2017, but it was an important part of the information gathering process for this manuscript. During that time, I camped, both in campgrounds and at times in my car. In the Appendix, I will give a detailed list of all the sites and areas in which I camped. In Chapter 3 there is an account of my conversations with some loggers, or 'tree-fellers' as they called themselves. I was camping for several days at a time at different parts of the 45-days at the same campground as these workers. I came to understand that they were mobile, in that they lived in the large camping trailer they pulled behind their truck during the months in which they worked taking down trees for those who would hire them to do so. Also while camping I took well over 1000 high resolution digital photos, with the purpose of including them in this manuscript as a kind of visual discourse analysis, but I decided against this late in the project, because I found it did not add enough to the overall argument I am seeking to make. However, this was a rewarding and interesting part of the research, while also a regret, in the sense that I deeply wish I could have spent more time doing this kind of embedded, yet unobtrusive research. It is my hope that

[89] Smith 2012.

I will be able to utilize those images and other field notes I took while there when I evolve this manuscript into a book-length project geared for a generalized, non-expert readership.

Key Texts of the Study

Of crucial importance is the reliance I have placed upon well-stablished historical works in reference to the subject matter addressed, as well as some specific source documents that are within government or university archival collections. In some cases, I have relied extensively on highly regarded historical studies for the collection of the most crucial information needed to make my historical geographical arguments. Most notable among these central texts are the following historical texts, each with a short description of its role in *this* manuscript:

- *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* by M. Kat Anderson (2005)
    - Anderson's work is deeply researched from the perspectives of Indigenous forest management, traditional ecological knowledge, and vast historical approaches to the diets and lifeways of early Indigenous communities and how they were – and continue to be – disrupted by settler-colonial land management regimes. Throughout the manuscript I return to her work to understand the interconnection between Indigenous knowledge of ecological functions in redwood country and the limitations of modern scientific forestry.
- *Murder State: California's Native American Genocide, 1846-1873* by Brendan C. Lindsay (2012):
    - This work was of profound importance to my understanding of what both he and Madley – listed below – identify as a 'genocide', whereas so many other historical accountings of California's Indigenous history do not. Genocide takes on many different meanings in different places and time-periods. The California genocides, as I

came to understand them from interacting with Indigenous researchers, as well as non-Indigenous historians of California, are rarely addressed to the depth that they are here.

- *An American Genocide: The United States and the California Indian Catastrophe, 1846-1873* by Benjamin Madley (2016):
    - Madley's archival research in this book is beyond anything else I found. Of particular importance is his use of early newspaper articles, newsletters, and government documents to show, in often unsettling detail, just how violent and intentional the California genocide of Indigenous people was. In many cases, Madley provides detailed archival evidence of arguments that Lindsay (2012) does not.[90] As noted above, both works together provided extensive information for me to work with.
- *Genocide and Vendetta: The Round Valley Wars of Northern California* by Lynwood Caranco and Estle Beard (1981):
    - When I began doing this research and visited the Humboldt State University Redwood Room – their archive on the history of the redwoods – the first name that was mentioned to me by the reference librarian there was Lynwood Caranco. He was a local historian of Humboldt County, living most of his life there, so his research was always backed up by extensive field experience. The most important part of his work, however, is that he researched specific locations within Humboldt County that are of particular importance to understanding the interconnectedness of genocide and government policies of Indian removal. Further, he was – as far as my research was

[90] This is not a comment on Lindsay's work lacking anything at all. To the contrary, I do not think one researcher could possibly do the work that Lindsay and Madley did in tandem. In some cases, it is possible that differences in the level of research funding or available time to complete the project may have limited Lindsay's ability to have the depth of archival documentation that Madley had. That said, Lindsay's book came out four years before Lindsay's and very little connection is made by Madley to Lindsay's work. If found this to be a bit questionable, but only from the perspective of comradery. In the end, both provided so much necessary analysis and research that the two works became indispensable immediately.

able to find – the first historian of record to use the word "genocide" in relation to the history of Northwestern California. This work was of great use in developing much of my thinking in Chapter 4.

- *The United States Forest Policy* by John Ise (1920):
    - This document by John Ise is the first of its kind and thus provides a window into the ways in which early American settlers dealt with the immense forests of the NorthEast and the later the rest of the country. It was from his work that I gained the important understanding that some of the early settlers had disagreements with the directions the colonies were being given from abroad. These wood-saving laws and other directives are addressed at some length in the early chapters and lay the foundation to my eventual understanding of early American silviculture as a fundamentally exterminist science.
- *Manual of Forestry, Volume I: Introduction to Forestry* (1891) and *Volume II* (1896):
    - In similarity to my use of Ise's work, this manual gave me a sense of what the earliest recorded scientific forestry methods were focused on, how these scientists viewed the notion of "the forest," and its role in European-American society. In many ways, the regulations and practices put forward in this manual were more closely aligned with more modern silvicultural practices of today that are desirable from an ecological standpoint. I address some of this in Chapters 3 and 4.
- *A Critique of Silviculture: Management for Complexity* by Klaus J. Puettmann, K. David Coates, and Christian Messier (2009):
    - Early in my research, I found a curious lack of available resources that looked at the science of silviculture critically. This book interrogates the concept itself, its very long history, and the ways in which it has evolved over that time. Many of the critical

interpretations of certain aspects of silviculture that I put forward in this manuscript were first brought to my attention in this document.

- *Bulletin of the University of Wisconsin, No. 352: Colonial Precedents of Our National Land System as it Existed in 1800* by Amelia Clewley Ford (1910):
    - This was a unique and interesting document that I came across rather luckily. It contains within it the actual text of all the first government laws regulating the removal of Indigenous people to reservations, as well as the land allotment regulations that would come much later.
- *Timber Growing and Logging Practice in the Coast Redwood Region of California* by S. B. Snow, Regional Forester, California Region, Forest Service, United States Department of Agriculture (March 1932):
    - This document gave me the opportunity to read, in their own words, how the early foresters and lumber companies worked together in the redwood region to establish the redwood lumber industry. Many of the techniques and guidelines established in this document continued relatively unabated well into the 1980s.

Limitations of the Methodology

Many research studies place high emphasis on 'replicability'. According to Sayer, one way this happens is through testing "to see how general the particular findings are in the wider population."[91] Providing a clear roadmap to the methods I have employed is admittedly difficult, because there is a significant amount of exploratory freedom embedded in how I allowed myself to engage with the existing knowledge. This is a desideratum applicable to a different sort of research project than this one, and

[91] Sayer 2000: 246. See also Rudestan and Newton 1992: 74 for a good discussion on replicability in qualitative methods.

thus, from a perspective, a weakness, but it is also the source of its originality.[92] While it may be, for the most part, non-replicable by someone approaching the issues from a different positionality, that is also where its potential strength lies. My work is meant to destabilize, challenge, and provide additional important language for the ongoing critical interpretation of *extinction* in the Age of Capital, the *Capitalocene*. Perhaps another way to present this dilemma is to suggest that while my method is not 'replicable' in the sense that it can be applied liberally to different portions of the related universe of observable phenomena, it is most certainly *repeatable*. It is not hard to imagine another project of similar scope and focus being approached in the same way. The approach to the identification of the data and the analytical response to that data in this manuscript is a process that can be repeated if one is willing. That said, computer simulations will not likely suffice, nor will standardized statistical packages, or the breaking down of units of influence into variables to be weighed against each other.

All methodologies, and even individual methods, contain limitations. The limitations of the methodology of this study are that it provides few, if any, of the settling outcomes that more natural scientific approaches to qualitative studies can often, though far from always, provide. I have elected to interweave, if you will, the data into the fabric of the study. That is to say, I do not have tables, charts, and otherwise streamlined access-points to the specific data that help me make my argument. Instead, the reader will encounter a series of conceptual models that outline the ways in which I am analyzing the relations I have abstracted in the process. Crucially, I must concede that my knowledge of the quickly advancing capabilities of computers to model highly complex systems and interactions at all scales of the human-nature relation is far from adequate to say with any certainty that a computer model or simulation could not do what I am doing herein. I remain open to those possibilities.

To conclude, another limitation is the relative absence of a clearly defined disciplinary border around the literature I am writing with. I am, by design, consulting works that span across geography,

[92] Wainwright 2021.

environmental history and sociology, critical literature studies, environmental humanities, critical theory, forest science, evolutionary biology, anthropology, postcolonial studies, ethnic studies, traditional ecological knowledge, American Indian studies, science and technology studies, critical conservation, and post-development studies. In short, while this manuscript is, I believe, fundamentally a work strongly connected to geographical thinking and scholarship, I do not envision this dissertation as one that will be immediately interpreted by readers as a work of geography or political ecology. But this is part of the plan, for I want this work to be legible to a broad cross-section of scholars that goes far beyond my comfort zones of historical political ecology and critical extinction studies. Whether I accomplish this will only be made clear by the readers. It is my hope that this manuscript will add important conceptual vocabulary and critical interventions into the ongoing discussion of the ways in which humans, systems, and spatial regimes collude in the making-inevitable of the endangerment of species.

Chapter 3: Deconstructing the *Redwood Curtain*

In this chapter I will explicate the *Redwood Curtain* as a thin strip of temperate coast redwood rainforest along the Pacific Coast of far Northwestern California, isolating it from the rest of the state. This is counter to the more popular cultural version of the term, which I will describe first. I argue that the Redwood Curtain entered a period of *systemic* removal when it began to be treated as a physical *socio-ecological* barrier[93] to long-term settlement in the mid-nineteenth century. It took more than 100 years for the term Redwood Curtain would be used to describe a *socio-cultural* barrier, as it is more commonly understood to be today.[94] In the former case, it was a barrier to the physical settlement, or even access to, the land that lay beyond it. Settlers often possessed limited knowledge of the land that lay past that barrier, making settlement plans complex. Settlers also likely knew of the numerous Indigenous communities that lived in the area, often food gathering and fishing along the coast, while their housing lay somewhere inland.[95] The difficulty of moving inland held them off for some time and thus the gold fields would not be exploited until the mid-to-late 19th century. They would need to cross through the entire forest into the river valleys to find them.[96] Moving into and past the Indigenous communities that had been established in the area for millennia was inevitable, but fraught with countless risks that they likely could not have foreseen.

The setter-colonial perception of the Indigenous communities of the far Northwest of California was not unlike the perceptions of the settlers who occupied the rest of California - that

[93] Primarily, the understanding here is that it is a physical ecosystem barrier. However, as ecology is also always social, the term 'socio-ecological' applies deeply here.
[94] Humboldt County remains highly isolated, economically, and culturally, from the rest of California. This will be further fleshed out in the remainder of the essay.
[95] Crucially, cultural and ecological lifeways like this are still in practice today in the Northwest of California, only with significantly reduced ecological surpluses.
[96] See Madley 2016: 169 for a representative map of the location of the Northern, Central, and Southern goldfields. The map also shows clearly that the goldfields were within the tracts of land that were ceded by the Indians when they were eventually removed and place on reservation land, a process that will be highlighted later in the essay.

Indigenous people and communities were beyond civilizing and 'destined to go extinct'[97] – not only from the violence of the settler desire for Indigenous land and resources, but from their 'primitive' ways of living. Beyond the already-existing Indigenous lifeways that existed in far Northwestern California for millennia, what was systemically removed was a sharply marked *ecotone* between the rough edge of the Pacific Ocean and the oak savannah of the rolling hills and river valleys behind a temperate redwood rainforest.[98] This long-historical event (later elaborated as part of the Long Extermination) led to the supposed 'endangerment' of the coast redwood tree, or *Sequoia sempervirens,* which will be examined in detail later in the chapter.

Removal of the Redwood Curtain – in its socioecological understanding – was accomplished not merely by the acts of people, but by people enmeshed into social, economic, political, and ecological relations that are intrinsic to the systems and structures of capitalism and settler-colonialism.[99] I write systemic, *not* systematic, for the latter presumes something purely of intention and planning, whereas the former suggests humans doing actions 'under the influence' of capitalist knowledge regimes.[100] Importantly, 'removal' is to be understood here as a generative concept, where every removal of human, animal, or plant from an existing 'place' begins a new production of space, and tangentially, a new investment of meaning, thus a new place, the reverse of David Harvey's notion of going "from space to place and back again."[101] Indigenous place was expropriated of its already

[97] The notion that Indigenous peoples were viewed as backward and destined for extinction unless otherwise saved is present in many historical texts, and that will be explored in greater detail later in the chapter, as well as in the remainder of the manuscript.

[98] My understanding the "redwood curtain" as an ecological barrier is driven by the concept of the 'ecotone,' or the transition space between two ecosystemic areas, in this case between the Pacific shoreline and the oak savannahs above the redwood rainforest areas. See Sequoia-Kings Canyon/Grant Grove Redwood Mountain development concept plan: environmental impact statement 1987: 91-93.

[99] Some have dealt with this idea through the lens of capitalist culture and linguistics, where language and cultural proclivities are understood to be coerced by the inherent demands of the capitalist system. See especially Widick 2009; Marazzi 2008, 2011; Hardt and Negri 2009; Vercellone 2007, 2010. In these texts there are several points where the idea of the production of needs and wants that fall far outside the realm of the basic needs of survival that all human beings have.

[100] Lewontin and Levins 2007.

[101] Harvey 1996: 291. Harvey does not necessarily argue this, but I believe his ideation could be understood as an ongoing cycle, such that that there is never a final resting at either place or space. It is a fundamentally dialectical viewing of the

deeply embedded meanings[102] and then reimagined as 'accumulative space' through the capitalist production of place, or the molding of space to reduce the obstacles to capital accumulation. [103]

To provide evidence in support of this argument, I will do an historical deconstruction of the Redwood Curtain, placing emphasis on precisely how it can be understood as a 'place'. Secondly, I will show that through *acts of removal* – the removal of plants, animals, and/or bodies to produce space – by the US state, settler-colonists, and finally scientific foresters, the Redwood Curtain was made into a kind of cultural mythology, as opposed to an existing socioecological entity. The erasure of the curtain as an ecological entity made possible the capitalist production of space that would come much later, something I will refer to as the *negative production of space* in Chapter 5. These can also be understood as part of the civilizational machinery of the 'expropriation of meaning,' which I will seek to outline in more detail in Chapter 4. Finally, I will show that the supposed 'endangerment' of the coast redwood is the result of a nearly 200-year *systemic extermination* of Indigenous bodies and (i)ndigenous plants,[104] for it is not the redwood that became endangered, but the ecosystem in which it lives and thrives. Left to their own devices, coast redwoods have almost no environmental constraints to their ongoing survival that are not directly brought about through the systemic characteristics of capitalism and the humans that carry out its systemic demands. This will be dealt with in much more detail as the document unfolds, but it is crucial to identify the basic presupposition early on that the impact of 'humans' is not the key target here. To the contrary, systemic extermination

production of 'space' *as* the production of 'place', and the eventual – under capitalism – un-making of that place, back into space, ad infinitum.

[102] Expropriation here is taken in the broadest sense of discarding, displacing, and outright stealing of existing cultural lifeways and land. Historians of 'expropriation' of land for the common good have rarely considered the underlying systemic believe systems driving those expropriations. For an overview of this phenomenon, see Reynolds 2010: 111-140.

[103] Lefebvre 1991: 49.

[104] I use the wording (i)ndigenous throughout to point to plants and animals – or more-than-humans – that are, in some cases, endemic to the area in question, meaning that they are only found within the redwood ecosystem. In this sense, there is an 'ecological' notion of indigenous that I am pointing, but it is in no way pointing to the Indian or the Indigenous person as 'ecological'. I am simply asserting that there is a multi-species way of understanding indigeneity. For useful engagements of interspecies understandings of Indigeneity, see Aguilera 2017 and Chang 2017 in Monani and Adamson 2017.

seeks to inculcate the actual system of capitalism in its entrainment of the human enterprises that bring to fruition the social and ecological crises of this historical age.

The implications of this work are manifold. First, it opens new avenues for understanding the processes that make the premature 'endangerment' of species inevitable. Second, and perhaps most importantly, it urges us to think of the 'extinction crisis' as something that is 'systemic', as opposed to species based. In other words, this argument challenges the popular Anthropocene argument that rests upon *Homo sapiens* as the 'bully species', bringing about the sixth mass extinction.[105] Finally, by thinking systemically, I therefore 'name the system'[106] – capitalism – in the narration of what is, in my view, more accurately understood as an 'extermination crisis', fueled not by humanity, but by capital's inherent *exterminism*, defined as capital's historic and ongoing tendency to destroy life that is deemed less valuable (read: less profitable), in order to make life that is more valuable (read: more profitable to produce).[107] There is a nonlinear progression of crises from extinction to capital to extermination.

Before all of these arguments can be made – some of which will take the whole length of the dissertation – we must first begin with an in-depth outlining of the Redwood Curtain, how it has been and how it can be understood, for it provides the main case study, laying the foundation for many of the claims that will be made in later chapters.

[105] Leakey and Lewin 1995; Harris 2000; Wake and Vrendenburg 2008; Kolbert 2014; Hecht 2014; Ceballos et al. 2016.
[106] Moore 2018.
[107] This term originates with E.P. Thompson's 1980 essay entitled *Notes on Exterminism, the Last Stage of Civilization,* which is focused primarily on his critique of the nuclear arms race. However, my interpretation of the term as it is applied in this manuscript comes from the following as well: Bender 2003; Cooper 2008; Moore 2014; McBrien 2016; Dawson 2016, 2019; Cox et al. 2019.

Finding the Redwood Curtain

What we know as the Humboldt Bay had, until the late eighteenth century remained well within the periphery of the failed Spanish colonization of Alta California,[108] and thus on the periphery of the already established European capitalist world-economy.[109] The main 'successful' enterprise of the Spanish was the mission system,[110] which depended largely upon Indigenous labor and ecological knowledge, in almost all cases occurring South of Mendocino County.[111] This also played the critical role of a class-formation mechanism that would expand in the decades to come. Explorers and traders landing on the shoreline of far Northwestern California, at the turn of the 18th century, like those who came before them, could only speculate about what lay beyond the imposing wall of reddish-brown trees springing out of the earth like spikes nearly 300 feet into the sky. Nevertheless, they likely brought with them a viewpoint of the Indigenous person gained in their previous exploits of the American MidWest and Southern California. Vancouver, the British explorer, visited Monterey (the Southernmost tip of the redwood ecosystem) in 1792, only to marvel at the 'inefficient use' of such giant stretches of land beyond the tree lines, where the expense of great amounts of labor was useless, because the land was not improved upon in any way.[112] This understanding of land is still held by many Western land managers.

The Spanish occupiers, while failing to colonize Northwestern California, were very successful in the development of the mission system, which was intended to "baptize new tribes, and thereby add to the glory and extend the power of their Order and that of the Church."[113] Similarly, yet to a

[108] It was largely a failure because the Spanish failed to get deep enough into the redwood forests of Mendocino, Humboldt and Del Norte Counties, before California was declared a state, to colonize the Indigenous communities in those spaces, as they had in Central and Southern California.
[109] Braudel 1979: 44-65.
[110] Coman 1912: 141-43.
[111] That said, settlers also invaded the "cow counties" of Southern California, relying exclusively on Indigenous labor and knowhow, "grafting themselves onto existing systems of ranching and farming," in some cases started by the Spanish. See Lindsay 2012: 135.
[112] Coman 1912: 142-43.
[113] Ibid: 145.

much higher degree compared with the Euro-American[114] invasion and occupation to come later, theirs was much more of an invasion on behalf of racist, religious imperialism. Under the continued advancement of the gloom and misery of forced Christianization, Indigenous workers in central and Southern California were often led into indentured servitude, false apprenticeships, and even outright slavery, or as some would put it, "slavery without the actual sale of the individual."[115] The slavery, indentureship, and forced schooling would not make it to Northwestern California until the traders and explorers landed ships past the fog cover, coinciding with rumors of endless gold riches in the river valleys that lay behind the redwoods. While the gold that was available in far Northwestern California was not nearly as plentiful as it was in lower river valleys, it was nevertheless the impetus for what Cook called an "overwhelming assault upon the subsistence, life, and culture[116] of California natives."[117] In short, it was gold that brought settlers into Northwestern California, but it was the ongoing structures of settler invasion and conquest that kept them coming long after there was any gold, in spite of the resistance of Indigenous communities to their presence.

[114] It is important to note that I am choosing the term Euro-American for two reasons. First, in many of the Indigenous accountings of colonization that I have read, this is the term used. I prefer to allow them to take the lead on this. Secondly, and perhaps more importantly (but no less problematically), to address the various ethnic origins of all the settlers would constitute a separate project. They were Irish, Italian, German, French, Russian, Polish, and so many more. Irish and Italian immigrants, for example, were very commonly understood as not included in what would be considered "White." In addressing the racial and cultural makeup of the settler-colonial migrant, these complexities would need to be examined in some detail. The town I grew up in, just about 70 miles South of Humboldt County was called Guerneville, named after a German lumber baron. On the one hand, I run the risk of homogenizing what is really a very diverse population by calling them Euro-American, while on the other hand, I am appropriately naming them, for many of them came directly from Europe to California, while others came from established families on the East Coast of the U.S. Still others were simply migrants from big cities where their likelihood of succeeding was low.

[115] Costo and Costo 1987: 187. See also Sanchez 1995: 55; Hackel 2005: 281.

[116] The word "culture" appears at many places in this chapter and throughout the manuscript, so I feel I must take a moment to clarify that there are times I use the word – such as the above usage – in a way that holds within it the meaning meant by the writer of the quotation I am using. Other times, I meaning to denote a different, or at lEast clarified meaning of the term in the way that I use it in my own theorizations. The most generally accepted defining of culture that I adhere to is what Raymond Williams refers to as the 'third' of the three 'general categories' in which culture is defined, and this is the "social definition of culture, in which culture is a description of a particular way of life" (Williams [1961] 2011: 61). At times I use the phrase "Indigenous lifeways," which occurs in some of the literature I examined in the development of this manuscript, and I think it also fits very well with Williams' formulation.

[117] Cook 1978: 93; also see Cook 1971.

Importantly, gold on the world market was only in high demand because of the consolidation of the European capitalist world-economy in Britain around the same time. Without this turning point in economic history, it is unlikely that gold would have been such a desirable find in the river valleys of Northern California. There is a curious characteristic between the European economy and the American at that time. While there was heightened consolidation in Western Europe, there was relentless expansion Westward in North America. In some cases, there were Irish migrants going West to escape famine and other effects of deep poverty in areas along the East Coast of the United States.

By this point, the Redwood Curtain, though not yet named as such, was no longer a barrier to capitalist appropriation of land, bodies, and resources. It became a gateway. Overland routes to the gold mines on the Klamath, Smith, and Platt rivers had already been well-laid, and it was now only a matter of time before large ships would start making regular landings on the shore of the Pacific. The gold-fueled metabolic interchange between the San Francisco Bay and the Humboldt Bay would bring about a surplus of desire for redwood. There was an extensive series of massive fires that swept through San Francisco in May of 1851, caused in part by the increasing influx of rushers from all over the world, destroying most of the newly built wooden structures. This event made demand for redwood – naturally fire and rot resistant – grow.[118]

Defining the Redwood Curtain

Shrouded in thick fog most of the year,[119] giant coast redwood trees formed an historical barrier that protected the temperate rainforest from capitalist appropriation until 1850s,[120] unlike the rest of

[118] Cox 1974: 48.

[119] It has been well documented by Lynwood Carranco, and other local historians of Northwest California that the only successful attempts to pierce the fog of Humboldt Bay by ship or boat happened during the Russo-Hispanic period, and once during the Spanish period, and that it would not be until the 1850s that Humboldt Bay would become clearly mapped enough for regular seafaring entrances. Famously, the *USS Milwaukee* ran aground, just outside of the city of Eureka, in its attempt to tow the Navy submarine *H3* from a beachhead at Samoa. See Carranco 1981. For more history of the "graveyard of the Pacific" see Carranco and Labbe 1979; Carranco 1982; Carranco and Beard 1981; Carranco and Sorensen 1988.

[120] Widick 2009: xvi, xviii.

California. It was, in this sense, more like a wall of wood behind a curtain of fog. In fact, it was often the fog that kept landing ships at bay, but it was the trees that kept invaders on the outside looking in. The giant wall of redwood was removed, in its physical manifestation, by the middle of the twentieth century, and then replaced by a socio-cultural imaginary of isolation, which remains the popular manifestation of the curtain found on the Internet today, as well as in popular novels.[121] By 1948 Humboldt had already become a significant competitor in global lumber production, and one of the largest on the West Coast, pumping out 816 million board feet per year. Ten years earlier, by 1938, more than half of the existing old growth had already been removed, most of it sitting right on the Pacific Coast.[122] I am concerned with the Redwood Curtain as a *socio-ecological* boundary, because it names what was removed in the process of creating the *socio-cultural* boundary of isolation that persists today.

The term "Redwood Curtain" did not actually come into wide use until well into the 1980s, deriving from the Iron Curtain terminology of the Cold War.[123] In this sense, one could also suggest that the Spanish and English never in fact encountered the Redwood Curtain, because they scarcely accomplished finding it. From the *socio-ecological* viewpoint, lives of Indigenous people and (i)ndigenous plants, most notably the tanoak tree,[124] are included in its historical geography. It allows us to gain a

[121] See https://www.urbandictionary.com/define.php?term=Redwood%20Curtain; Wilson 1993; Hill 1998; Porter 1981.
[122] Madley 2012: 214; Melendy 1953:110-14.
[123] After considerable research of texts, as well as conversations with local historians of Humboldt County, the exact origin of the term remains mysterious. Depending upon whom you ask, it is defined in very different terms. For example, the Clarke Museum of Eureka describes the "parting of the Redwood Curtain" in very historical terms, coinciding with the development of the Northwestern Pacific Railroad in 1914 and then the Redwood Highway shortly after, the precursor to the infamous Pacific Coast Highway, or Highway 101, in the 1930s. However, it is unclear that the actual term "Redwood Curtain" was used in those days, as it does not appear in any of the literature that I have consulted from that era. One of the few PhD dissertations that exists on the subject offers essentially the same limited defining of the Redwood Curtain found in typical urban dictionaries on the Internet, all of which point to Churchill's 1946 warning of the Iron Curtain of Communism falling 'descending upon Eastern Europe'. See Karp 2015: 16.
[124] The tanoak, or *Notholithocarpus densiflorus,* like the coast redwood, or *Sequoia sempervirens,* is a monospecific genus, which means it is the only existing species of its genus on the entire planet. Both trees are indigenous to the coastal biome of the Pacific Northwest of California. See Bowcutt 2015: 8.

fuller understanding of the historical agency[125] of the coast redwood tree, or *Sequoia sempervirens,* in fending off the colonization of the far Northwest of California. As Widick notes, "The dense coastal mountains and nearly impassible redwood forests formed a natural barrier that ensured passage to Humboldt Bay would be by dominated by sea traffic for years to come."[126] These trees and the fog that feeds them[127], kept the Indigenous people, space, and place safe from capital,[128] and the *isms* that travel with it (racism, imperialism, sexism), until much later than the rest of California.

Coast redwoods are among the largest and longest living organisms on the planet, the humpback whales of terra firma. Groves of big redwoods were often referred to by early explorers[129] as 'cathedrals', with the individual trees like church spires that reach up into the heavens. It was quite common for early conservationists in the 1920s and 30s to speak in religious overtones when referring to these trees.[130] Their height at old age, usually above 300 feet, is barely calculable from the ground as their canopies are swallowed into the sky. Their trunk at chest height is commonly more than 25 feet in diameter, with epicormic shoots starting as high as 50 feet up the trunk, well over the tops of its ecological companion, the tanoak.[131] It is daunting to imagine coming ashore at Humboldt Bay in

[125] Here, I am suggesting that trees have agency, just as humans and animals do. Just as a river has agency to move rock and soil in response to all sorts of machinery, a redwood tree has agency not only to disperse water to its ecological community, but also to form a barrier that keeps exploration of its ecosystem at bay.
[126] Widick 2009: xviii.
[127] Coast redwoods get upwards of 15% of their water from fog, and this is accomplished by 'scraping' the fog with their rather short and narrow needles. As the fog rolls over the canopy, the needles gather moisture, which is then transferred down the tree through dripping. Up to 34% of the annual hydrologic input in the redwood rainforest is thought to be from fog water drip produced by redwoods. See especially Dawson 1998, as well as Sillett et al. 2007.
[128] I write here about *capital* as though it is a living thing, a kind of being, because I am treating it, in lineage with Marx, as a 'relation'. It is a relational abstraction, in that it contains within it the ties with labor, value, commodity, capitalists (who are in this case settler-colonial), and workers (human and more-than-human). See Ollman 2003: 14. Further, Marx referred to capital as "that kind of property which exploits wage-labor, and which cannot increase except on condition of getting a new supply" (Marx and Engels 1945: 33), meaning that capital *is*, but it also *does*.
[129] By this term I mean to highlight those late explorers who charted redwood country before the arrival of settler-colonists from the East and from Europe. Lewis and Clark would qualify here, as would others.
[130] This theological lens is applicable all the way up to the founding of the first National Parks and especially to the rise of the California's early conservation movement, when the big redwood forests of Northern California were seen as the perfect location to engage in the eugenicist experiment of saving the 'great White race' from its own 'race-suicide' by sending young brown men to work in the forest on conservation crews, a pet project of August Vollmer the policing reformer. See Stern 2005: 117, 258, n. 16, n. 17.
[131] Bowcutt 2015.

a boat likely no longer than 10 feet long, walking up the beach and seeing densely packed stands of trees significantly larger than the boats and anchored wooden ships a few hundred feet out. The tallest coast redwood is as tall as the Statue of Liberty. This is the great red wall that was the ever-present barrier for thousands of years, at lEast against settlement from the sea. There are many competing theories about how Indigenous people had come to make their community in that area, but most assume they arrived by walking or riding, not by water vessel. It was a social obstacle because occupiers could barely get to the land upon which they stood, which meant communication was difficult, and it was an ecological barrier, because it was a complex ecosystem literally standing in the way of invading settlers and the capitalist system that would seek to bring simplicity and legibility where there was none. The more popularized version of the Redwood Curtain, the *socio-cultural barrier,* was made possible by the physical destruction of the *socio-ecological* one I have just described.

The removal of the Redwood Curtain (RC) is a long-historical unfolding, akin to what Braudel called the 'infinitely stretchable event'.[132] His thinking is useful here, because how the RC is defined, read, narrated, determines its tempo and space. Settler-colonial incursion into Northwestern California was predicated, unintentionally, but *systemically*, on the eventual removal of the curtain in its physical manifestation,[133] marking it as a project of ecological imperialism,[134] as much as political and economic. This settler-colonial incursion would last well into the 1980s, after which point roughly 6% of the old-growth[135] community that existed at the time of colonization remained, roughly the same number in existence today.[136] Crucially, it is difficult to explore any of this without looking into the socio-cultural

[132] Braudel 2012.
[133] It is for this reason that we can only understand the significance of the RC as a socio-ecological barrier through looking first at more current history, for the idea of the RC did not actually exist until well into the 20th century. Further, it could not have been in the intention of the early settlers to do this until there existed the technology (i.e. large enough saws, mule trains, railroads, and logging spits) to accomplish it.
[134] See Crosby 2004 for an overview of this subject matter. His work will come into play later on as well.
[135] "Old growth" redwoods are commonly understood to be any *Sequoia sempervirens* over the age of 500 years.
[136] Some have argued that it is closer to 5%, but from the science that I have consulted, it seems closer to 6%. The National Park Service has adopted the latter. See https://www.nps.gov/redw/faqs.htm.

isolation of Humboldt County that the concept of the Redwood Curtain is most regularly associated with. Focusing on settler-colonial invasion and occupation, Indigenous removal by the American state,[137] and Western scientific land management – three deeply related *acts of removal* – highlights the historical process of Northwestern California's appropriation into the Euro-American World-ecology of 'capital, power, and re/production in the web of life'.[138] Furthermore, the question of whether or not the coast redwood is "endangered" in the classic sense of the 'endangered species' becomes more controversial, or at lEast less clear.

Placing the Redwood Curtain

> "…the humanness of man and the thingness of things dissolve into the calculated market value of a market which not only spans the whole earth as a world market, but also, as the will to will, trades in the nature of Being and thus subjects all beings to the trade of a calculation that dominates most tenaciously in those areas where there is no need of numbers.
> (Heidegger 1971: 114-15)

The Redwood Curtain was, until occupation and conquest (1846-1873),[139] (i)ndigenous and Indigenous. It was not yet a spatiality through which Euro-American "imaginaries" (i.e. institutionalizations, social relations, material processes, and formations of political and discursive power) could function. It was not yet a "place" in the mind of the Euro-American settler. Just what constitutes *place,* and its role to *space,* has been a contentious subject of geographical and critical social study since the dawn of the 20th century, reaching its highest intensity beginning in the 1930s.[140] My conceptualization of *place* is formed through the texts of several key thinkers on the subject,[141] all of

[137] It is typically called "Indian removal," because that was the terminology used in the 1850s when it was in full swing in the Northwest of California. However, I have opted to call it Indigenous removal. I recognize that there are many Indigenous people who, for reasons I have no right to question, prefer to self-identify as "Indian" over "Indigenous."
[138] Moore 2015: 14.
[139] I take this timeframe directly from the work Benjamin Madley, who has designated this period as the covering time for the California genocides. This period also coincides well with the initiation of the Euro-American genocidal occupation of Northwestern California. See Madley 2016.
[140] Reclus 2013; Mumford 1934; Lefebvre [1974] 1991; Smith [1984] 2008; Soja 1989.
[141] Harvey 1996: 261-294, 2004; Lefebvre 1991; Leibniz 1965; Whitehead 1920; Massey 2005.

whom share the foundational viewpoints that place is *socially-constructed*, *impermanent*, and *contingent* on a great number of factors that lie far beyond the individual in society, factors like property and planning regimes, state apparatuses, and socioeconomic structures. There is a systemic, and thus structural,[142] quality to how they view what could be called the *production of place* over time, though that phraseology seems to be used mostly in the urban context by theorists of place-making.[143] It is necessary before I move on to clarify how *place* is put to work here.

Place is often understood in opposition to the global, something which Massey takes issue with. She posits that "place … is figured as inevitably the *victim* of globalization."[144] Here she is necessarily taking to task the masculine and hierarchical nature of the traditional globalization literature, where everything and anything becomes the agency-less other of the globalized master.[145] She invokes Arturo Escobar, who is another thinker who looks at space as a critique against the globalization rhetoric, arguing that "the local is likened to place, labor, and tradition – as well as with women, minorities, the poor, and one might add, local cultures."[146] However, Massey's characterization of Escobar is a bit limited, in that he wrote extensively on the production of poverty in the making of the Third World, not as 'project', as Vijay Prashad would state it,[147] but as a place, arguing that "the old colonial systems of exploitation and control were no longer tenable," which would require the restructuring "of world power," and this would come largely through the consolidation of global capital during the 1970s and

[142] There is room for confusion here, which I recognize. However, I want to suggest that there are systemically driven actions that can later become something more like a structure. I address this later when considering settler-colonialism as a structure versus an event. Property and planning regimes, for example, may only be plausible because of systemic demands at one point in time, but at a much later point – hard as it may be to pin down – they can become structural in their somewhat universal application across a broad spectrum of space.
[143] Gornostaeva and Campbell 2012; Willett 2016; Duff 2010; Cutajar and Vella 2018.
[144] Massey 2005: 101.
[145] To be clear, I am also not attempting to do that. While I am focusing quite heavily on the importance of the global intruding upon the local, I am specifically attempting to think about that from the perspective of not only the local population, but of the people not of that population as well. I am seeking to think about place and globality in as relational method as possible.
[146] Escobar 2012: 155-66.
[147] Prashad 2007: xvi-xvii. The 'Third World project' was a place-centered collectivized revolt against colonial occupiers that 'demanded the redistribution of the world's resources,' among many other things. It was also anti-patriarchal and put many Black and Indigenous peoples out front. This goes strongly against the 'place as victim' narrative.

1980s.[148] In other words, like many, Massey is perhaps giving so much power to the master narrative that the attempt to undermine it is lost in the dismissal. Massey, however, remains very instructive for thinking about place as a relation. She rightly points out that it is politically problematical to allow place to be automatically equated with "the local, without regard to the constitutive social relations … to the *constitution* of the local itself."[149] In other words, we cannot understand place, or for that matter locality (though I do not always see these as similar), without the influence of social, economic, and, I would add, ecological processes at multiple scales.

Bertell Ollman and Henri Lefebvre, perhaps more so than Massey, treat *space* and *place* as dialectical relatives. If we think of the dialectic as the methodology of studying abstractions, with the hope of understanding structures of momentary stability,[150] we can begin to understand *place* as a kind of abstraction *in* space. Ollman reminds us that dialectics is a methodology that seeks to expand our notion of what any one thing includes. If place is our *thing,* the dialectic says that we can only understand what it is if we understand, or at lEast study, "both the process by which it has become that and the broader interactive context in which it is found."[151] It is through this method that I am seeking to understand the RC as both a 'thought object' and a 'real object',[152] where the latter can only be shown after the work of historicizing it. From Ollman's perspective, dialectics is the science of "replacing the commonsense notion of "thing" with notions of "process."[153] Lefebvre uses this methodology, perhaps unintentionally at times, describing place through his delineations of space. He writes, for instance, that "Any 'social existence' aspiring or claiming to be 'real', but failing to produce its own space, would be a strange entity, a very peculiar kind of abstraction unable to escape from the

[148] Escobar 1995: 32.
[149] Massey 2005: 102.
[150] By this I simply mean that no existing place, be it the American embassy of Budapest, Hungary, or the Redwood National Forest, is stagnant and unchanging. In fact, any number of events could happen in each place to render it unrecognizable in short order. Place is thus always changing, because space is always changing.
[151] Ollman 2003: 13.
[152] Sayer 1992: 46-48.
[153] Ollman 2003: 13.

ideological or even the 'cultural' realm."[154] In my own reading of his work, "own space" can easily be transposed into 'place'.

Not unlike Ollman's insistence that thingness is but an abstraction of momentary permanence, Harvey points to *place* as the "locus of change," but changes that, following the rise of capitalism, are rarely based on purely localized processes. He writes:

> "Capitalism is under the impulsion to eliminate all spatial barriers, but it can do so only through the production of a fixed space … Capitalism thereby produces a geographical landscape … appropriate to its own dynamic of accumulation at a particular moment of its history, only to have to destroy and rebuild that geographical landscape to accommodate accumulation at a later date."[155]

In this age of intensifying anti-globalization, this harsh reality is often jettisoned for a discussion about place that lives outside the bounds of capital, or 'beyond capital'. The stifling fear of universalization of the global sometimes leads to a trap where only the local is considered, in which case the local, the global, and everything in between is given less than adequate agency. There is a negative relationship between the local and the global, where focusing too specifically upon the local underplays the global, and vice versa. Sadly, I think Harvey is correct in his assertion that the 'dialectical oppositions between space and place' are embedded within a floating knot of relations that involve, for better or for worse, "underlying capitalist imperatives to accelerate turnover times and to annihilate space by time."[156] Nevertheless, this reality does not, contrary to what some have argued, unsettle the importance and ongoing development of place. Anna Tsing beautifully reminds us that "Capitalism, science, and politics all depend on *global connections*. Each spread through aspirations to fulfill *universal* dreams and

[154] Lefebvre 1991: 53.
[155] Harvey 1996: 412.
[156] Ibid.

schemes. Yet this is a particular kind of universality: It can only be charged and enacted in the *sticky materiality of practical encounters*."[157] One interpretation of Tsing here is that we must think relationally and dialectically if we are to get at how and why crises occur in the way they do.

There is another argument that can be utilized to better situate the complex machinations of placemaking. That is the notion that *space* invested with meaning becomes *place*. How and what meaning is invested into already existing space and/or place? What if the *space* in question was already a *place*? That question holds a lot of importance, because Indigenous space in redwood country was/is already highly invested with meaning, meaning that was/is systemically expropriated during the genocidal practices of Euro-American settler-colonial 'place-making'. I am reminded of Wolfe's contribution that 'invasion is a structure, not an event'.[158] Wolfe is attempting to ward readers off from the trap of thinking of 'invasion' as something that happens and then is over. His sentiment is not lost on this reader, but I think it is both an event and a structure. To put it another way, settler-colonial invasion is a dialectic between event and structure. My agreement with Wolfe on his general intent – that invasion does not end – seems to show a bit of a counterpoint to Massey. Where she goes to considerable lengths to argue that in discussions of the global, place becomes the 'victim,'[159] in the context of settler-colonial invasion, place does in fact become the victim, though not of 'globalization'. Instead it is the victim of the expansion of capitalist empire. Interestingly, in thinking about the Redwood Curtain, as a place, it is directly altered and even controlled from far beyond the local, or in fact *only* conceivable from within the local. This also depends greatly upon the temporal framing one is considering it. In other words, the RC is only visible as a physical barrier if we narrate its history in relation to the rise of the RC as a socio-cultural artifact of settler colonization.

[157] Tsing 2004: 1 (Italics are mine).
[158] Wolfe 2013.
[159] See above.

The preceding discussion has been meant to outline the ways the RC can be understood as a *place* in two distinct ways: as a physical obstruction to Capitalogenic expansion of the commodity frontier,[160] or a *socio-ecological barrier,* and as a popular imaginary that places Humboldt firmly within some American settler imaginaries[161] a marker of *socio-cultural isolation,* to which I turn now. The former constitutes the massive red wall of trees and its underlying forest floor that made traversing past it into the more hospitable openings for settlement virtually impossible. The latter constitutes not only the geographical isolation of the area, but the economic and social dissociation from the rest of the California economy, which becomes particularly clear in the first few decades of the 20th century. In the remainder of this chapter, it is the RC as socio-ecological boundary that I claim was 'removed.' The capitalist investment of meaning into what the Euro-American settlers saw as under-utilized, even wasted, space was predicated on the removal of existing meaning. To show this, however, we must also examine in some detail the more recent historical phenomenon of the RC in its socio-cultural iteration.

The Redwood Curtain as Socio-Cultural Isolation

The Redwood Curtain is frequently used as a signifier for the far Northwestern tip of California.[162] It is, as I have already lain out, an area that is geographically removed from the core of the state. In its contemporary manifestation, it is thought be specifically connected to Humboldt County, and its off-the-gridness.[163] There is a long and largely under-emphasized history of post-industrial urban-rural

[160] Toivanen and Kröger 2018; Schindler and Kanai 2018; Moore 2015, 2000; Wallerstein 1976, 1980, 1983, 1989; Braudel 1982.
[161] This is fleshed out later in the essay.
[162] Flinn 2003; Nicks 2010.
[163] The phrase here is meant in the form used to denote moving to less populated areas and becoming self-sufficient. See for example Vannini 2015. It is not to be confused with the idea of "off-the-grid" being homes using non-gridded energy sources, such as solar. In many cases, "off-the-grid" means both things, but in this case, I am specifically suggesting the former.

migration to dislocated places like Humboldt,[164] seeking a way of in the supposed bareness of raw nature. With the onset of the 1960s 'back to the land' movement,[165] many of those fleeing Southern California and other urban spaces for the 'wide-open spaces' of the Humboldt hills, were fleeing not only urbanity, but law, order, and social participation and obligation. A recent documentary series, *Murder Mountain*,[166] plays deeply, and at times quite sensationally,[167] upon Humboldt's isolation and what it calls the 'culture of disappearance,' the people who go to Humboldt to 'disappear' because they want to get away from life somewhere else. It may be worth considering this phenomenon a different kind of 'removal' of the RC as a physical barrier. By migrating to Humboldt, many of these neo-settlers, knowingly or otherwise, pay no attention to the bodies, (i)ndigenous and Indigenous, that were removed to produce space for them to deploy an 'outlaw' lifestyle.

There are more 'missing persons' per capita in Humboldt County than any other county in the state of California.[168] According to private investigator Chris Cook, "Humboldt's a great destination to find yourself. The redwoods, the mountains, the rivers, the ocean. It's the most beautiful place in the world … But, there's a million places to disappear."[169] Much has been made of the isolationist pot growing history in Humboldt,[170] something that reeks of a kind of colonial lust for a time lost. Cyrus Allen, a local longtime pot farmer, well-intentioned, displays his colonial mentality. Speaking about his original venture behind the RC, he states "what allured me … was the idea of living in the great outdoors, off the grid, being self-sufficient, that kind of thing. Things that are harmless, really."[171] The initial genocidal removal of thousands from the Indigenous community, previous to the creation of

[164] See Siegler 2017 for a good example of the phenomenon.
[165] Brown 2011.
[166] Murder Mountain, directed by Joshua Zemen (2018; Singapore: Netflix), Video.
[167] For a local response to the sensational quality of some of the ways the documentary describes life in Humboldt, and particularly the role of the pot industry, see https://lostcoastoutpost.com/2019/jan/4/op-ed-what-netflix-series-murder-mountain-got-wron/
[168] California Department of Justice, *Reports of Missing Adults by County*. https://oag.ca.gov/sites/all/files/agweb/pdfs/missing/adults/adult-reports-cnty-2018.pdf Accessed on July 6, 2019.
[169] "The Redwood Curtain," 2019 episode of *Murder Mountain* (Netflix, 2018).
[170] Kaufer 1984; Brady 2013; Sullivan 1986; Regan 2017.
[171] "The Redwood Curtain," 2019 episode of *Murder Mountain* (Netflix, 2018).

the settlement area called Humboldt County allowed people like Cyrus to join the "back to the land movement"[172] by breaching the Redwood Curtain. Thus, the supposed harmlessness of the modern-day "outlaws" of the Humboldt Hills is predicated on the existence of more than 150 years of violent land and resource expropriation that was made possible by organized genocide. Braun is instructive here, writing that white people's exploration of Indigenous land (which he was identifying through the lens of such activities as ecotourism) makes evident the "ideological formations of modernity that produce subjects who experience the present in terms of loss."[173] Importantly, this notion of dealing with the present as a time of loss can be interpreted as not only relevant to Indigenous people who have lost land – and as I will write about later, gained back through struggle – but for rural people of all races and cultural lifeways who believe that something about the present moment is lacking what a much earlier historical moment may have held for them. Braun's notion of the longing for a simpler, more unspoiled past, is deeply connected to the violence of non-Indigenous people invading for the purposes of making a life not available where they are from. Later, I will describe this process of producing space through the colonial apparatus as a major aspect of the inherent 'exterminism' of capital.

The genocidal destruction of huge swathes of California's Indian population between the years 1846-1873 was a continuance of a "pre-existing trajectory,"[174] established during the earlier colonial periods, most notably during Russian-Hispanic domination (1769-1846), just as California was to become a US state. The Indigenous population at that time dropped from as much as 310,000 to

[172] This is not to say that many of those modern settlers had only the best of intentions when arriving into the hills of Humboldt County, but it is to say that the very idea of being able to leave one's life behind, to go live in some wild oasis that is devoid of law and custom, and to bring it under one's own control, is precisely the settler's vantage point. A crucial difference between the 'back to the landers' and the early Euro and American settlers was that many of these people came with a sense of respect for the Indigenous peoples and indigenous plants of the temperate rainforest ecosystem they were about to move into. What they didn't have, and continue not to have, however, is the understanding that they are settling the mountains of Humboldt for its resources, one of them being 'wide open spaces'.
[173] Braun 2002: 111.
[174] Madley 2016: 1.

150,000.[175] While the settler-colonization of Northwestern California is quite unique in many respects – which will be discussed herein – it was nevertheless a continuance of established policy in previously conquered parts of the modern world, especially evident in Spanish America. Bernal Díaz del Castillo of Spain, wrote of the arrival in America as a mission which was "to serve God and His Majesty and also to get the riches."[176] More similarly to the structure of settler colonization was the already established approach exercised in the Dutch colonization of Java in the 17the century, where "land control superseded species and labor control as the key to the state's forest policy."[177] One of the basest goals of settler colonization in the case of the Northwestern California is the initial appropriation of forested land, for that was most often the location of long-established Indigenous communities, which also were the locales with the most abundant riches of raw materials and food. Included among those riches were animals and trees. As stated by forest historian Robert Pogue Harrison, "In other parts of the world and at other times in history humankind had exterminated species and subjugated nature to its own ends, and systemically at that."[178] The ways in which old-growth redwood trees were dealt with mimicked the ways in which many hundreds of thousands of indigenous bodies were dealt with – they were removed. The American 'war of extermination'[179] against the California Indians[180] was also, by extension, a war against coast redwood trees.

[175] Cook 1976. Cook is considered by many scholars of Northern Californian history to have done some of the most accurate estimations of the pre- and post-invasion Indigenous populations available in the historical record. See Madley 2016; Anderson 2005; Lindsay 2012, all of whom utilize Cook's estimates. Another estimate of population that is used, which I found in Anderson's work, is that of Kroeber 1962, 1976. That said, it is also widely acknowledged that it is hard to know with a strong degree of accuracy what that initial population was, because Indigenous peoples themselves did not keep clear records of this kind of data.
[176] Díaz del Castillo et al. 1967.
[177] Peluso 1992: 50.
[178] Harrison 1992: 92.
[179] This term was used routinely in government and journalist accountings of the colonization of Northwestern California. See Madley 2016: 86, 88-90, 144, 164. Brendan C. Lindsay has rightfully referred to the government-backed militias who carried out the killing as "democratic death squads." See Lindsay 2012: 179-80.
[180] Here I use the term Indians, because that is the official and common term used then, which was the "war of extermination against the California Indians."

What is by far the most common understanding of the Redwood Curtain comes from the Cold War. Whereas the Iron Curtain separated Eastern and Western Europe, the RC separates Northwestern California from the rest of the state. In the simplest sense, the RC is the underdeveloped[181] tri-county (Mendocino – Del Norte – Humboldt) area that exists between the Northern tip of Mendocino County to the extreme Northwestern border of California – marked by the economically challenged towns of Eureka, Arcata, and Crescent City, all of which are within Humboldt County.[182] A nearly constant influx of tourists to see the redwoods during the spring, summer, and fall[183] provides a larger and ever-increasing portion of the economy.[184] Whereas fishing and logging once provided the majority of the jobs in Humboldt County, today the top employers are in the educational and health care industries, neither of which provide the amount of family-supporting jobs that the previously dominant industries did.[185] In fact, there is a small stretch of old fishing hamlets and post-logging boom towns that dot what is known as the Lost Coast,[186] including Petrolia, Shelter Cove, and Whitethorn, all towns that became drastically depopulated once Highway 101 was built without roads to connect them to it.[187] To this day, during certain months of the year,

[181] Smith 1984: 3-9, 50, 93, 122-23, 150-52, 186-88; Rodney [1972] 2011. Rodney is particularly relevant here, because his viewing of 'underdevelopment' as a process and structure is highly relatable to settler-colonialism as a structure as well. In both cases, the cite of exploitation and appropriation is also the site of systemic downgrading of land and people to expedite the production of commodities.

[182] In the case of both Crescent City and Eureka, tourism has managed to keep these economies from completely taking, but evidence is everywhere of the dire separations between the rich and the poor in these communities, from the boarded-up K-Mart in Eureka, to the massive homeless shelters in Crescent City. See *Lost Coast Outpost,* July 7, 2017.

[183] Most of which are second and third generation, produced only after vast swathes of old growth redwood stands were turned into plantations during the wood boom of the 1930s-1980s.

[184] It must however be noted that at the time of the writing of this manuscript, the Covid-19 crisis has likely caused great damage to the tourism economy of Northern California generally and specifically to Humboldt County.

[185] See "Eureka County California Community Profile https://web.archive.org/web/20060930124329/http://www.nwfsc.noaa.gov/research/divisions/sd/communityprofiles/California/Eureka_CA.pdf. It is also important to note, however, that with the legalization of marijuana and a robust microbrewery industry, there are some optimistic aspects of the Humboldt County economy. See Mintz 2018.

[186] Importantly, the Lost Coast is not named as such because it is a bit hard to find – though it certain is – but because it was essentially left behind when HWY 101 became the main way for resources to come in and go out of that region. Even before that, the area had seen a precipitous drop in population during the 1930s. See Bright 1998.

[187] By the 1930s, it became clear that the State of California was not going to build connecting roads to and from HWY 101 for these towns, and so virtually everyone left. See Carranco 1982; Bright 1998.

Shelter Cove is only reachable by four-wheel drive, all-terrain vehicle (ATV), by sea, by air, or on foot.[188] Pictured below are two images from the region, which give a sense for its remoteness.

Image 1. An abandoned property on a dirt road, leading toward the Lost Coast. This image is highly representative of the isolation behind the Redwood Curtain. Image taken with a Sony A33 DSLR camera.

Image 2. A view of Black Sands Beach from the Lost Coast Trail. This beach is reachable, to this day, only on foot, by seafaring vessel, or flying apparatus. Image taken with a Sony A33 DSLR camera.

[188] I was there only in the summer, so I was able to get to most places without much trouble. However, even then I required an all-wheel drive car to make it down from HWY 101 to the Lost Coast Trail, where I camped for seven days.

Still other meanings have been invested in the creation of the RC as a socio-cultural zone of isolation. "This is Humboldt, man!" That was a common refrain I found when I was talking to people there about the violence and homelessness that I encountered in my time there.[189] At one point I was staying at a campground in Arcata, CA, where a two-man team of "tree-fellers"[190] were living for an extended period. I collected many anecdotes from these young men, but two stand out as remarkably representative. The first was a conversation I was having with them in the evening after they came back to the campsite with two large male deer roped to the front of their pickups. I had learned that many times, the work they were doing was unsafe, not only because it was so physically demanding, but because they were often felling trees on property bordering illegal pot growing sites, so I was curious how they hunted, while on the job.[191] I asked "How do you hunt? Do you use a rifle?" One tree feller, whom I came to know quite well, said, "Nah man, I use a bow. A rifle is white-boy shit."[192] He went on to tell me that when guns go off, you have to worry about the pot growers coming down from their plots on ATVs with M-16 rifles strapped to their backs.[193] I later learned that feller was of Yurok ancestry and in fact lived on Yurok Nation land, which stretches down from their ancestral site of Requa at the mouth of the Klamath River, SouthWest down to the small bay called Trinidad, just above the town of Arcata. The Yurok Tribe has historically suffered intense losses of land and

[189] Between the months of June and September of 2017, I spent more than 45 days camping up and down the coast, between the Northern edge of Mendocino County and the far Northern tip of Humboldt County. My aim was to embed myself in the local culture as much as possible. There were many nights I slept in my car on one of the endless side roads that surround Arcata and Eureka, when I saw levels of despair and economic precarity that I had not experienced anywhere in my travels. In one case, the only reason I was not robbed at gunpoint in the middle of the night was because my dog Zoli growled viciously through the window of my car at a would-be thief, no doubt targeting my camping equipment. The gun in his pants pockets was clearly visible.

[190] This was the term they preferred. They specifically objected to terms like "logger" or "lumbermen."

[191] I knew, from seeing them in the morning, that they were in fact working that day.

[192] This conversation took place at Redwood Coast Cabins and RV Resort on Sunday, August 13, 2017. I have purposely kept the names of all those I talked with anonymous, both for safety reasons, and in order to be as unobtrusive as possible. Many of these workers are nomadic workers, living in RVs for most of the working season, and the few remaining jobs are precarious at best. In many cases, workers I talked to explained that they must be "on the road" for most of the Spring and Summer, in order to be in "the right place at the right time." This is largely because the companies hiring them do not offer salaried positions, but hourly paid positions.

[193] I also witnessed this on multiple occasions when I was seeking old growth redwood stands to take pictures of.

resources, particularly affecting their lifeways that rely upon the robust salmon population of the Klamath river and its connected tributaries in the Trinity-Klamath area.[194] In this case, we get a sense for how the physical isolation of Humboldt plays into its cultural construction as well. In a separate conversation, he describes having the "pleasure of felling an old-growth redwood."[195] His enthusiasm for the tree and working within its location was obvious, and he is clearly not alone.[196]

This personal experience in redwood country illustrated that that tree-felling woods workers are not hungry to cut down all the trees they can find, contrary to the belief of many in the environmental activist community.[197] Where many in that community paint "loggers" as little more than profit-hungry destroyers of precious resources, it is often the owners of the land upon which they work who appear the most brutal and ecologically uncaring in their approach to land management. In many moments, I talked to forest workers of various backgrounds who expressed, in some cases, outrage at the rate at which the companies they worked for cut down old-growth redwoods. It was common in our conversations to hear the tree fellers talk of how much more difficult it became to be employed in the industry after the corporate takeovers in the 1950s. Even though most of the tree fellers and other loggers working today were not around to witness the early takeovers, they have likely heard the stories and some may have experienced the latter round of takeovers in the 1980s.[198] Another way to understand this is to say that the social and cultural lifeways of a tree feller does not automatically align with the economic and social orientations of the corporate logging operations that came to dominate redwood country, something that other scholars have sought to

[194] LaDuke 2002; Jenkins 2011.
[195] This conversation took place at Redwood Coast Cabins and RV Resort on Wednesday, August 16, 2017.
[196] In speaking with him, I developed an understand that was working *with* the tree to take it down. as opposed to working against it. He did not, however, say directly that was how he was approaching it, so this was projection on my part. While more likely the subject of a different paper, this was one of the more intriguing interpretations I was met with while being in that space.
[197] Speece 2017.
[198] Before that time, there were many small, family operated sawmills and logging operators dotting what it today is the Tri-County area of Mendocino, Del Norte, and Humboldt. See Cox 1974; Rajala 1998; Widick 2009; Speece 2009, 2017.

document as well.[199] One might say that the many who work in the wood and pulp industries were, like the environmentalists before them, against the corporate take-over of Humboldt County logging, only for differing reasons.

Long before the 1960s counter-cultural invasion of the Emerald Triangle, and even before the settler-colonization of Northwestern California, it was not wood, but furs and pelts that brought would-be exploiters to the shores of Humboldt.[200] It was a wood rush, however, that the Gold Rush ushered in, for up until the middle of the 18th century San Francisco was little more than a "tent city of some six thousand people," with a small demand for timber. Wood for cooking and small buildings was not hard to come by and large planks for large structures were not yet needed. All of that would change drastically with the massive influx of Gold Rushers between 1848 and 1852.[201] Interestingly, the gold fields in Oregon has already been fairly well depleted by this time, and the ability to cut down large trees and export them had begun to be learned farther up the Pacific, so many of the people we might call the "wood rushers" did not actually come from the East, but from the North. The wood went to supply everything from railroad ties to housing shingles, with prices telling the story of capital making the redwood rainforest work for it. The *Californian* in March of 1848 reported that the price of California pine and redwood went from $40-$50 per thousand board feet, to $300-350 per thousand in August. $750 per thousand was not unheard of by midyear.[202]

The Redwood Curtain can be understood as a *socio-cultural barrier* to inclusion – of what lay behind it – to the trade relations within and beyond California. However, high levels of poverty still

[199] Speece 2017; Rajala 1998. Further, it was very clear in our conversations that the history of the Humboldt County lumber industry was verbally passed down from generation to generation of workers. It was rare to meet anyone who could not have a well-reasoned conversation about the role of Pacific Lumber, Maxxim, Humboldt Lumber, and other companies that have operated over the past 100 years.
[200] The Emerald Triangle is the common term for the tri-county area, where close to 90% of American marijuana is grown. Alderpoint, the small town where "murder mountain" is located sits right at the epicenter of the Emerald Triangle.
[201] Cox 1974: 46.
[202] Ibid: 47, n. 4.

persist in Humboldt County, as well as what Haraway recently called "forced homelessness."[203] Whereas Haraway is referring to the changes in multispecies migration patterns and the (in)ability for mothers to feed their babies, brought on by the climate crisis, in Humboldt this tends to arise through the forced dislocation of often young, counter-cultural people, who can't seem to find a 'place' to fit in, or the money to house themselves in an increasingly costly outpost.[204] In this sense, the geographical isolation of Humboldt County is only secondarily important, whereas the socio-cultural isolation stands out, made ever clearer by the normality of counter-cultural cleavages among the homeless, evidenced by the frequency with which homeless youth, for example, are homeless partially by choice. Some I met called it "hoboing," to highlight that they are choosing this lifestyle against the societal requirement to live in a more typical domicile, work a typical job, and depend upon a regular income. That said, the geographical isolation of the Redwood Curtain gives rise to the cultural isolation that it is more well-known for. The history of settler-colonial invasion provides many needed nuances to the story.

The Redwood Curtain as Socio-Ecological Barrier

Settler-colonial invasion and occupation is the root of the Redwood Curtain as a social and ecological barrier to appropriation into the capitalist world-ecology. It is important also to note that there were many Chinese immigrants to California who made their way up to the gold fields of Northwestern California as well, only to be expelled from Eureka as the gold became scarcer. White violence against Indigenous people thus translated into violence against any people who stood in the way of profit.[205] Many of the systemic foundations that later ecocidal land management processes[206] were founded

[203] Weigel 2019.
[204] O'Shell 2004; Amster 1999, 2003.
[205] See "Immigration, Expulsion, Homecoming" http://www.clarkemuseum.org/immigration-expulsion-homecoming.html.
[206] Here I am thinking of clear-cutting, slash and burn, and high-forest managements systems implemented by many professional silviculturalists during most of the twentieth century. See Smith et al. 1997: 16, 196-7, 302-3.

upon were unwittingly brought to the shore of Humboldt Bay by settler-colonists who genocidally massacred the women and children on Dulawat Island in 1860. To be fair, they could not have known that their social and scientific beliefs regarding the redwood forest were so ecologically unsound, because little was known or acknowledged about ecosystems[207] by that time, especially on the Western frontier. Ultimately, the trees that looked down from 350 feet in the sky, just across the Humboldt Bay from Duluwat Island, stood in the way of the further inland domination of the landscape by these early settlers and gold rushers. This is the Redwood Curtain as a *socio-ecological barrier*.

Crucially, the systemic requirements of capitalism, settler-colonization, and scientific forestry (outlined in Figure 2 below) created the conditions for the inevitable removal of (i)ndigenous ecosystems, what I consider to be evidence of *systemic extermination*. If we think of the capitalist world-ecology as a kind of 'base' to a superstructure, which includes the internal relations of both settler-colonization (which, again, is a structure as well) and scientific forestry, the image helps us visualize the 'systemic' extermination of life (plants, animals, and humans). Of particular importance in this model is the *zone of shared internal relations,* which I view as the combined mechanism through which the capitalist world-ecology appropriates nature (human and not human), making it work to produce capital. For example, in scientific forestry it is necessary for occupied land that is uncommodified to be transformed into 'property', through processes of the making legible of specific spaces of land. This 'de-communalization' can also be understood as the expropriation of communal ownership of land into the individual ownership of pieces of land, or 'tracts' of land. Further, 'management units' (a technical term often used by professional foresters to describe relatively homogenous parts of a larger heterogenous stand of trees)[208] are themselves examples of a way land becomes commodified

[207] In fact, the term "ecosystem" as not entered into the lexicon of forest science until Tansley used to counter the prevailing viewpoint based on Clements's "succession" theory. See Clements 1936; Tansley 1935. Even though Tansley published his work earlier, the contestations between the two camps hand gone on for a long time. In short, there is no way that settlers or even early forest managers in the redwood region would have had even the slightest technological knowledge in this regard. Of course, the absence of a word does not thus mean the absence of a concept.
[208] Smith et al. 1997: 385.

under capitalist management systems, such as modern silviculture. To slice and dice land into individual parcels, often mimicking the straight lines like those found in many cities, as well as in agricultural land, to be managed for the purposes of the capitalist production of space, is also to simplify a complex system; a naturally chaotic, always fluctuating ecosystem. While the typical rectangle and square shapes found in farming territories were not employed in the redwood forested areas, the idea of simplifying their complexity through land-management systems was central to the development of commercial timber in the area.

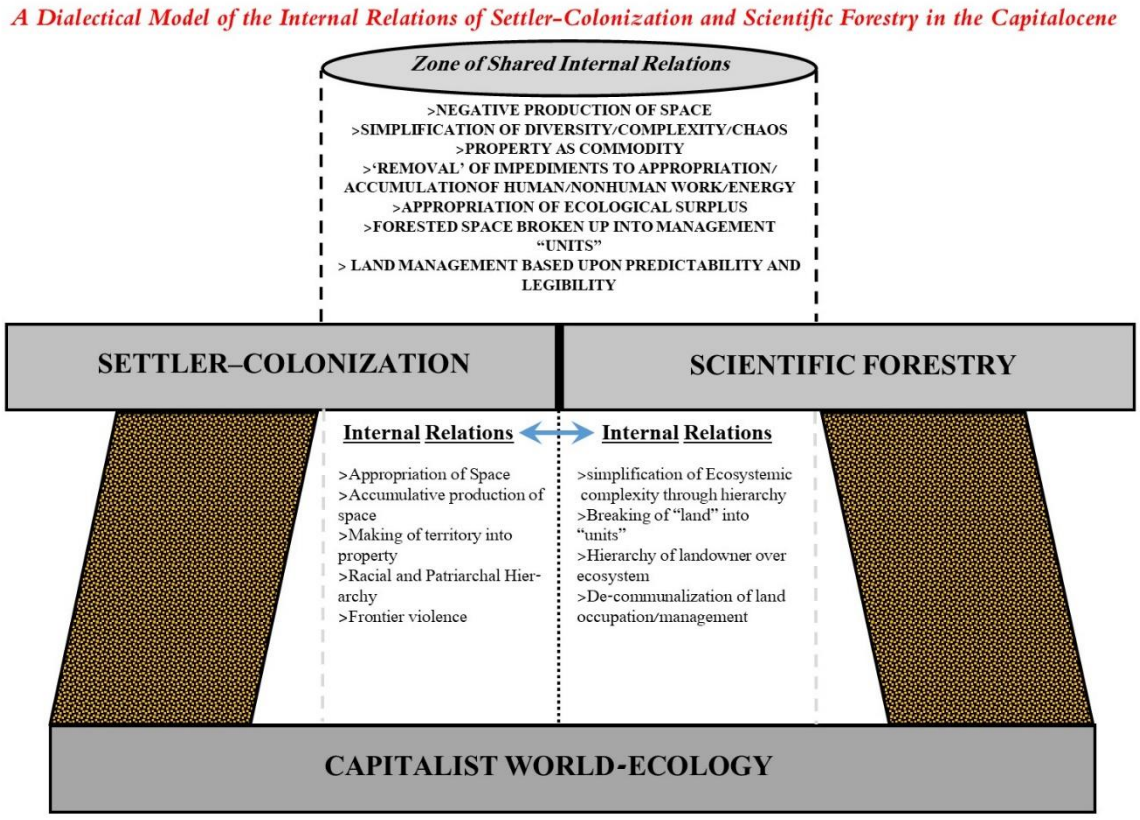

Figure 1. Dialectical Model of Internal Relations between Settler-Colonialism and Scientific Forestry. Internal relations constitute the 'systemic'. This model seeks to show the overlap of these processes via the 'zone of shared internal relations.'[209]

[209] Not all aspects of this model are represented in this chapter. Specifically, 'negative production of space' and 'appropriation of ecological surplus' are hinted at here but are more thoroughly explained and utilized in a later chapter.

Invading settler-colonial occupiers of Northwestern California arrived with a conception that the ancient coast redwoods were old and in the way. To the forest managers who would come along in only a few decades, they became unproductive wasteland that needed to be razed. Indigenous bodies were treated in a parallel way by settlers, as blemishes that needed to be 'removed', 'cleared', 'eliminated', and 'extinguished', all words that come up frequently in the historical documentation of occupation and conquest of the American West.[210] According to California's first and newly-minted Governor – once a lowly Oregonian forty-eighter[211] – extinction was 'inevitable' for the American Indian. In a nearly forgotten declaration, he stated that "The inevitable destiny of the race is beyond the power or wisdom of man to avert,"[212] clear evidence that even as early as the first Administration of the State of California, the myth of inevitable extinction of Indigenous peoples[213] was already being swiftly put to work for capital. This will be explored more deeply in the next two chapters. However, it is worth pointing out that the general Christian belief that settlers held about Indians – that they were an already "inferior, dying race"[214] – was used as a precondition for violently moving them out of the way of the raw materials and other resources that invading settlers needed to advance the capitalist way of life.

The American 'war of extermination' against Indigenous people, already well under way to the East, was kicked off in California around the Yosemite Valley, then down to the Sacramento River Valley, where Johann Sutter's infamous report laid bare the realities of the exterminatory violence

[210] Anderson 2005: 104-5, 156-57 (uses of the words "eliminated" and "cleared," as well as "removal," which was the common term for moving Indians to reservations); Madley 2016: 90-1 (use of the words "eliminated" by gold miners in 1849). Also see Lindsay 2012 for extensive analyses of the uses of these words by settlers, as well as government officials in reference to, for example, "conditions for guilt-free massacre" (p. 35).
[211] Madley 2016: 67-68, 90. The terms *forty-eighters* and *forty-niners* are meant to depict early gold rushers who were seeking wealth as fast as possible. They were often highly prepared, weaponized, and willing to engage in violence to get to the territories they knew had gold.
[212] Burnett 1851.
[213] Madley 2016: 186; Lindsay 2012; Brantlinger 2003.
[214] Lindsay 2012: 43.

about to come.[215] Theodore T. Johnson and Heinrich Lienhard summarized the report soon after he made it, pointing to the well-known intentions of White settlers to "Kill every d-Indian you can find."[216] The Wiyot massacre of 1860 on Duluwat Island in what is today Arcata[217] marked the expected extension of that exterminatory war into the far Northwest of California, which would include several more massacres on the same day.[218] Often overshadowed or downplayed in the history books of the California genocides is *capital's* 'war of extermination'. The reluctance to name the socio-economic system under which the violence of settler-colonialism was carried out is troubling, for in California the Euro- part of the Euro-American invasion of Indigenous place is lost in discussions of culture that do not interrogate European colonization in relation to historical capitalism.[219] Further, there is a tendency to leave out the role of the removal of (i)ndigenous bodies. Capital's war of extermination was *also* against (i)ndigenous plants and animals, but that would come later.

Genocidal violence, aided by the policy of Indian removal, accomplished the solving of the 'Indian problem', or Indigenous resistance to settler-colonial terror to a high enough degree to which the settler-colonial state felt it was in position as conqueror. As stated in an editorial in the *Northern Californian*, written following a retaliatory massacre by Indians:

> "The people of this county have been long suffering and patient. They have had homes plundered, property destroyed, and lives of friends sacrificed. The protection of a Federal force had been found inadequate and when volunteers have been raised and the captured savages placed on reservations, by some defective screw in the Federal machinery they have escaped."[220]

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[215] Johann Sutter built a small empire based almost exclusively upon "unfree Indian labor," as described by Madley 2016: 52. He was also known to have bought and sold Indians, based upon an indentured servitude structure. For a recounting of some of Sutter's own memories, see Sutter 1876: 14, 45, quoted and cited in Madley 2016.
[216] Johnson 1850: 140; Lienhard 1846-1850: 186.
[217] *Humboldt Times,* January 20, January 27, February 3, May 26, August 11, 1853; October 4, 1856; October 30, 1858. In these many accounts, it is vehemently clear that journalists and citizens expected this violence for some time and were not surprised by it, even when clearly horrified.
[218] Lindsay 2013: 327.
[219] Exceptions are found in the work of the cultural Marxists, like Stuart Hall, Raymond Williams, and to a degree Terry Eagleton as well. However, in these cases, settler-colonialism, particularly in its Western American version, is not a subject they place strong emphasis on.
[220] Harte 1860.

This response of Indigenous people to the violent taking of land and in many cases the brutal murders of their family and friends was often referred to as 'the Indian problem.'[221] One might suggest that the settlers needed to rid themselves of what stood in the way of complete outright appropriation of (i)ndigenous land and resources, namely Indigenous bodies.[222] With the 'Indian problem' dealt with in their minds, what was left could be called the *old-growth problem,* or the inconvenient knowledge that there was as much production (from an ecological standpoint) in the temperate redwood rain forest from death and decay as there was from new growth. This tendency to see death and decay within an ecosystem as wasteful and even 'decadent' had already surfaced in the early response of the Federal foresters of Oregon many years earlier.[223] Where there was a lack of understanding of the complexity of Indigenous management of the redwood so too was there a lack of understanding of the complexity of the ecosystem it was a part of. To make the redwood region profitable for the settlers, the old-growth (the death and decay) needed to be removed as fast as possible, so that new young, healthy, productive trees could be planted, and spaces could be opened for agriculturalization – accumulative spaces.[224]

This *old-growth problem* I am referring to is linked to the problem of very slow – comparatively speaking at lEast – rate of production within an ecosystem. Ecological production is accomplished over the sometimes extremely long timeframes of life and death of plants and animals in the forest. Of course, these timeframes can be very short, depending upon the species under consideration, but regarding redwood trees it is decidedly long stretches of time. The ecological timeframes of old-growth redwood forests are perfectly applicable to the complexity and chaos of production and reproduction, before the arrival of capitalist logic, but highly deterrent to the making of profit in the short-term

[221] Widick 2009: Ch. 4.
[222] This is not to say that all Indigenous people have been erased from Humboldt County or any other place in the world. To do so would be naïve at best, and rhetorically violent at worst. The point here is that enough bodies had to be removed, so that White settlers could gain relatively unimpeded access to the resources the land had to offer.
[223] Hirt 1994.
[224] Lefebvre 2014.

timeframes of capitalogenic production and reproduction. From an ecological perspective, 'production' is as much part of the process of decay of dead and dying life, as it is the establishment of new life. A branch that has fallen to the forest floor, due to anything from rot to a lightning strike, does not just sit there dormant, doing no work. To the contrary, this decaying branch, sometimes hollowed out by various wood-consuming creatures, becomes a home for many different species, as well as eventual material added to the forest litter.

Before these (i)ndigenous plants, such as tanoak, coast redwood, and black oak, could be removed and/or utilized for the creation of capital, the Indigenous bodies had to be removed. This is the first major 'act of removal' on behalf of the American government. It would take a lot of technological and infrastructural development to bring about the razing of 1200 year old redwoods that were teenagers when Genghis Khan was invading China. Very crude, murderous technologies were needed to cause Indigenous people to suffer enough to be more easily removed. Nevertheless, the systemic extermination of 350-foot-high trees would come in less than one-hundred years. In the next two chapters, several different methods of this 'removal' by systemic means will be discussed in historical detail. Indians came first on the list of what needed to be dealt with decisively for Euro-American capitalist culture[225] to be implemented.

[225] Here specifically I am thinking of "culture" in the sense of capitalism as not just a system but also a "dominant culture" as Widick has called it. See Widick 2009: 52.

Chapter 4: Expropriation of the Redwood Curtain

Bribery and deception traverse the history of the American treaties with the Indigenous, beginning with the notion of the "tribe." No equivalent word exists in the Indigenous languages of Northwestern California,[226] but it has a modern linguistic history in Western culture, dating back to mid-thirteenth century Old French, *tribu,* coinciding with one of the three ethnic divisions of the original Roman state.[227] The Western and European concept of the 'state' was historically developed in direct response to the rising class antagonisms created by slavery, private property, and the formation of structural racism and patriarchy.[228] As Neil Smith puts it, "its function was to arbitrate the resulting conflicts in favor of the ruling class while presenting itself as "above" society."[229] The would-be 'ruling class' of Northwestern California (in tandem with the core countries of the capitalist world-system)[230] entered as the migrant settlers of the 1850s. Many arrived poor, put they were already in a position to take power over the existing population, giving them the privilege of profiting from appropriation and exploitation. One of the key civilizational techniques of establishing that dominance was through the removal of Indigenous bodies that stood in the way of the removal of (i)ndigenous plants and animals that would be needed to build the new capitalist society that would eventually become the society and economy that existed behind the Redwood Curtain, what many refer to as the Redwood Empire.[231]

For the early colonizers of the United States, however, the term "tribe" was understood to linguistically mark the Indigenous communities that appeared to them to be homogenous, living on the same tracts of land, and appeared to adhere to the leadership of a "chief" of some kind.[232] As the

[226] Heizer 1972: 6; M.K. Anderson 2012.
[227] Gibbs N.D.: 110.
[228] Gilio-Whitaker 2019.
[229] Smith [1984] 1990: 109.
[230] Wallerstein 1989.
[231] This is a term used commonly to label the entire North Coast of California, from San Francisco to the border of Oregon. However, it was the redwood lumber industry that fueled the rise of the North Coast economic boom between the 1930s and the 1980s. See Nixon 1966 for an overview its historical ideation.
[232] Heizer 1972: 6.

conquest matured, so did the meaning of the term "tribe." This is made evident in the way in which it was used in the Indian Reorganization Act (IRA) of 1934: "any Indian tribe, organized band, pueblo, or the Indians residing on the reservation."[233] In other words, once an Indigenous community was deemed sufficiently homogenized, located in a central area – even if by removal to a reservation – and displayed a kind of hierarchical leadership structure, they were called a *tribe*. The 'display', however, is only visible to the state. Hierarchies of all sorts already existed in many Indigenous communities, but some did not look to the settler state like the kind of hierarchy necessary to be considered 'tribal'. In some communities women held much more power to make decisions for the community than men, and this would likely look backwards to a state that was decidedly patriarchal. To take on the collective identity of a "tribe" meant that Indians could be "recognized" by the new American federal state, thus receiving basic health care and other services the state claimed "tribes" would get, though they often did not. These 'politics of recognition'[234] provided an avenue for occupying settlers and the government to physically and in all other ways isolate the Native Indian from the process of constructing the Far West in the image of Old Europe.[235] Those Indians who did not belong to or identify with a "tribe" were completely alienated, politically, from the new state of California. "Only those tribes that were *federally recognized* received services, assistance, and funds through the Bureau of Indian Affairs (BIA) and the Indian Health Service, and this was long in coming."[236] Indigenous communities that were not recognized or understood to be homogenous in their culture and their spatial arrangement, were thus not entitled to treatment by the federal government as tribes. This also shows that recognition has its own political and social politics that are not always positive.

[233] Indian Reorganization Act 1934: 984.
[234] Coulthard 2007.
[235] Wallerstein 2011.
[236] M.K. Anderson 2005: 111.

This recognition politic[237] was a centralized civilizational technique used by the federal government to separate Indians from settlers. Recognition as a "tribe" eventually meant placement on a "reservation," and it was the BIA's job to make sure that this separation happened with the lEast possible pushback from the Natives.[238] Reservations were, to say it with historical accuracy, an alternative to outright mass slaughter, "a clear alternative to genocide."[239] This idea that reservations were an alternative to mass slaughter was only logical to those making the decisions to forcibly remove Indigenous bodies against their will. To Indigenous people, however, it was merely a difference in tactic, not of kind. There was a murderous line of connection between the creation of "tribes" and the "reservations" they would ultimately be relocated to, usually against their will. Both share the dubious historical distinction of being Euro-American terms to describe the spatial relations the settlers and their government had with the Indigenous.

Indigeneity requires not just space, but place. Alfred and Corntassel characterize 'Indigeneity' as "oppositional, place-based existence,"[240] painting into Indigeneity an already active opposition to the colonial marking of Indigenous people as something 'other' than White and civilized. Colonial 'acts of removal' are clear in the removal of Indigenous people from the land upon and through which they construct their Indigeneity. There is some tension in coding 'land' as 'place' because Indigeneity itself is a concept that relies heavily on 'land' as a defining factor. That said, the connection to place is deeply coded through "kinship communities, native languages, traditional knowledges, and ceremonial practices that are foundational"[241] to how Indigenous society operates on and through land. Between 5.6 and 13 million acres of forest had been burned annually in California by Indigenous firing regimes,[242] based on traditional ecological knowledge (TEK) passed down for millennia. To visualize

[237] Coulthard 2014.
[238] M.K. Anderson 2005; Lindsay 2012.
[239] Madley 2016: 164.
[240] Taiaiake and Corntassel 2005.
[241] Byrd and Rothberg 2011.
[242] Martin and Sapsis 1992; M.K. Anderson et al. 2017.

this, we can think of a soccer pitch, which is just over 1 acre, so by some estimates, regular burning regimes were clearing 13 million soccer pitches of forest floor every year. This kind of interaction with the land is as much a part of the social construction of Indigeneity as anything else. Further, the fire ecology used in traditional management methods played a central role in how place was created out of what might first be understood as simply space. There is a more-than-human element at work here, such that fire itself can only be controlled in an approximated way. Humans can ignite fire and hold fire back, but they can do very little to control its immediate behavior. Indigeneity could, in this sense, be seen as a more-than-human concept, for it is so reliant upon the human and more-than-human interaction.

Settler occupation and colonization of already existing Indigenous place in Northwestern California could be understood as exemplifying the *expropriation of meaning* that was accumulated and invested over thousands of years. If we step back to our earlier discussion of *place* as *space* invested with meaning, it is clear that with the arrival of the Euro-American settlers, there was a move from already-existing *place* to a kind of *abstract space*. Lefebvre pointed to this as space that is produced by capitalism, thus made up of the "'world of commodities', its 'logic' and its worldwide strategies, as well as the power of money and that of the political state."[243] the erasure of the land management practices, as well as other place-based Indigenous lifeways and accumulated knowledge, constitutes what could be understood as a divestment of meaning in place. Smith identifies this European modernist view (of Indigenous place) as 'first nature', where all that exists beyond place is 'abstract space', or the absence of 'society'.[244] For the settlers, and even the explorers long before them, Indigenous place was evidence of the absence of society – the absence of so-called civilization. First nature is thus the primitive viewing of space and place from the perspective of modern European

[243] Lefebvre 1991, p. 53.
[244] Smith 1990: 107.

White men, in the context of the conquest of the ever-expanding frontier of capital. The internal relations of capitalism and settler-colonialism are identifiable through this lens.

Smith's 'Second nature' constitutes the "development of social economies based on commodity exchange,"[245] creating a rift in the metabolism between place and nature.[246] With the transition from feudalism to capitalism in Europe during what Braudel called the "long sixteenth century,"[247] violence against existing place (meaningful space) moved from being at lEast partially 'extra-economic' to being perpetrated not by armed people, but overwhelmingly by 'the world market' itself![248] Polanyi treated this as the process of making the non-commodities of land, labor, and money into the most dominant commodities on earth.[249] While in the figure above, and in the larger argument of this manuscript, 'property' is treated as a commodity, it is so done to highlight its 'fictitious' nature, to take the Polanyian phrase. However, under capitalism it is fiction realized. As the world-ecology of capital appropriates the resource-rich areas of the world,[250] bringing them into the capitalist web of life, existing places become 'things' to be converted into nothing. That is, the sociocultural investments of Indigenous meaning are expropriated, as place is converted into abstract, mathematical space, only then to be invested with meaning that produces surplus-value.[251] This is to suggest that the socialized meanings invested into space can produce socialized values, often referred to as 'use-values', which are appropriated, that commodified.

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[245] Ibid.

[246] Here, 'nature' is meant to be considered what O'Conner referred to as "external nature," or an "aggregate of things" that was "seen as a mechanistic structure that (like any mechanism) could be disaggregated or taken apart and then rebuilt in various ways." It was, in all ways, separate from humanity. See O'Connor 1998: 22.

[247] Braudel 1979. See also Wallerstein 1974; Moore 2003, 2004.

[248] Lefebvre 1991: 276.

[249] Polanyi [1944] 2001: 75.

[250] "Resource-rich" here refers not to a current conceptualization of resources, such as fossil-fuels and the like. To the contrary, in the early development of the capitalist world-ecology, resource-rich areas were areas where desirable minerals, fibers, water, and food were easily gotten and in high volume.

[251] It is important to remember that concepts like "value" existed long before capitalism was a systemic reality. However, it was 'use-value' that was the metric for an object's worth. It is only with the imposition of European capitalist logic that value is something accrued through a market mechanism.

A stand of old-growth redwood trees left relatively untouched for thousands of years can be treated as valueless by intruding settlers, but *invaluable* to Indigenous occupants of that land, for the use-values of the trees and all of the ecological communities they support (i.e. edible plants like sorrel; game animals like deer, elk, grizzly bears, boars, and cottontail rabbits) were of very high social importance.[252] Many of those communities of animals and plants became key commodities for the rapidly growing population of settlers in the 1850s, supplied by the also growing hunting business.[253] What is primitive to the invader is highly complex and valuable to those communities invaders deemed equally primitive. As that stand of redwoods is cut down and sliced into some number of feet of board, the place is expropriated of some aspects of its meaning and at the very same time, made into a different place.[254] Primitive spaces become accumulative as they are produced into places that work *for* capital.[255] They cease to be merely ecosystems, producing the material conditions necessary for life itself, to become plantations to produce wood.

This relationship of an ancient stand of trees moving from a basic socialized use-value to a value recognized by commercial or market-oriented forces can be – with some slight modifications – outlined using the classical formulas of what Marx called the commodity form ('C-M-C') and the money form ('M-C-M'). In the commodity form, an object with perceived use-value is produced in a way that allows part or all of it to be purchased with money, at which point it is commodified. It is then held by the capitalist, as it is raised in value, and therefore sold at a higher price. A further accumulation of value is then transformed into an accumulation capital, not yet in motion. Once that held value is used to purchase other commodities, it becomes money, be it in paper or object form. At this point, the commodity has produced more money, thus use-value becomes "value in process,

[252] It is important to note here that many early scientific foresters also treated these old growth woods as value-less because there was not a way to appropriate them and subsequently commodify them. Only with the rise of logging technology would this become possible.
[253] M.K. Anderson 2005: 91-93.
[254] Later, I refer to this process and processes like it as the *negative production of space*.
[255] Moore 2015.

money in process, and, as such, capital."[256] In the latter case (M-C-M), or the money form of value, the relationship starts again not with the commodity, but with money, which is used to buy a commodity, which is then held until its value raises. In the first instance, use-value is turned into a commodity, a commodity that is socially valued regardless of the alienated labor that is represents.[257] In the second case, money-value is used to turn a commodity in more money-value, thus "Capital is money: Capital is commodities," while "value is here the active factor."[258] For example, a tree is cut into boards and then held until the social need for those boards grows to the point at which the holder of that capital can demand a higher price. The seller has now taken money for that object, which they can now buy more commodities with, hold again, and sell for more again. Money, in fact, begins to throw surplus-value off from itself, in the form M-C-M¹.[259] For the Indigenous user of ecosystemic production of redwood forest, a use-value stays a use-value. As discussed earlier, death and decay of wood is itself a form of production for the redwood rainforest ecosystem, and thus a source for the creation of value. The Indigenous land manager, before the arrival of the capitalist settler, recognizes the intrinsic use-value of the always already unfolding ecosystemic production within the forest. For the invading capitalist, it becomes capital and thus takes on a socialized value that is then traded on a market.

The removal of Indigenous peoples from the spaces they invested meaning into forms one of the major acts of removal by the State. Another act of removal is perpetrated not only by the state, but by the professional foresters it employs, those who were brought in to manage what was thought

[256] Marx 1967, *Capital, Volume I:* 153
[257] By way of modification, 'alienated labor' can here be understood to be – particularly in the case of the ancient redwood tree – the labor of non-human nature itself. The death and decay of the forest ecosystem that made life possible for the tree to grow can be understood to be embedded into the tree itself. Elsewhere I have written about this as 'extra-human labor' or 'work/energy'. More directly, we can think about the growth of the redwood tree over the course of several hundred years, even thousands of years, as alienated labor the minute it is cut down and sold as board feet.
[258] Ibid.
[259] Ibid: 155.

to be wild wasteland that is 'decadent and overmature.'[260] When the first Federal Foresters encountered the massive stands of old growth Douglas fir trees in the Blue Mountains of Oregon, their initial response was that they were 'decadent and overmature', meaning that they were no longer productive. Ironically, they argued these forest stands were producing as much from death and decay as they were from new tree growth. Others have dealt extensively with the notion of 'wastelanding', or crudely lumping Indigenous bodies in with a settler view of land that is not used to produce commodities as wasted. Indigenous bodies become expendable, along with any land that is deemed unproductive for whatever reasons. For example, land around intensive mining operations, much of which is/was Navajo, is often considered wasteland, and the bodies of Navajo people living in those lands, attempting to eke out a living, are largely treated the same.[261]

Deeply connected with the idea of 'wastelanding' is the colonial preconception that what is not 'efficient' in the productivist logic of capital is 'doomed' to become 'extinct'.[262] Let us keep that close in mind as we consider the role of scientific forestry in the expropriation of meaning within the redwood forest ecosystem. *Silviculture,* or 'scientific forestry', as engaged in the next section, is a European science that came to Northwest California along with the first land managers following the demise of the Gold Rush in the late 1850s. In what follows, I will show that scientific management of the redwood temperate rainforest and its stands of old-growth redwoods was predicated on removing (i)ndigenous plants and animals with the intention of plantationization, or the turning of chaotic ecosystems with stands of old-growth trees into tree farms. The plantationization of chaotic rainforest ecosystems is another way of pointing to the simplification of complexity for the purposes of commodification, or what James Scott pointed to as "techniques … for officials to be able to comprehend aspects" of a "complex reality" that "must be reduced to schematic categories," like

[260] See Langston 1995; Hirt 1994.
[261] Voyles 2015: 28.
[262] Brantlinger 2003.

maps, cadastral lists, and stand units of measurement. Where Indigenous tenders of the land saw cooperation, or what we might even call synergy today, at every turn, the modern forest manager could only recognize it in easily digested, measurable units.

The Rise of Silviculture and the Demise of the would-be Redwood Curtain

"So, in with these vast stretches of forest – in they go
into the competitive circle of private activity and speculation!!!"[263]

Coastal redwood trees are the last surviving members of the *Sequoia* family, a species that was once the most dominant in all North America,[264] but today is found in the highest density along the Pacific Coast of Mendocino, Humboldt, and Del Norte Counties, where a maze of six rivers from the Shasta-Trinity mountain range drain into a series of alluvial flats. These are areas of land that are generally level, created by the very long-term riverine movement of sediment, forming 'alluvial soils' that are particularly friendly to large conifers like *Sequoia sempervirens* (the coast redwood). It is very likely that when the first explorers, as well as the first settlers who arrived by sea, would have witnessed a giant wall of redwood, because the stand density would have been the highest of all the redwood rainforest ecosystem.[265] This is still the case today, where the densest and tallest redwoods are along the sides of riverbeds and along alluvial flats that sit between the beachhead and the oak savannahs on other side of the forest. The first major job of the early professional foresters employed by colonial landowners was to find a way to make those stands less dense and more profitable for the already growing wood industry.

[263] Hazzi 1804: 769, quoted in Radkou 2012: 149.
[264] Noss 2000.
[265] Generally, it is accepted that coast redwood stand density is greatest in the areas that are next to upland sites. In contrast, while many redwoods grow in the upland sites, the density slowly dissipates until the canopy is taken over by oak. See Guisti 2007: 164; Hammon et al. 1969.

Silviculture came to Northwestern California on the coattails of European capitalist systems and work ethics, which were implicated in the science of what the Germans had called "forest hygiene," where the goal was to rid the forest of the inefficiency of its exploitation and fiscal success.[266] It was a science employed by the state and backed by corporations, already deeply embedded in the capitalist development of Northwestern California, to remove what stood in the way of the expansion of the capital frontier.[267] With the rise of European capitalism, occurring in tandem with the rise of early scientific forestry in NorthEastern Europe (specifically Prussia), "frontier-making" became something beyond territorial expansion, fundamental to the production of the "potential for endless accumulation."[268] That process had already begun long before, with the fall of feudalism in Western Europe amidst the rise of the peasant rebellions in the late sixteenth century against the proposed enclosures of what was long establish communal property set aside for subsistence farming.[269] Feudalism was a 'tributary' system in the most general sense, but it is important that we not oversimplify these relations, because feudalism was not uniformly in place within Europe. In fact, there were different forms of feudal relations across all of Europe.[270] This unsettles the often-assumed common sense that feudalism was a system that dominated all peasantry in the same way, lending credence to many world-historical narratives that are wanting of place-specificity on this matter.[271] Others have established a more nuanced understanding of feudalism as a regime of economic and land management of rural spaces by urban power structures.[272] The rising professional class charged

[266] Scott 1998: 23.
[267] Braudel 1982. He frequently used this term to describe the ever-expanding geographical range of capitalist commodification.
[268] Moore 2015: 63.
[269] Kett's Rebellion of 1549 is a good example of the kind of upheavals that were happening in response to the enclosures of land.
[270] Bloch 1961, Vol. II: 445.
[271] Hilton 1976.
[272] Arrighi 1994, 1998: 126. Arrighi's view of feudalism was also that it was a system that was primarily rural, facilitated by power that was concentrated into the town, such that towns became the key spaces where the transition to capitalism would be activated. The problem with this view, however, is that it is a tautology, in that the rise of capitalism is connected not to the fall of feudalism – as I want to argue – but to the rise of capitalist cities.

with making nature work on behalf of the capitalist global elite held no allegiance to either the simplified viewpoint on feudal relations or the more relational one. Their target in the Pacific Northwest, as Nancy Langston shows us, was "to rescue the grand old Western forests from the timber barons."[273] Langston was pointing out a basic point that even when capitalists were "saving the forest" from the worst humanity has to offer, they were saving it for future commodification. All of this is to say that silviculture, or the shifting of focus from the complex connectivity of the forest as one large body (what would in the 20th century become known as an 'ecosystem') to the production specificities of particular tree species within the forest, takes as its taproot, the capitalist system under which it operates.

Defining silviculture as scientific forestry is rather simple, for many of the textbooks point in this direction. A more difficult defining is one where a specified silviculture is outlined by historical geographical specificity. In essence, there is silviculture as a unified scientific discipline, and there is silviculture as a place-specific practice of scientific management. I will begin with the more conventional definition based on a unified scientific foundation. One of the most highly studied and cited American textbooks on silviculture begins with what I argue is a very solid, historically grounded, three-part definition. It is (1) "the art of producing and tending a forest"; (2) "the application of knowledge of *silvics*[274] in the treatment of a forest"; and (3) "the theory and practice of controlling forest establishment, composition, structure, and growth."[275] The first problem encountered here is, as always it seems, definitional. Specifically, how does one interpret "forest"? Smith et al (1997) define a "forest" from the specific point of view of 'forest management', as "a collection of stands administered as an integrated unit, usually under one ownership."[276] From this viewpoint, the forest is

[273] Langston 1995: 86.
[274] "Silvics," or the suite of techniques for dealing with individual tree growth, as opposed to whole stands of trees, forms the main foundation of silviculture. There is a well-established set of resources on silvics, including Packham et al 1992; Koslowski et al 1990; Whitmore 1990; Kimmins 1987; Spurr and Barnes 1980; and Daniel et al 1979.
[275] Smith et al 1997: 3.
[276] Ibid: 11.

a managerial unit, defined more by the ownership of the land and its valuation than by the ecosystemic processes operating within it. A "stand" is a simpler notion, in that it merely denotes a group of trees that are relatively uniform in age, size, and species composition, as well as the class and perceived quality of the wood. This occurs naturally in many cases as well but is more obvious in a forest that is already under direct management. It must also be a distinguishable unit within the forest.[277] But let us resist the historical silvicultural urge to miss the forest for the trees, for we will certainly return to the more tree-focused vision of silviculture later.

As a term, *silviculture* goes all the way back to the middle of the seventeenth century, and probably earlier, cemented in the historical literature with John Evelyn's *Sylva,* published in 1664.[278] While scientific forestry was practiced in other parts of the world, nowhere was it more systematized and profit-centered than on the European continent. For example, the Romans developed a kind of hostility between civilization and the forest, which can be seen all through the *Aeneid* in the relationships between Romulus, his mother Rhea Silvia, and the rest of the Sylvian family line.[279] In a modern context, it constitutes what Nick Estes points to as 'settler-colonial property regimes', or "formulaic enterprise(s) of Native territorial dispossession."[280] The breaking of existing land into squares and rectangles, or tracts, allowed for the scientific simplification of the porous boundaries recognized by Indigenous communities. Scientific planners employed by the state,[281] adhered to notions of time and space that were in many ways diametrically opposed to the long-existing Indigenous methods of land management.[282] California Indigenous peoples, for example, understood

[277] Ibid.
[278] Importantly, among silviculturists, the first attempt to move silviculture into the category of a "science" is not Evelyn's work, but Hartig (1791) and Cotta (1817), which many historians of silviculture point to as the initiation of silviculture as a science, versus an art.
[279] Harrison 1992: 46-52.
[280] Estes 2013.
[281] These included very early land surveyors, who misread, at every step, the ways in which Indigenous people had divided up areas of the land. To their untrained (in the ways of old growth forests) eyes, what they saw were chaotic tracts of land that were not clearly marked and re-purposed, therefore were not being efficiently utilized.
[282] Whorf 1960; Cordova et al. 2007: 100.

their human lifespans as intricately connected to, and determined by, cycles in the land. This synchronicity made time told by the watch seem completely alien, where the time of day was often measured by the length of a person's shadow.[283] As Joachim Radkou brilliantly points out, "The age of liberalism also announced itself in the timber trade" in the Western European and American world, and thus "So much the better if, as a result, wood became scarce and expensive, since then there would be an economic incentive to proper silviculture."[284] Silviculture and liberal economic culture are of the same root structure.

Silviculture would become a branch of the sciences even before the establishment of the ecological method, or the "conscious application of the science of ecology."[285] Before the term *ecology* was coined, silviculture was deployed as a scientific technique to turn the forest – as functional ecological unit – into a mechanism of commodity generation.[286] Thus, the dialectic of use-value and exchange-value is heavily implicated in the intellectual development of silviculture. More precisely, the new realization of the forest as an ecosystem also meant the realization of the processes that forests utilize and help to regulate, such as the cycling of water, carbon, and oxygen – processes that are indispensable for human and presumably most more-than-human life – are also processes that therefore have some sort of 'value' to society, even if a value that cannot be physically visualized.[287] Silviculture thus represents a systemization of the civilizational techniques[288] of resource exploitation and appropriation of wooded land and local labor-power for predictable, efficient, and above all else, profitable production of socially valuable species of trees. The ongoing production of needs and wants that require more consumption beyond what the ecosystem can provide through its normal function requires the destruction of non-renewable resources, like old-growth redwoods. Moore refers to the

[283] M.K. Anderson 2005: 60.
[284] Radkou 2012: 149.
[285] Smith et al. 1997: 9.
[286] Ibid: 9-11.
[287] Radkau [2007] 2012: 33-35.
[288] Mumford [1934] 2010.

ecological provisions offered before the capitalist intervention as the 'ecological surplus'.[289] Importantly, the ecological surplus exists after the intervention of capitalism as well, but Moore's point is not lost in suggesting that the rise of capitalism brings with it a lowering of the already long-established surplus of ecological capital. Capitalism is the system that produces those needs and wants with the help of silvicultural systems of ecosystem production. In a more poetic, but no less meaningful sense, Carlo Vercellone referred to this constant production of needs and wants as the "making rent of profit,"[290] meaning that to successfully thrive in a capitalist society our everyday actions must be profitable to the owners of capital, as a kind of payment for mere existence. The productions of needs and wants produces an increasing reliance on profitable ways of life. It is necessary to take a moment to consider the historical development of silviculture, its meanings, and its practices, in redwood country as a way of making profit and efficiency hierarchically favored above ecosystemic health.

To articulate, through historical analysis, a working conceptualization of *redwood silviculture,* it is necessary to connect it to the much older traditions of forest management and *silvicultural systems*[291] that have informed it. American forestry has historically been caught between early settler-colonial worldviews of human-nature relations and those of the capitalist ideology of developmentalism.[292] Through a critical analysis of the historical unfolding of the rise of forestry and the wood-dependent industries in America, as well as in the writing of early forest policy experts, this schism between professional forestry and ecosystem science can be seen clearly on, even though the actual term

[289] Moore 2015: 95-98.
[290] Vercellone 2010: 91.
[291] It is important to understand that a silviculture is developed by the "silvicultural systems" that are used to plan and manage particular trees, stands of trees, and the forest ecosystem more generally, depending upon the contents of the land in question. Clearcut and shelterwood systems are good examples of the many silvicultural systems that exist. I have often wondered by these are not called "methods" instead of "systems," but it matters little for the purposes of this study.
[292] Dirlik 2014. Some might suggest that Dirlik's idea of developmentalism was already deeply embedded into the mindset of the Euro-American settler, but I don't think it is that simple. Whereas developmentalism is much more in line with the requirements of modern narratives of technological advancement and economic growth, settler-colonialism also had deeply embedded in it ideas of religious, racial, and cultural superiority.

'ecosystem science' was to come along after the early development of professional forestry. One of the earliest known books about American forest policy, published in 1920, begins with a somber assessment of how the early settlers related to the forests of what we would now call New England. John Ise writes, "The attitude of the early settlers toward the timber resources of the country was generally one of indifference."[293] Evidence suggests, however, that the British government was indeed less than indifferent regarding the status of wood resources in the colonies. While their interest in preserving forested land was connected to their own continental development needs, including the strengthening of its navies and shipping industry, it is counter-intuitive that the settlers were not concerned about preserving, or at lEast conserving, the wood that was already in existence at the time of the first settlements for their own localized development needs. Nevertheless, this seems to be the case, for they fought the far away British government on this front. The historical discontinuity between English forest policy in the colonies and the view of the forest of the settlers themselves provides for us a window of understanding of the *internal relations* of capital (evident in the reluctance of settlers to slow their pace of development) that tend to create conflicts that are external in nature (i.e., political).

A plausible argument can be made that the British colonial metropolitan core was the first entity to suggest that the seemingly endless supply of forested space in the New World was indeed finite, and that it might need to be 'preserved'. In 1704, the British passed an act through Parliament that imposed a fine of five pounds for any cutting of a pitch pine tree or a tar tree that was less than twelve inches in diameter when measured from approximately chest height from the ground.[294] This act and others like it were also applied to several different British colonies. Even earlier, in 1626, one of several ordinances applied by the British to the Plymouth Colony made it illegal to transport any

[293] Ise 1920: 19. This is one of the earliest known books dedicated to the analysis of the then history of forest policy since the colonial period.
[294] Fox 1902: 16. Also see Ford 1910: 145.

timber in or out of the colony at Plymouth without written approval of both the governor and the council. This shows clearly that there was an understanding that the supply of timber in the New World was not endless. Ordinances like this were expanded upon and made more punitive throughout the middle of the 17th century, much to the dismay of the settlers, restless to cut more timber to keep up with the growth of family farming and the population expansion that farm-oriented family planning triggered.[295]

The internal contradictions of capital were beginning to pose challenges even at this early stage of development of what was then clearly the European world-system of capitalism, or what I have chosen to call, in agreement with a growing number of scholars,[296] the capitalist World-ecology. Thinking of capitalism as a world-ecology of power and re/production in the web of life means re-thinking the role of scientific forest management in the history of the settler-colonial occupation and conquest of Northwestern California. The systemic requirements of capitalism make inevitable a *systemically-driven exterminism* event that is buttressed by patriarchy, racism, and territorialization, as well as a dependence upon the appropriation of life (living organisms at all scales) and simultaneously the past death of those and other organisms (i.e. fossil fuels and the production of life that results from ecological decay).[297] Specifically, the requirement of an ever-expanding *world-ecological surplus* (where small amounts of capital can be invested to create high rates of profit)[298] provided for free, or at a cheap enough rate as to not slow down the rate of production and the return on investment.[299] The New World, for the British, was not a world developed for the advancement of those already living there, but a world developed for the sake of the British. Settlers to Northwestern California, on the

[295] Ise 1920: 20-6; Thwaites 1904: 327.
[296] Moore 2015; Fuller 2017; Toivanen and Kröger 2018; McBrien 2018; Cox et al. 2018.
[297] Huber 2013; McBrien 2016.
[298] Moore 2015: 95.
[299] This is deeply connected to what Marx called "crisis theory," appearing in the largely unread three-volume work called *Theories of Surplus Value,* often referred to as Volume IV of *Capital.* He writes, "In a situation where men produce for themselves, there are indeed no crises, but neither is there capitalist production" (Tucker 1978: 446).

other hand, while mostly of British, Irish, and German origin,[300] likely did not have such attachment to enriching the European core. Many, in fact, were coming to California from British North America, seeking to establish settlements that were free of the rather strict laws in colonies. Later, the Far West settlers were increasingly American born. There were many who believed that remaking "old Europe" in the "New World" was a doomed venture, and that it was much more logical to stretch the rules of what was possible, seeking to get out from under the economic constraints of the Empire.[301]

The use of silviculture in redwood country came very late in comparison to the Eastern parts of the United States, where it originated with protecting trees from being overharvested. With the arrival of the 18th century there was already a growing urge for government regulation of tree felling in the Eastern colonies, made evident by a 1772 statute passed at Albany, New York, making it illegal to bring any timber into Albany below a certain diameter, six inches for pine, a move quite reminiscent of much earlier English colonial regulation.[302] Regulation of tree-felling could be pointed to as the early beginning of professional forestry, as well as the origin of American silvicultural development. This was a clear indication that there was a growing need for preservation and even cultivation of forest land, in order to supply the growing demand for wood in North America, and increasingly the desire for wood to construct inroads to the North American West, an acceleration few were capable of seeing in real time. The California gold rush would become a huge motivator. Between 1820 and 1870 the American population quadrupled, and sizeable farms were replacing considerable old-growth communities, much of which were being simply burned, for lack of an established market for large timber.[303] Here lies a critical historical moment in the rise of forestry in the United States, for this

[300] Johann Sutter, one of the most famous of the early gold rushers, was born in Germany and had a Swiss partner when he set up what would later become Sutter's Mill. See Madley 2016: 52.
[301] Coman 1912.
[302] Ibid: 21.
[303] Ise 1920: 26. While there was an existing market for naval and maritime trade, for both hulls and masts, the amount of wood needed for such endeavors in the British colonies was quite small in comparison to the density of wooded land. Further, it was only the hardwoods that were sought for this. Ise remarks on this on the same page.

period would also mark a rapid increase in the number of sawmills in the country. In 1870 lumber establishments numbered over 25,000, employing great numbers of workers, reportedly higher than 160,000 hands, utilizing capital investment of more than $160 million, valued at roughly $252 million, which was at that point the largest manufacturing industry, aside from flouring and grist mills.[304] This points to an increase in the ability to exploit the timber resources of the country, which would be virtually extinguished in the NorthEast by the middle of the 19th century, necessitating the expansion of the wood frontier eventually to the Far West.[305] That said, through plantationization, by the middle of the 20th century, many parts of the Eastern seaboard and several mountainous areas more inland have been replenished, if not in a natural forested way.

Whereas previous to the middle of the century, 'wood saving' was a practice employed by the European state and by peasant farmers and woodworkers meant to use as little wood as possible for daily ongoing needs, while leaving as much as possible for future needs, this utilitarian approach changed after the 1750s. The goal became to use as little wood as necessary to complete the project at hand, leaving as much of the forest as possible, while planning efficiently for future forest production.[306] The advent of silviculture and scientific forestry more broadly constitutes a revolutionary change in the relations between humans and forested landscapes. Human management of forested spaces is likely as old as human settlement itself. What is dramatically, in my view, different about the development of scientific forestry is that it forms a system focused on the production of space in ways that were amenable to market determinations. The application of forest science and the geometry of legibility, backed up by government power gave forest managers the ability to tame the

[304] *Proceedings of the American Forestry Association 1894-95-96*: 81
[305] Ibid; Coman 1975: 50; Trollope 1984: 23; Thwaites 1904: 327.
[306] Ise 1920: 205-6.

chaotic nature of old-growth forests, to nudge them toward straight lines and identifiable shapes that could be purchased and sold as commodities.[307]

Settler-colonization pushed forward the development of silviculture because of its inherent use of what Moore has referred to as "hard processes" (standardization, measurement, simplification, and commodification – explained below) to appropriate not only land, but current and past labor, both human and more-than-human, while utilizing "soft processes," like the imposition of social systems and engineering.[308] These changes in land-use and planning point to changes in the production of space that Estes refers to as "settler-colonial property regimes."[309] Further, as discussed in the previous chapter, these regimes are not just civilizational techniques, but as sub-structures to the ongoing structure of settler-colonialism. These regimes of property management could also be understood as what Carolyn Merchant called 'ecological revolutions,' or "major transformations in human relations with non-human nature,"[310] in the temperate redwood rainforest.

[307] Scott 1998: 15.
[308] Moore 2015: 194-6, 201-20.
[309] Estes 2013.
[310] Merchant 1987.

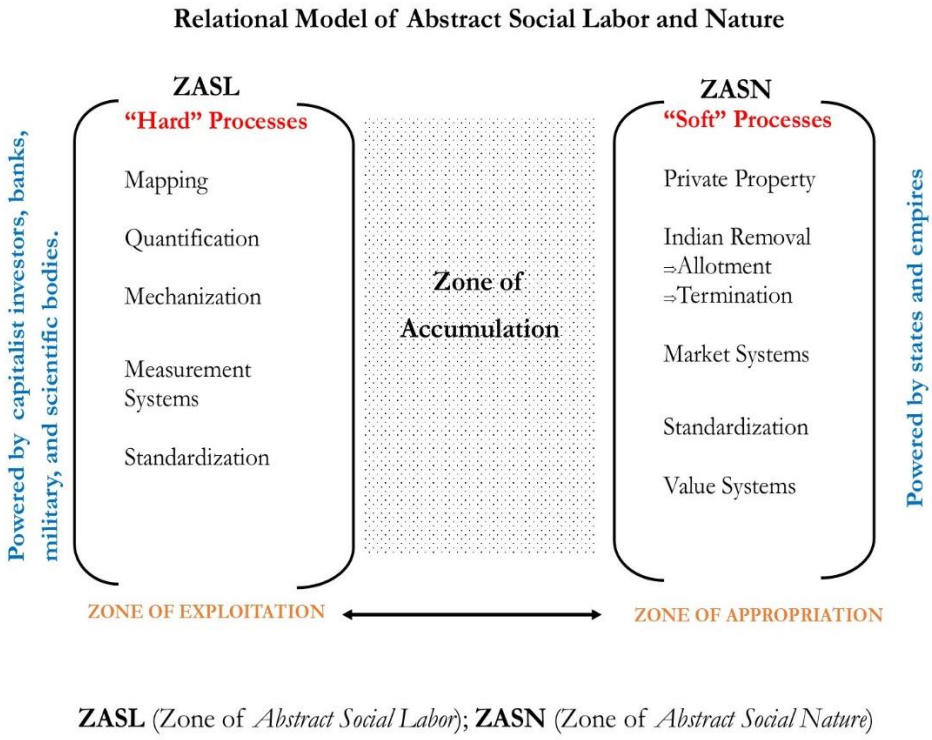

Figure 2. Model outlining how 'labor' in 'nature' is conceived within the World-ecology framework.

In the above theoretical model, I have sought to clarify what is meant by "hard processes" and the "soft processes," dividing them two different 'zones.' The former is in the 'zone of exploitation,' while the latter is in the 'zone of appropriation.' I derive this categorization of dialectical abstractions primarily from Moore's work on what he refers to as 'abstract social labor' and 'abstract social nature', which are environmental-historical renditions of 'historical natures' or "the fields upon which the conditions and constraints of capital accumulation unfold in any given era."[311] It is important to be able to abstract these historical-natures in trying to understand how they interact with currently existing structures. Settler-colonial property regimes, for example, required both the "hard" and "soft"

[311] Moore 2015: 197.

processes to achieve the ultimate outcome, which was turning the land into an unpaid laborer for its new owners. Once that labor is entrained toward the desires of the landowner, the space can then be more intentionally produced.

One key method of changing the land in ways that make it more adaptable to the capitalist system is *Standardization,* which can come from the breaking of inconsistent units of land into identifiable shapes more easily described by surveyors, eventually rendered on a map. The role of the cadastral surveys (those land surveys meant to define the perimeters of proposed private property) in the history of North American settler-colonization should not be under-emphasized.[312] With surveyors and the resulting maps, these tracts of land can be presented as individual commodities (in the form of property) to be sold. It also requires the imposition of *measurement systems* that did not already exist in the Indigenous spaces of Northwest California in the middle of the 19th century. Referring again to the model above, the zones of abstract social labor (ZASL) and abstract social nature (ZASN) work across the adjoining 'zone of accumulation'. This can also be understood as one way that capitalist landowners turn the requirement of profit into rent. That is, to make the cost of owning property the general systemic requirement of being continuously profitable.[313] The ecological and economic decision to make land something that can be bought and sold on the capitalist market necessitates that any new landowner must find a way to make that land return profit, or it loses its accumulated social and monetary values.

This "world-ecological revolution"[314] in the re/production of human-forest relations was a shift away from production of forest products for basic needs (i.e., use-values),[315] to production for

[312] There is a robust literature on the importance of cadastral surveys in the history of settler-colonization. See especially Bhandar 2018; Blomley 2003, 2014; Kain 1992. This is addressed in more detail below, but it should be noted that much more could be written on the influence of cadastral surveys in the colonization of the Pacific Northwest of California and its relationship to capitalism.
[313] Vercellone 2010: 91. See also p. 76.
[314] Moore 2010.
[315] This is to say nothing of the revolution in human-forest relations from what they were under Indigenous land management regimes.

the world market, made possible through significant changes in the distribution of power[316] at the global level, from localized power to Eurocentric power. Regions of Europe began to work together to achieve mutually beneficial economic outcomes, so much so that some parts of Europe began to focus primarily on the production of a set of commodities, like a kind of regional division of labor. We might even call this the early stages of globalization. Mercantilist (or early capitalist) buying and selling of wood across the ocean and seas had already been happening in the seventeenth century, but production of forests for the sole purpose of commodification was not common until the beginning of the eighteenth century. Radkou argues that there was a 'commercial revolution' that occurred just before the English industrial revolutions of the 18th century, that "created the markets and capital sums without which industrialization would not have been possible."[317] The timber trade was one of, if not the most, important sectors of the commercial revolution, made more evident by the fact that there was a significant timber boom – mostly for construction – that began in the late 17th century, likely laying the foundation for the industrial revolutions to come.[318]

The occupation and conquest of Indigenous land by settler-colonial states is exemplary of a major change in the power distribution of Europe, spreading out to the rest of the world-system, especially during the 18th and first half of the 19th century. The Spanish Empire was obviously very significant in terms of power distribution, but its effect upon the economic control of the world-system was small in comparison. Colonization of the North American West by settler capitalists expanded the world market by increasing the rate and depth of production of commodified natural resources, while also creating a new market for many items. A market can only exist if there are also consumers, so a consumer society was being developed at the very same time, but to do that, nature

316 The use of the word "power" here is meant not only in the sense of political power, or the power over something, but the power to influence and control market behavior. By distributing the power of some people and regions to control certain aspects of commercial trade, commercial relations between countries change.
317 Radkou 2012: 136.
318 Ibid: 136-40.

had to be commodified to some degree as well. As J.W. Moore states, "The history of capitalism is the history of revolutionizing nature"[319] to the demands of the capitalist system. Ecological revolutions make new forms of capitalist production of nature and space possible through the free appropriation, via production of accumulative space,[320] of the work[321] of more-than-human nature (the contributions of ecosystems). One key reason the production process is undertaken is to supply commodities (socialized use-values) in a way that simultaneously produces surplus-value.[322] The production of surplus-value is the end goal of the capitalist, for it is the process by which money is turned into capital,[323] something that forest managers are intimately intertwined with historically. A tree produces a certain amount of value for the capitalist forest manager only if it is cut down for profit or made to grow in a way that draws more investment, as outlined earlier. Importantly, we must also recognize that not all production is simply for the inherent requirements of capitalist profitability. Production in the most general sense is something every human being engages in (hence, the term productivore). In the above statements, the goal is to highlight specifically the production of commodities for sale on the market and for consumption within capitalist society.

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[319] Moore 2015: 112.

[320] For the sake of clarity, let us be reminded that *appropriation* is the 'taking of' versus the 'exploiting of'. As Moore writes, "The history of capitalism flows through islands of commodity production, developing within oceans of unpaid work/energy" (2015: 54).

[321] Ibid: 14-15, 29. Moore used the phrase "work/energy," which stems directly from Caffentzis, who sought to bring "energy" and "work" into a "unified field," with the chief contribution of linking "capital's control over work across the planet … [to] how energy commodities were … used to impose once again the control the control that capital once had over the work process" (G. Caffentzis 2013: 2-3). Moore greatly expands this idea in several directions, most notably by addressing "capitalism's unified logic of appropriating human and extra-human "work" that is transformed into value" (2016: 14, note 24). It takes "energy" to transform work into value. For my purposes here, I use the word "work" to signify the production process that nature engages in regardless of human intervention. It can only, in my view, be understood as "work" because "labor" is only existent under capitalist systemic control. To that extent, every human body works, even in the physical sense of expelling energy, but not every human body "labors." Nature, non-human nature at lEast, cannot therefore "labor," it can only "work."

[322] I use this term 'socialized use-values' to indicate that all value begins as 'use-value'. As use-values are placed into the production process, they become useful for production, which then produces commodities that are useful to consumers (presumably). In short, use-values become social values when they are placed upon the market, because some use-values are 'valued' higher than other use-values. In short, the goal of capitalist production is to produce use-values that consistently draw higher valuation within society. Marx has also referred to this as value throwing value off from itself, or the 'self-valorization' process.

[323] *Capital, Vol. I:* 263.

The history of the development of silviculture is predicated on turning the forest – as a large complex system – into a mechanism for capitalist commodification. To accomplish this, various modes of simplification are emphasized. Through removing the 'decadent and overmature'[324] trees, for example, silviculture provides a scientific method for transforming a temperate forest ecosystem – a good example of a complex system[325] – into a plantation, a simpler, more linear system. To clarify, a complex system does not pursue a common goal. In ecosystems, adaptations that take place in one species can have positive or negative effects upon many other species. There are 'feedback' and 'feed-forward' mechanisms that keep the system hopefully in balance, but the direction it goes is only partially predictable. Put another way, complex systems are best understood by the internal characteristics they possess.[326] You cannot adequately understand a complex system by using the logic of systems that are external to it. To contrast, a good example of a simple system might be a physical production system, which is organized from start to finish to achieve a set of goals. As Lewontin and Levins put it, "Systems of physical production have distinct elements that capture information, processes that measure "errors," that is, deviations from the goal, and others that affect the changes."[327] In sum, silviculture is a way of applying a production system approach to the management of a complex ecosystem. Only in very recent decades have scientific foresters begun to recognize the inherent inconsistency of this relationship.

Early silviculture was both a method of engineering the redwood ecosystem to work for capital accumulation by plantationization, and an historical method of removing the dense and chaotic Redwood Curtain in its ecological context. This was eventually accomplished through silvicultural

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[324] See p. 69-70.

[325] Gallagher and Appenzeller 1999; Levins and Lewontin 1985: 12, 15, 22. Importantly, societies are in some ways even more complex than ecosystems. This is because they feature component parts to the system that pursue goals and outcomes independently of a common goal. Whereas in an ecosystem, still featuring ordered chaos, there is a common set of goals for that system. There is a clear "flow of matter and energy that provides the structure, organizing the processes of competition, predation, and mututalism" (Lewontin and Levins 2007: 189.

[326] Bertalanffy 1950, 1975; Laszlo 1972; Bird 2003.

[327] Lewontin and Levins 2007: 188.

alignment with the relatively unconstrained timber industry of Humboldt County between the 1930s and the 1980s.[328] Professional forest managers were often employed primarily in service to corporations that controlled large areas of land where old-growth coast redwoods resided. This is less the case today, because so much of the land has been taken over by State and National Parks,[329] which of course do also engage in commercial activities, but on a more sustainable foundation. In fact, in many national and state parks, they are engaging in very modern forms of silviculture that seek to mimic, or bring back, the complexity and chaos that once dominated those landscapes. This newer form of management is referred to as "managing for complexity," a term that will be discussed later. In sum, it is important to understand that silviculturalists working in Northwestern California today are working on a very different set of ideals than they were 50-100 years ago. The interdependence of large corporations and silviculturalists was strong and direct in the early stages, and it rested heavily on the foundation of property rights, many of which were established during the settler-colonization of the Pacific Northwest of California.

Maxxim, one of the giants of the redwood lumber industry, argued it was their Constitutional and land-ownership-based right to cut them down.[330] For the silviculturalists of the early American industrial age, it was understood that the dictates of the landowner were the primary impetus for the decision-making processes of how and when to cut trees, which derives from the very origins of the notion of private property in America.[331] Many German silviculturalists were already questioning the 'profit maximization' method of developing silvicultural treatments, as early as 1817, but those in

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328 Rajala 1998: 6, 19-24, 223.

329 This discussion is examined in more detail in Chapter 7.

330 Widick 2009: 289. As Widick points out in his magisterial work *Trouble in the Forest,* this happened not of the permission, or even the agreement, among forest workers. Forest workers generally were against the fast and loose tree-felling of the Maxxim's of the world, both for ethical reasons, and out of concern for the future of their job security.

331 It is beyond the scope of this dissertation to engage in a lengthy overview of this subject, but it is widely understood that the American viewpoint on private property rests with the initial core tenet of John Locke's *labor theory of property,* which argues that as soon as a man (and he mean a "man") has mixed his labor with the soil, that soil becomes his to do with as he pleases. However, there was a proviso attached to that general idea that many capitalist landowners failed to adhere to, which is that they must build their homesteads in a way that leaves "enough, and as good, left in common for others." See Locke [1689] 1980: Chapter V, Paragraph 27.

America had been trained through manuals and ideas that were not up to date.[332] In short, the Germans were at the time the most current in their silvicultural practices, but the translated German textbooks used by American forest scientists were older. Thus, the *Waldreinertragslehre* method of 'maximizing annual returns rather than the internal rate of return' became, and largely stayed, the prime focus.[333] Meanwhile, in Germany, there had already been major improvements to silvicultural systems.

Silviculture, as a science and a practice, is not one-dimensional,[334] but its early development most certainly was, and that speaks directly to the systemic requirements that brought about dramatic changes in forest management systems, coming on the heels of settler-colonial invasion. 'High-forest methods,' which involve planting by seed, versus 'coppice-forest methods,' which rely upon "vegetative regeneration from stump-sprouts,"[335] are two methods that are opposite in their main goals. Planting via seed gives the managers much more control over how and where redwood sprouts appear, thus giving them the ability to influence the future density of tree stands, among other things. Through stump-sprouting, the forest can grow in whatever ways the ecosystem demands. In other words, high-forest methods seek to control and limit, whereas coppice-foresting seeks to mimic the natural chaos found in a redwood rainforest ecosystem. In the case of *Sequoia sempervirens,* the latter method is much more aligned with its natural ecosystemic regeneration processes, because they are 'stump-sprouters.' When visiting old-growth coast redwood forest groves, one of the most common visual attributes is seeing trees that have grown out of, or even over, the stumps of much older trees. The following two images I shot in an active logging area of Humboldt County, where they actively seek to retain as much of the old-growth stumpage as possible.

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[332] Puettmann et al. 2009: 6-7.
[333] Speidel 1984; Ruppert 2011.
[334] Silviculture today has advanced to what is commonly referred to as "managing for complexity." However, it is still a 'science' that is tightly connected to the demands of the wood market.
[335] Smith et al. 1997: 303.

Image 3. Example of 'coppice-forest' growth. The thinner trees growing around the stumps have sprouted from the past death of the older, larger trees.

Image 4. A redwood stump-sprout growing through the stump of an old-growth tree.

Understanding the ways that silviculture has influenced the growth of redwoods after the settler-colonization of Northwestern California gives us a sense for how the production of space in specifically capitalist ways may have led – as much as any other one cause – to the endangerment of the coast redwood tree, if indeed we accept that it is in danger of going extinct. Crucially, most of the scholarship on silviculture that I was able to find in my research rarely, if at all, addressed the role of capitalism in silvicultural decision-making beyond recognizing that profitability, market trends, and the desires of the landowner are central.

In what follows I will attempt to outline some of the ways we can understand how, why, and if *Sequoia sempervirens* is endangered.

The "Endangerment" of *Sequoia sempervirens*

The coast redwood tree was listed via the IUCN Red List[336] as *endangered* in 2013, upgraded first in 1998 from *lower risk/conservation dependent,* then in the same year to *rare,* and in 2006 to *vulnerable.*[337] What can be seen here is a steady worsening of the perceived status of *Sequoia sempervirens* over the course of less than fifteen years. Much debate has been spawned by those decisions, and only limited agreement on what the implications are, or even if the tree should in fact be listed at all. Dr. Erin Kelly, a prominent forester at Humboldt State University argues, for example, that it is not the status of *Sequoia sempervirens* we should be most worried about, but the temperate rainforest ecosystem that the tree is both indispensable to and formerly endemic of.[338] Kelly is not alone in her suspicion around whether the IUCN classification system and documentation process is worthy of being uncritically heeded. She is suggesting that the coast redwood may not actually be endangered, but more specifically that if it is, the IUCN may not go far enough in the direction of making the case Some have pointed to the "mismatch" between the IUCN criteria and that of "common sense evaluation" by practitioners in the field.[339]

For now, it is safe to say that while the Endangered Species Act has yet to take a clear position on the fate of the coast redwood,[340] the world's most deferred to non-governmental body in regard to the tracking of biodiversity and extinction crises,[341] the International Union for the Conservation of

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336 Farjon and Schmid 2013.

337 It is important to note that there are two further classifications on the IUCN Red List of 'critically endangered', 'extinct in the wild', and finally 'extinct.'

338 Kelly 2017. In conversations with Erin Kelly during my fieldwork, she helped me understand just how much of a disconnect there was between the IUCN process of classification of *Sequoia sempervirens* and the ESA process. One of the key problems, in her view, was that the IUCN made virtually no effort to contact any of the numerous redwood ecological experts at Humboldt State University or in the local community.

339 Godfrey and Godley 2008: 155.

340 Harris et al. 2012.

341 There is a necessary debate about which reporting agency is the best, and there is no obvious consensus on that. However, we do know that the IUCN is deferred to much more commonly by the world's researchers and media organizations than the Endangered Species List. This does not mean that the IUCN has more political agency to affect conservation though. The Endangered Species Act, unlike the IUCN, holds the power to stop many forms of development in its tracks, in order to protect species. That fact alone means, to a certain degree, that the ESA is more powerful. What this also means is that there are many more political hurdles to jump in the process of listing a species. This is made evident

Nature (IUCN) has put considerable energy into documenting the decline of the last living *Sequoia* species. Herein lies the problem: The acknowledgement, important as it is, that *Sequoia sempervirens* is in decline, does not take us nearly far enough toward understanding its *bringing-to-endangerment*. Specifically, it does not consider the systemic relations between capitalism, settler-colonization, and scientific forestry, as I have outlined herein. That a species is in decline only states the outcome, leaving the circumstances and conditions of its move toward declination is under-emphasized. The Endangered Species Act (ESA) requires many stakeholders in the control of the redwood forest to collude in finding for that tree to be listed, with heavy impacts to many aspects of economic life in the area. Importantly, in my view, there are no obvious "political consequences"[342] to the listing of *Sequoia sempervirens* by the IUCN, whereas there would be if it was listed by the ESA.[343] For example, if the coast redwood was listed via the ESA, the effects on the local tourism economy might be negatively affected, because where there are endangered species there are strong limitations on use of space.

With all that in mind, I question why the American government, through its mechanism of the ESA, has not set out to follow the declarations of the IUCN. The political will that it takes to list a new species via the ESA might not be there for *Sequoia sempervirens,* and that is unsurprising.[344] If the coast redwood were to be listed, it would mean, unequivocally, that there could be no "taking" of *Sequoia sempervirens* in any way. By "taking," the ESA means "harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting."[345] It would seem that, for example, the conversion of redwood forest land into grape vineyards – a common plan in Northwestern California of today – would constitute a very clear breaching of "harming" and "killing." The conversion of redwood ecosystem land into agricultural lands of any sort could therefore also be understood as a

by the fact that the IUCN lists far more species than does the ESA, particularly birds, insects, and plants. The ESA is also plagued by "vague definitions of *endangered* and *threatened"* (Harris et al. 2011).

[342] Kelly 2017.

[343] Lieben 1997.

[344] Harris et al. 2012.

[345] Endangered Species Act of 1973.

violent act against the right to life of the coast redwood. The ESA, and its government actors, would have to be highly politically motivated to take on that battle to list *Sequoia sempervirens* at the level that the IUCN has. My research has led me to feel more inclined to agree that the coast redwood should not actually be listed, because it is in decline for reasons that are not founded by the requirements of the ESA. That said, the IUCN does get point more in the direction of what I assert are the real reasons the tree is in fact in decline.

By thinking about the *acts of removal* (which are characteristics of the capitalist system) perpetrated by the American state, settler-colonists, and scientific foresters, we are answering the following question: What systemic characteristics needed to be in place for the 'endangerment' (at lEast according to the IUCN) of *Sequoia sempervirens* to become inevitable? In so doing, we then have a much stronger foundation for the potential reconstruction of the 'would-be' Redwood Curtain as, again, a socio-ecological boundary between redwood country and the always expanding World-ecology of capital. I say "would-be" because, as I have outlined above, this is not the popularly accepted view of the Redwood Curtain.

(Re)Constructing the Socio-Ecological Barrier

"When capital has moved on,
the importance of place is more clearly revealed."
- Raymond Williams[346]

Through deconstruction of the investments of meaning into the popularized notion of the Redwood Curtain, as a marker of *socio-cultural isolation,* I was able, in this and the previous chapter, to then construct, through critical historical analysis, the Redwood Curtain as an historical *socio-ecological barrier.* I then showed that this barrier was 'systemically removed' through the processes contained in the

[346] Williams 1989: 242.

structure of settler-colonial invasion and the advance of redwood silviculture, or scientific forestry. We can now see that the Redwood Curtain, as it is most understood, is little more than socially constructed at this point. What was once an ecological zone of defense against the inevitable onslaught of the capitalist World-ecology, what one could call a Great Red Wall, which became excessively porous with the expansion of the Far West commodity frontier and its technoscientific advancements. It remained an obstacle, but with the extension of the railroad into Humboldt County, and eventually HWY 101 during the Progressive Era, it was made into a mere inconvenience, an inconvenience of travel that would eventually be used by young, often entrepreneurial white settlers of the most modern sort to locate their new off-the-grid outlaw lives as rogue pot growers and urban dropouts. In short, the Redwood Curtain – in its most popularized sense – was invested with meaning that was incognizant of the historical socio-ecological agency of *Sequoia sempervirens,* as a protective boundary against the capitalist invasion of Humboldt Bay in the middle of the 19th century. It was constructed to explain why Humboldt remains less capitalized than the rest of California. Nevertheless, if we take seriously the historicized view of the Redwood Curtain, then we also must take seriously the role of the physical incursions that effectively removed it, only for it to be remade in a purely socio-cultural context.

In two grand *acts of removal* this was accomplished. First, through several state-funded genocidal massacres, the 'Indian problem' was solved, as lEast from the perspective of the invading settlers and the state. The forced removal and tribalization of Indigenous people and lifeways in Northwest California cleared space for the settlers to entrain the surrounding nature to the world-ecology of capital, to make nature work for it. Planting trees in nice, neat rows; sectioning off plots of land in squares and triangles; implementing technological advancements that made the cutting down of trees that took 1,200 years to grow, profitable. Second, the removal of (i)ndigenous trees, plants, and animals laid the foundation to produce capitalogenic places, such as the Redwood National Forest

and other land uses that were specifically geared to the commodification of the work/energy of soil, plants, animals, and humans. I sought to show how this was accomplished not only through settler-colonial property relations, but through specific *silvicultural* practices that required the taking down of roughly 94% of the all the existing old-growth redwood trees of the Far West.

The systemic removal of the Redwood Curtain was a project of capital's inherent exterminism, which implies the following: We are not witnessing an 'extinction event', but a long-unfolding *extermination event* that is fueled not by *Homo sapiens,* but by the capitalist system itself. This 'infinitely stretchable event'[347] can only be ended if the processes that have historically pushed it forward are ended. That may be a political question, more than anything else, but there is an ecological solution as well: reconstruct the Redwood Curtain as a socio-ecological barrier to the capitalist world-ecology. Silviculturalists of today are already there, for they are "managing for complexity"[348] against the management for simplification that was imposed for the past 200 years. While there is far from unanimous agreement, there are many ecological scientists who say re-growing forests, in ways that mimic the complexity and chaos of (i)ndigenous forest, could slow down the runaway climate change we are already experiencing.[349]

As I have outlined already, even the science is questionable regarding the "endangered" status of *Sequoia sempervirens,* but what nobody questions, scientists included, is whether human social systems played the key role in the bringing-to-endangerment of this ancient tree species and some of its ecological companions as well. It is at this crucial moment where we must now zoom out a bit further and consider those systemic apparatuses that bring human beings to the point of destroying life to

[347] This is a term I take from the work of Fernand Braudel that will be explored in much more detail later.
[348] Puettmann et al. 2009: 80-84, 129-30.
[349] IPCC, 2014; National Research Council Committee on Geoengineering Climate, Technical Evaluation Discussion on Impact 2015: 20.

make life; the systems that require the flattening place in order to make space that is conducive to the production for the market, what Polanyi called the 'weirdest' of all human endeavors.

So far, settler-colonial property regimes and silviculture have both been highlighted as ways and means of making nature (inclusive of the human and the more-than-human) work in support of the capitalist system. Both of those largely capitalist endeavors[350] utilize spatial practices that are both implicit and explicit. What has been produced in Part I is a theorization of *systemic extermination* and its constitutive elements. The coast redwood is the main case study used to bring this argument to the forefront. In Part II of the dissertation the concept of the *Anthropocene* is considered in greater depth, and in relation to the history of capitalism itself; Polanyi's *Great Transformation* is theorized in relation to the Anthropocene's *Great Acceleration;* and finally, all of these 'events' are placed into historical and dialectical relation to *systemic extermination* as it has been theorized thus far. The result, the conclusion if we must call it that, is an answer – undesirable as it must be – to what has been called the productivore's dilemma: *The Long Extermination.* In this part of the dissertation, I move away from *Sequoia sempervirens* as the main case study, but I come back to it some important ways. In the next chapter the idea of the *negative production of space* will be explored as a key, yet implicitly constructed, civilizational tool that settler-colonialism, capitalism, and silviculture have all utilized explicitly.

[350] It is worth pointing out that while I do not deal with these directly in this manuscript, there are certainly examples around the world of the production of space – even in recent history – that do not adhere to the systemic demands of capitalism. Post-socialist cities, for example, provide some evidence that neoliberal growth patterns do not dictate the ways in which space is planned and performed. Similarly, there are formers socialist and soviet states that have produced space in ways that support the state much more so than the capitalist world-system. I have elected to address these issues in later work.

Chapter 5: Negative Production of Space

Popular socioecological[351] imaginaries of a doomed planet often feature scenes of radically climate-changed environments, extreme separations of the rich and the poor, and cataclysmic wars over dwindling resources, all appearing as inevitable Earth-futures. To others these outcomes are stoppable, reversable, or even avoidable altogether. Contrary to the thinking of figures like Elon Musk,[352] there are many ways to interpret these crises, not merely a fight or flight response. In the second part of this manuscript, and this chapter specifically, I take the position that these fearful outcomes are not inherently inevitable, but instead are systemically mandated. It is indeed inevitable that there will be a so-called 'extinction event', for that is simply part of the cycle of life and death for all species, including *Homo sapiens*. The making-inevitable (on a faster time-line) of the 'extinction crisis,' however, is a *crisis of extermination*, brought on by the systemic processes that require the taking of certain life to make other life more viable. Crucially, the use of the word 'systemic' is intentional, pointing not to the ordered, systematic doings of individuals, but of the determinations of a system. One such process I seek to outline and theorize here is *negative production of space.* In doing so, I will look at both *settler-colonial property regimes* and *silviculture* as mechanisms through which this negative production process happened historically on the far Northwestern coast of California.

[351] See Mansfield et al. 2015; Fischer-Kowalski and Haberl 2007 for the frameworks from which I derive my understanding of the term "socioecological." Most directly, I use this word because, as it is understood in these works, it dissolves the binary of society-nature or human-nature as well as any other term. Further, in specific relation to forests, it allows for the discussion of forests as both social and ecological entities at multiple levels. Mansfield et al. write that "socioecological forests" differ "in terms of species composition, structure and function, and actions and actors (human and not) deemed necessary for the forest's persistence, as well as those deemed to threaten it." In the case of the coast redwood forest that lies at the center of the discussion in this paper, 'socioecological' is unquestionably applicable. See also Braun 2015.

[352] Futurist investor and corporate magnate Elon Musk was quoted as saying, "Either we're going to become a multi-planet species and a space-faring civilization, or we are going to be stuck on one planet until some eventual extinction event." See *Mars,* "Novo Mundo." Episode 1, Season 1. Netflix, November 14, 2016.

In theorizing *negative production of space*, I am giving a name to the act of expropriating meaning from already-existing place.[353] To 'expropriate meaning' is to remove – by force in many historical cases – previous investment of human meaning into space, which I posit as the root of the concept of *place*. I interpret this process as a key civilizational technic[354] of capital's[355] exterminism, defined as the historic and ongoing systemic appropriation of life in ways that entrain nature to work for capital.[356] I will highlight two forms of civilizational conquest and development that will help to explicate negative production of space: *Settler-colonial property regimes* and scientific forestry, or *silviculture* – as it was put to work in the far Northwestern tip of the state of California.[357] These examples also provide a lens through which to think about capital's exterminism in a long-historical frame, which will be the subject of the remaining two chapters.

The chapter will unfold in the following way: First, I will define *negative production of space*. Then, I will situate it within the ongoing intellectual debates about the new epoch now officially named, by and for geologists, the Anthropocene.[358] This is important, because it provides some of the background necessary to understand what is at stake in the case study of the coast redwood tree, or *Sequoia sempervirens,* which I have argued is not simply going extinct, but is in fact being 'systemically exterminated.' Second, in an effort to show the systemic nature of this 'extermination event',[359] I

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[353] See pp. 19-20 for a more robust discussion of "meaning."

[354] I take this idea from Lewis Mumford, who argued that "technics" of civilization originate from the "exploration of the raw environment, the utilization of objects shaped by nature – shells and stones and animal gut – for tools and utensils," only be mechanized with the rise of "the machine" under capitalist employment. It inevitably led to "the habituation to wreckage and debris as part of the normal human environment." See Mumford 2010: 60, 158. For the remaining pages, I will return to the now conventional spelling of "technique."

[355] It is important to note that when I use "capital" here, I am naming the system of capitalism as an entity unto itself with both physical and social impact upon environments, not to be confused with the use of the term capital as a relation of materiality. In other words, I use the term "capital" to apply to actual resources at some points in the manuscript and as a relation in other parts of the manuscript.

[356] I owe the term 'exterminism' to Jason W. Moore, and the connected phraseology of 'life' in capital to Melinda Cooper. See Moore 2015; Cooper 2008. What I am doing here is spatializing and historicizing the concept of 'exterminism' in process.

[357] See Chapters 3 and 4 for additional explanation of the historical development of silviculture.

[358] See http://quaternary.stratigraphy.org/working-groups/anthropocene/.

[359] This is a term that my colleague Justin McBrien and I have discussed for some time. He highlights the idea in a recent essay. See McBrien 2019.

explore the imposition of settler-colonial property regimes[360] on Indigenous people[361] and the (i)ndigenous[362] trees of Northwestern California through the settler-colonial structure of invasion.[363] Third, I will expand on this structural argument by discussing the rise of scientific forestry, as both a Western scientific knowledge regime and a vehicle by which the capitalist system was placed into the temperate redwood rainforest ecosystem of Humboldt County. Finally, I will conclude that since *negative production of space* is predicated on the 'expropriation of meaning from place', then a *positive* 'production of space' could also be elucidated.[364]

Defining Negative Production of Space

As stated above, *negative production of space* is the historic and ongoing appropriation of meaning in *place* to make nature work for capital. Put another way, it is the systemic extraction of some aspects of existing place, not only raw materials, to produce a new place that helps establish the capitalist production of space.[365] While this may be a relatively new conceptual tool, what it describes is not. Henri Lefebvre is very instructive to the conceptualization. Whereas in the past exchange value of products and things were expressed in the money-form, they most often "bought or rented land. Today, what are bought … are *volumes* of space: rooms, floors, flats, apartments, balconies, various

[360] This term can be understood as normalization of land expropriation as an enterprise of an occupying entity.
[361] To be specific, I am writing primarily about Indigenous people of Northwestern California, not a universalized Indigenous person that can be understood at the global level. This Indigenous person does not in fact exist.
[362] I have elected to use '(i)ndigenous' to describe plants and animals that are native to a specific ecological zone, as a way of connecting, through a multi-species lens, the not-human natures that are exterminated in the processes of the imposition of settler-colonial expansion.
[363] Settler-colonial invasion is not merely an event or process, it is an imposed structure. See Wolfe 2006, 2013.
[364] I will explain the use of the word "expropriation" in much greater detail throughout the chapter, but for now it is appropriate to think of it in a more general sense of meaning: to take away.
[365] It is important to point out here that raw materials and meaning, as I am interpreting them, are also examples of *life*. In a philosophical, if not less than material sense, it is life itself that is being expropriated. 'The capitalist' is also life in motion, and thus is an investment into the making of place, even if simultaneously an 'unmaking'. Raw materials are only converted into commodified energy by humans working with the capitalist infrastructure. It must further be stated that I interpret all 'negative production of space' as capitalist. While it may be argued that other forms of negative production exist, the aim of this paper is to highlight a specific sense of the term. Perhaps in later work, the idea can be expanded to look at earlier forms of appropriation by dispossession as a way of expanding the concept.

facilities (swimming pools, tennis courts, parking-spaces, etc.)."[366] For Lefebvre, who mostly dealt with urban spaces, this was the *consumption of space*. The move from place to space, and back again, in the historical reality of the Redwood Curtain, is a move from non-commercial place-making to the destruction of place, and then to the production of space for profit. In that move, place was destroyed and redeployed for capitalist means. I will come back to this later in the chapter. It is important to get some conceptual clarity on the key terms herein.

If *place* is understood as space invested with meaning, we must also conclude that place is only recognizable as a construction of the human intellect. Admittedly, this is a bit Cartesian in its coordinates, but I have not found sufficient grounds to claim that place exists beyond human social construction. More-than-human communication exists in forested places, even amongst the trees at the heart of this manuscript,[367] but a simple truth cannot be avoided here. That is, if a human is not interpreting and then communicating the existence of place, it does not exist in human reality. However, that does not imply that the matter entangled in the space-place relationship is somehow fixed, nor isolated from the social-constructive process. To claim social construction is not to simultaneously claim immateriality. To the contrary, I take Karen Barad's notion of matter to be instructive: "substance in its intra-active becoming – not a thing but a doing, a congealing of agency."[368] While space is transcendent of human existence, place is not, because it can only exist if it is contemplated and thus, produced. At the risk of under-selling space as a concept, I want to suggest that space is the always existing foundation upon, and within which, place is constructed, socially and

[366] Lefebvre 1991: 336-37.
[367] See the work of Suzanne Simard, who has done great research on the ways in which trees communicate with each other in the Pacific Northwest (Simard 2021). Additionally, Paul Stamets has also written and studies extensively on the ways in which Mycelium-based communication works like an ecological Internet for all of the plant species of a forest (Stamets 2005). There is also a rich literature on the more-than-human ways in which plants behave, and the implications on how we think about forests. See Marder 2013; Kohn 2013.
[368] Barad 2007: 184.

physically. How space is interpreted gives place much of its meaning. Whereas place is also interpreted, it is produced repeatedly through time, and interpreted by those living in it.

As mentioned in the Introduction and elsewhere in this manuscript, the conceptualization of matter as having agency is not contested here. Barad's identification of this framework of analysis is 'angential realism', or the consideration that "the forces at work in the materialization of bodies are not only social and the bodies produced are not all human."[369] In this viewing of agency a redwood tree is engaging in material agency while being a more-than-human body. Interpreting material conditions in this way troubles much of the stricter Marxist traditions. For example, Alf Hornborg, a highly respected Marxist environmental historian, argued against the use of post-humanism in any form if one is to be a Marxist.[370] In this sense, I am writing against a more traditional Marxist approach that has not adequately considered more-than-human aspects of life. This also pushes against the feminist postmodern/poststructuralist theorizations of "materiality solely as an effect or consequence of discursive practices."[371] I am of the position that from a material perspective, place and space are at all points interacting and converging upon one another. However, I agree with the basic Newtonian framing[372] that space is the physical reality into which all other actions happen. This does not suggest that space is thus devoid of agential impact, or that space is like Newtonian matter – dead and lifeless. To the contrary, like a long line of critical geographers, I do not support the oversimplification of space that Newtonian physics suggested. I am merely suggesting that space where our discussion starts when we are examining the production of place. Further, I suggest that the un-making of place also begins with discussions of space.

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[369] Barad 2007: 225.
[370] Hornborg 2020.
[371] Barad 2007: 225.
[372] Some refer to this basic framework as connected to the Newtonian school of physics, which suggests that the world is essentially composed of individual objects, each of which can be measured by abstract methods based upon determinate boundaries and observable properties. Importantly, this school of thought also rejects the now popularly accepted idea that observation physically alters the observed. See Barad 2007: 194-96.

In the context of systemic analysis, *place* can be understood to be space invested with power-laden meaning,[373] for investments of meaning in space do not happen evenly across time and location. I argue that *negative production of space* is a specifically power-laden capitalist technology of spatial production, and that the real outcomes of it are *systemically* derived determinations of the world-ecology of power and re/production in what Fritz Capra referred to as the "web of life."[374] Capitalist production and reproduction happen not in "Nature" as a container in which human and more-than-human relations swim, but in "nature" as an unruly web of complex relations that whole civilizations "move *through,* not around."[375] A dialectical understanding of nature-as-web follows from the relational understanding of resources and production that Marx put forward long ago,[376] then expanded upon by other more recent dialectical analyses[377] that ground the historical development of capitalism as a "rich totality of many determinations"[378] containing their own environmental histories. When we articulate these determinations in time and space, historically specific examples can be highlighted. Some of these determinations, like the policies of assimilation and Indian self-rule (1870s-1950s), all of which were passed by the United States government as structural (meaning: an enduring element of lawful participation in society) institutions with the purpose of taking away any potential power Indigenous people could retain based upon their ancestral connection to the land. Those were determinations that made scientific forestry possible in Northwestern California, bringing into operation a formal structure of invasion-appropriation-exploitation that continues today, although

[373] Cresswell 2015: 15. Whereas Cresswell outlines his view of place as "invested with meaning in the context of power," I am simplifying this idea on the one hand, while complexifying it on the other. I suggest that meaning can, and is, invested into space to make place by groups that may or may not be considered the holders of "power," depending of course on how power is defined. Yet I am complicating the idea by suggesting that the investment of meaning can, and does, happen not only by the takers of the land, but by the original holders of the land.
[374] Capra 1996: 4.
[375] Moore 2015: 44.
[376] Marx 1990.
[377] Ollmann 1976, 2003; Harvey 1974, 1996; Smith 2006; Moore 2015.
[378] Marx 1973: 100.

now in a less formal way, allowing market forces to do much of the work which the government did at the time of settler-colonization.

'Determinations' are not to be understood here as 'outcomes' in the causal-mechanistic sense of the scientifically predictable results of actions taken over time. It was a determination of settler-colonial property regimes, and therefore of the state, that Northwestern California Indigenous communities were to be "removed"[379] from the land they had been occupying continuously for millennia.[380] In the dialectic, as I interpret it, a 'determination' is a kind of impermanent, still-unfolding event, brought about through the relations between systems and their parts. As Patrick Wolfe reminds us, "the colonizers come to stay," creating a structure – not an event – that relies upon the 'elimination' of the Native.[381] Forcing, in this case, the Yurok, the Hupa, the Wiyot, and the Karuk to survive on lands they had little knowledge of (poor valley floors far away from the mouth of the Klamath River, their ancestral territories).[382] An enduring structure was being set up that would allow the colonists to produce new places through the investment of capital. This accumulative space is the space of settler-colonial occupation.

While it is true that the capitalist mode of production depends, first, upon the appropriation and exploitation of the existing contents of a given space, the reproduction of that space becomes impossible, or at lEast very problematic, since the ecological time necessary to reproduce a space is too vast for the capitalist. As Lefebvre states, "Eventually it becomes necessary to reproduce nature also, and to master space by producing it."[383] This aspect of the capital-nature relation is as much a production by taking away as it is a production by putting in. In the case of Indigenous land, the

[379] Spence 1999; M.K. Anderson 2005: 157; Madley 2016: 257-8.
[380] See p. 16 for more on this.
[381] Wolfe 2006.
[382] In many cases, the valleys that Indigenous people were forced to relocate to were areas that they had not used to produce food, and instead used for gatherings and other large-scale events. Because of this, those lands were not tended with the same intentions that other land was. Often called "Rancherias," these allotments of land were small and in some cases unsuitable for the agricultural planning that the state would force upon them. See M.K. Anderson 2005: 114.
[383] Lefebvre 1991: 219.

capitalist settler-colonial occupier encountered an already well-developed socioecological system that depended upon patient alignment with the slow pace and chaotic (though also predictable cycles of night and day) structure of socioecological time. The removal of too many plants and animals in one season may result in a severe lack of food for the following season, or in some cases several season down the line. The cutting down, or removal, of a grove of tanoak trees, or *Notholithocarpus densiflorus* var. *densiflorus,* would mean a significantly lower availability of meat, because the bears, boars, elk, and deer who feed upon the acorns – the same acorns that are central to the Indigenous diet of Northwestern California – would likely not return to their normal feeding spot.[384] The production of space through the settler-colonial property regime of 'removal' is predicated on the expropriation of existing human meaning in place,[385] as well as existing more-than-human life that provides, in tandem, much of that meaning through the lens of the human experience. The socioecological determinations of these acts of removal are embedded in the imposed structures of settler-colonial property regimes. Importantly, by thinking about what is removed, we leave room for resurgence of Indigenous lifeways and (i)ndigenous plants and animals; room for the idea that there was no actual "conquest," as much as an occupation that is still very much underway.

Negative production of space is thus a civilizational tool I am naming and attempting to describe in its practice. It is a determination of the capitalist World-Ecology and is itself a structure. Crucially, it is not necessarily 'systematic' (methodical), but 'systemic' (born of a totality). In the former, those colonizers engaging in negative production would be doing so in an ordered, managed, and intentioned way, arguably independently of the state's own system of appropriation through expropriation of land. To the contrary, it is more evident that there was chaos and misunderstanding

[384] M.K. Anderson 2012: 85, 174, 179, 285-87.
[385] See n. 59.

everywhere in the process,[386] and I assert that was largely because it was the systemic requirements of capital[387] that informed their behaviors in reference to the appropriation and production of space.

To sum up the chapter thus far, I have been laying out an argument that many, if not all, of the causes of what could be pointed to as the 'bringing-to-endangerment' of the coast redwood tree are systemic. That is, beyond the scope of one species or any individual. *Negative production of space* then derives from the systemic requirements of the capitalist World-Ecology, not the requirements of what makes up *Homo sapiens.*[388] The popular argument for the onset of the sixth mass extinction, and for the Anthropocene, its attendant epoch, suggests that it is indeed *Homo sapiens* that is to blame for the crisis moment we find ourselves in today. The conceptual device of *negative production of space* seeks to unsettle that argument. It is important therefore to dig into the debate regarding epochs, so that we can more clearly identify the role of the production of space in the making of the Anthropocene epoch.

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[386] Much work has been done outlining the relatively haphazard nature of the early militia groups in Northwestern California. Some were funded while others were not. In some cases the government paid men to assemble these groups and carry out mass genocides, while in other cases men put the groups together under the guise of government-sanctioned militias in order to carry out expropriations of desirable Indian land, regardless of its lawfulness. See Lindsay 2012; Madley 2016. The willingness of some settlers to carry out these executions with or without sanction is also evidence that it was the inherent beliefs they had about the Native Indians, private property, and capital that drove their actions, not logic based on systematic processes.

[387] Here I am thinking specifically of the need for an ever-expanding market of commodities in the form of surplus-value generation and a consistently expanding ecological frontier for exploitation. The former was written about extensively by Marx and Engels, while the latter has been explored by Jason W. Moore. See Marx and Engels 1964; Marx 1967: 153-4; Moore 2015: 95-98.

[388] This is not to say that cultural factors, such as long-established religious dogmas, patriarchy, and racism were not also very strong motivating factors. However, it is beyond the scope of this paper to give the issues of race and gender, specifically, the intellectual energy they deserve. I believe there are others much more prepared to take that on. I am a White settler, and thus it is not actually my place to make such judgements about the role of race versus the role of capital. However, what I can, and arguably should, spend considerable energy remarking on is the role of the capitalist system, which was begun by and is still largely controlled by White men. To be very clear, I am also not utilizing what some have called 'standpoint epistemology' or the practice of deferring to those most affected by various oppressions as being better suited to write against it. In fact, I argue that this can cover up the political and economic intent behind systemic oppression. See Taiwo n.d. Nevertheless, there are other scholars who are much more skilled at speaking to these aspects of capitalist society. Race and patriarchy are, to be clear, indivisible from the negative production of space, but I have made the choice to address that aspect in later work with other scholars, for I think it does deserve extensive treatment.

Setting the -*cene*

> "The '**Anthropocene'** is a term widely used since its coining by Paul Crutzen and Eugene Stoermer in 2000 to denote the present geological time interval, in which many conditions and processes on Earth are profoundly altered by human impact. This impact has intensified significantly since the onset of industrialization, taking us out of the Earth System state typical of the Holocene Epoch that post-dates the last glaciation."
> - Subcommission on Quaternary Stratigraphy, 2019

Epochal debates, from the geological to the poetic, have risen from the dust of the Holocene, our apparently previous epoch,[389] for over a decade. The '-cenes' of mass extinction (Anthropocene,[390] Capitalocene,[391] Chthulucene,[392] Plantationocene,[393] Necrocene,[394] among others) have come to resemble a revolving set of stages, but only one supposedly large enough upon which the undeniable climate crisis[395] can play out. Unlike the alternatives to the Anthropocene,[396] some of its popular scientific narratives rely upon envisioning humans as a kind of 'bully species',[397] the only sentient entity

[389] The Anthropocene Working Group of the Subcommission on Quaternary Stratigraphy officially named the new epoch the "Anthropocene" on May 21, 2019. See http://quaternary.stratigraphy.org/working-groups/anthropocene/.
[390] Crutzen and Stoermer 2000; Crutzen and Steffen 2003; Crutzen 2006; Zalasiewicz et al. 2008; Zalasiewicz et al. 2010; Pievani 2014; Scranton 2015; Waters et al. 2016; Kolbert 2016.
[391] Moore 2014, 2015, 2017; Cox 2015; Parenti and Moore 2016; Dawson 2016; Cox et al. 2018.
[392] Haraway 2015, 2016.
[393] Haraway 2015; Haraway and Tsing 2019. See https://edgeeffects.net/haraway-tsing-plantationocene/.
[394] McBrien 2017, 2018; Clark 2019.
[395] This term should be broadly interpreted to mean the ongoing and intensifying effects of climate change and global warming.
[396] This is to be contrasted with what some have called the "geological Anthropocene," for there are many nuanced debates about when and how the Anthropocene started, as well as the role of humans in it. See especially Malm and Hornborg 2014; Chakrabarty 2014; Yussoff 2013.
[397] Leakey and Lewin 1995.

capable of playing the role of impending asteroid, bringing what many have pointed to as the 'sixth mass extinction,' indeed already underway.[398] When considering the historical production of space in any one of the many zones of extinction[399] around the world, we are pointed not only in the direction of an 'extinction crisis', but as I want to argue, an 'extermination crisis,' where plants, animals, and other creatures are being annihilated at a rate far beyond anything in recent recorded history. Scientists refer to this as the 'background extinction rate', but a better referent might be the 'background extermination rate.'

An important distinction needs to be made here. Species are not being annihilated by various forms of competition with other species, as in the classical biological understanding of extinction,[400] but by 'industry' and 'consumption', and all the threats to ecosystemic operation that come from them. A dialectical approach to understanding the Anthropocene and extinction must have the ability to see the "system" (specifically, in this case, the capitalist system) as not an already occurring, omnipresent thing, but "an intellectual construct designed to elucidate some aspects of reality, but necessarily ignoring and even distorting others,"[401] as dialectical biologists Lewontin and Levins point out. This is, in my view, the only way we can get beneath the surface of the crucial assertion that it is consumption, industry, and population growth that is causing this epochal change. These are all human, or Anthropogenic, problems, but they are problems derived in and through a dominant global capitalist system that has been in place – in various forms – for more than 500 years. The

[398] Glavin 2007; Dunn et al. 2009; Amato and DeSalle 2012; Pievani 2014; Kolbert 2014; McCallum 2015; Plotnick 2016.
[399] There are many areas where both human and more-than-human communities are being severely impacted by the rising rates of extinction of species. For example, "extinction hotspots" are located North America, the Siberian Tundra, the Patagonian Coast, and multiple SouthEast Asian island communities. These are linked to the earlier concept of "biodiversity hotspots" (see Myers 1988) but are differentiated by the disappearances of ecological communities and the rise of deeply threatened human communities as well. See Myers 1991; Hopkin 2006; Davidson et al. 2012.
[400] Admittedly, this is an oversimplification of the process of extinction, but it cannot be over-emphasized that extinction is inevitable for every living creature on this planet, and in that sense, it is not such a distinct event.
[401] Lewontin and Levins 2007: 122.

Anthropocene (particularly in its popular scientific narration) does not appear capable of representing what is at stake.

The Anthropocene is not big enough to capture the thickness[402] of what it seeks to represent. In the Anthropocenic narrative, capitalism[403] passes virtually unexamined. Paul J. Crutzen, the initiator of the conceptualization of the Anthropocene, along with his group of highly regarded climate scientists, have argued repeatedly that one of the key drivers of Anthropogenic climate change is consumption on the global scale,[404] yet he (and a great deal of other thinkers on this subject) does not name the system[405] that has made hyper-consumption[406] a pre-existing condition of planetary demise. This is likely because they choose not to view it from the politico-economic position that I and others do. Perhaps that is because to do so would be to use the tools of Marxism and critical social analysis, it also might be because no other science that came before them took that approach. J.K. Galbraith argued many decades ago, that the theory of 'consumer demand' – that it is the main cause of the spike in output growth of specified industries – is deeply flawed on the grounds that it does not articulate the difference between consumers satisfying basic physical needs (i.e. sustenance) and satisfying 'psychologically grounded desires'. I do not believe that the geological chemists and atmospheric scientists who have helped shape the narrative of the Anthropocene are incapable of understanding what Galbraith so clearly articulated. Further, the idea that the Anthropocene is brought on by a crisis of consumerism, as opposed to the manufacturing of spurious needs and wants, supports the false narrative that all wants originate with the consumer.[407] All wants and desires do not originate with the consumer, any more than does commodity fetishism originate from the market.

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[402] That is, the thickness of the line in the rock strata that will likely mark this epoch in relation to the others. Haraway, in this vein, argues we must make the Anthropocene as "short/thin as possible." See Haraway 2015.
[403] It is very uncommon to see that word uttered within the discourse of the popularized Anthropocene narrative.
[404] See https://www.youtube.com/watch?v=vd7utmeP1qo for Crutzen's own thoughts on some of this.
[405] Steffen et al. 2007; Crutzen and Stoermer 2000.
[406] Crutzen and Schwägerl 2011.
[407] Galbraith 1998: 117, 126-7. See also Pirani 2018: 175-6. There is a rich literature that shows specifically that the production of needs and wants plays into rises in consumerism over time. For more on what is known as the 'Institutional

In pointing to 'human consumption' as the culprit, Crutzen and others are also placing the blame at the feet of those who live in the so-called developed world, a minority of the world's population, as opposed to the even smaller minority of the global population doing the majority of releasing of CO2 into the atmosphere.[408] Poor people struggling to feed their families from the desertifying farm-beds they rely upon can hardly be pointed to as problematic consumers of anything other than misery and despair. 'Pavement dwellers'[409] on the crowded streets of Bombay don't seem like willing subjects of over-indulgence. The seemingly endless production of what Haraway called "forced homelessness,"[410] for example, is not a problem of the human species, it is a problem of the exterminist agenda of what C. Wright Mills called "the power elite," and what Peter Phillips recently extended to call the "global power elite."[411] They are the managers of the World Bank, the International Monetary Fund (IMF), NATO, World Trade Organization (WTO), G7, G20, and many other organizations that are, above all, concerned not only with brokering global peace through economic harmony, but with the expansion of capital. These organizations are often in close consultation with large multinational corporations, banking executives, and the several hundred members of the nongovernmental policy planning networks of what Phillips points to as the Transnational Capitalist Class, specifically that 1% of the global population that controls a large amount of the available capital on the planet.[412]

Economy' critique, which places special emphasis on the role of "nudges" that move ordinary people into the position of being consumers and desirous of specific goods and services, see also Vercellone 2010; Veblen 1946, 2007; Sheehan 2010.

[408] If we look at per capital kWh/year usage around the world, we see that in the United States it is 4,517, while in India it is 131. This is a crude measure of course, because it does not account for massive disparities of wealth and access in both the developed and developing worlds. See http://shrinkthatfootprint.com/average-household-electricity-consumption.

[409] Roy and Giyasuddin 2018; Ramachandran 1972.

[410] See https://www.theguardian.com/world/2019/jun/20/donna-haraway-interview-cyborg-manifesto-post-truth?CMP=share_btn_fb&fbclid=IwAR3xMbYinqX6cSIlualQOc9nx02p58EqfA5f15szUTMLuUUVjeZlHaxWogU

[411] Phillips 2018.

[412] Ibid, 9-10. For a list of 389 of the specific people that Phillips names as members, or "facilitators" of the Transnational Capitalist Class, see pp. 161-219. This is the first published book that has sought to name the people at the core of the transnational capitalist power structure.

On the one hand, it is relatively easy to point to this rather small percentage of the human population with a not insignificant amount of global economic and social power. On the other hand, however, these people are just working within a system that is designed to operate in such ways. What Peter Phillips and others are alluding to in writing about capitalist transnational class relations is that capitalism itself is the root of the global crises that we face today. What would it mean if geologists, chemists, and environmental scientists began to recognize these relations in their own research projects? What is at stake for them?

There is something caught up in that dystopian knot of relations that geographers and historians can do much to clarify: the role of the production of space in, through, and under the agency of the capitalist World-Ecology, a production process that requires the expropriation of life in order to make new life profitable.[413] There is nothing new or groundbreaking in acknowledging and naming this inherent life/death contradiction of capital,[414] but when it is placed in relation to the historical production of space something both old and new emerges. New, in the sense that we are capable of envisioning different pathways toward the production of space that move away from production of space that does the work of capital accumulation. Old, in that the production of space has happened, one way or another, for as long as humans have been around to contemplate it. We are, to recall,

[413] I choose to identify the system this way, along with others in the World-Ecology community, but it should be pointed out that this naming is resting on the foundations of the work done by Fernand Braudel, who first defined the "world-economy" as concerning "a fragment of the world, an economically autonomous section of the planet able to provide for most of its own needs, a section to which its internal links and exchanges give a certain organic unity" (1979: 22). For Braudel, the "world" is determined according to the social and economic processes of places within a world of worlds. Immanuel Wallerstein would both simplify and greatly complicate this idea, in suggesting that there was a "world-system," or a system in which the worlds all evolve over time and space. Approaching it like an astronomer, who uses "the laws derived from the study of smaller physical entities, the laws of physics, and argue that (with perhaps certain specified exceptions) these laws hold by analogy for the system as a whole," he was able to begin to think about the "world-system" as an always evolving constellation of worlds that intertwine and require historically specific abstraction and relation back to the whole in order to be understood (2011: 7). Jason W. Moore would later take both Braudel and Wallerstein and apply their thinking to the question through the lens of environmental history, or more specifically, the environmental history of capitalism. Capitalism has its own world-systemic/world-economic history, and that is the "world-ecology" of capitalism (Moore 2015).

[414] Capital is itself a relation, not necessarily a thing, and thus it must be brought to life. Often what is brought to life is at the expense of something else that must be put to death. For example, trees are planted, grown as capital investment, and then killed in order to be made into commodities.

'productivores'[415] not just omnivores. That is, we produce the environments that we use to reproduce ourselves and our own lifeways. We do not, as Marx pointed out more than a century ago, produce the environments we live in just as we please, for we produce under the social systemic controls and natural limitations imposed upon us, and these limitations include the laws of nature itself.[416] The intellectual construct of "the system" must be taken into consideration dialectically whenever we are attempting to understand place, space, and time in historical context.

In the case of settler-colonial man,[417] call him *Colonus occupanti,* it was not only the demands of the human species – air, water, soil, food – that lured him into the supposedly dark, wild corridors of the far Northwest of California's Pacific Coast temperate rainforest, but rather it was furs and pelts, land, gold, and wood, in that order.[418] At all stages of this historical progression, from furs and pelts to gold and wood, there was always the necessary step of removing impediments to the appropriation and exploitation of resources. Impediments included Indigenous people and (i)ndigenous plants and animals. Settler-colonial property regimes would be the civilizational apparatus by which *negative production of space* would be put to work for capital. In what follows, I will seek to show how these regimes of private property were utilized to expropriate meaning in already existing place.

Settler-Colonial Property Regimes and the Expropriation of Meaning

"Extermination is no longer even a question
of time – the time has already arrived,
the work has been commenced,
and let the first white man who says treaty or peace
be regarded as a traitor and coward."

[415] Lewontin and Levins 2007: 103.
[416] Tucker 1978: 595.
[417] Again, here I use the word "man" on purpose, for it has been extensively documented that it was primarily men, not women, who engaged in the most direct acts of colonization. Some have even argued that the existing patriarchy of settler-coloniality was more impactful on the outcomes of settler-colonization than was racism or capitalism. See, for example, the work of Fuller 2017; Meissner and Whyte 2017; Mies 1986; Vallowe 2017.
[418] It is well-documented that in earlier eras of the exploration of the far Northwest of California, particularly during the Russo-Hispanic period, many species of shore-dwelling and ocean-based creatures were nearly eliminated in the quest for highly sought-after furs and pelts. See Carranco and Beard 1981: 30-35.

- Marysville Daily Evening Herald, 1854.[419]

Expropriation,[420] particularly of Indigenous land,[421] is extermination in slow motion. 'Settler-colonial property regimes' necessitate and normalize the expropriation of land through what Nick Estes points to as "a formulaic enterprise of Native territorial dispossession."[422] One prominent understanding of Indigeneity is that it is ineluctably composed in and through land. Thus, to expropriate land – that is, for an occupying force to redistribute by any and all means necessary to its own people – is to expropriate the existing investment of meaning in place established over millennia by Indigenous people. Just as people produce place through their interaction with the environment around them, they do so within the ethical systems,[423] or regimes of knowledge[424] that direct those relations. Dispossession of Indigenous land, a key element in the structure of settler-colonial property regimes, becomes necessary, from the perspective of *Colonus occupanti,* because the land for many Indigenous communities is first a relation and only secondarily an entity.[425]

Land surveyors, what Edney called the "point men of British Imperialism,"[426] did much of the work in the dirt that the United States Congress needed done to gain access to the most fertile and resource-rich land left in the West. For example, in the 1880s, surveyors were sent out primarily to the

[419] *Marysville Daily Evening Herald,* August 12, 1853, quoted in Lindsay 2012: 319.
[420] I define 'expropriation' as the taking of land and resources from a person or group of people, by a state, occupying force, or any other power-seeking group, with the aim of distributing that land and its resources to the new group at the expense of the first.
[421] Here, I think the notion of "Indigenous land" can be extended to many different parts of the world affected by settler-colonial property regimes.
[422] Estes 2013.
[423] Ollman 1971.
[424] Foucault 1977.
[425] M.K. Anderson 2005: 133. Anderson points to the system of "usufruct rights" which was the closest conception they had in Northern California to 'ownership of land' or even 'land'. "If an area is used and tended, it becomes the domain of the gatherer." I interpret this as a 'relation' above a possession because it is only through working with the land that it becomes, in a sense, kept.
[426] Edney 1993: 62.

inland valleys bordering the forests,[427] under the guise of the General Allotment Act of 1887, to break up 160-acre tracts of land,[428] which they were charged with distributing to Indian families, and 80-acre tracts to be allotted to each single Indian male.[429] The goal of the Act was meant to separate Indians from the Reservation lands (good examples of negatively produced space), so that they could adopt "the habits of civilized life."[430] This meant, among other things, adopting the notion of private property, for the central goals of the Act were to teach Indigenous men "the white man's ideas about owning property and farming."[431] Further, as will be discussed later, there is linguistical evidence that the concept of ownership in relation to land was nearly non-existent in the Indigenous cultures of Northwestern California. Communal sharing of food and other resources is also a key tenet of what constitutes an Indigenous relationship to land.[432] To remove it is to remove an important source of meaning-making. Congress, in passing the Dawes Act (another name for the General Allotment Act of 1887), directly engaged in the development of these structures that were, again, capitalist in nature, but not directed by an external market as much as directed by one group of men to appropriate the lands of Indigenous communities. To be more specific the Dawes Act allowed for the government to

[427] They were specifically sent to find land that was hospitable, but not land of high resource wealth, like the lands that lay upon the rivers and near the sea. The job was to find a place where they could put Indigenous people that would then open up the resource-rich areas the Indians had already cultivated for centuries. In other words, the goal was not to help them return from the reservations to the land they were used to living on, but to move them into White society.

[428] Land that was, until then, only identifiable by the constant tending of Indigenous communities for many hundreds of years. Areas of frequently visited and occupied land were made visible not as squares and rectangles, but as vast areas of territory with porous boundaries. Traditional Indigenous resource management included many of the same techniques used today (burning, irrigating, coppicing, pruning, transplanting, tilling, sowing, and weeding. Boundaries were often marked by naturally occurring plants, such as a group of berry bushes, or an apple tree. See M.K. Anderson 2005: 134-5.

[429] This also shows the inherent patriarchy of settler-colonial property regimes. Where Indigenous community leadership was often engaged by women, landownership would be only by men.

[430] American Friends Service Committee 1947-1960; See also https://www.ourdocuments.gov/doc.php?flash=false&doc=50&page=transcript for a full transcript of the Dawes Act of 1887.

[431] M.K. Anderson 2005: 105.

[432] There is a great deal of disagreement among scholars regarding Native American conceptions of land ownership, but one thing is relatively constant in all the interpretations and that is that most California Indian societies engaged in the practice of communal food sharing. That is, at lEast some of the harvest in a given territory would be shared as a "wealth-spreading device, a way to both dissolve competition and strengthen social bonds." See M.K. Anderson 2005: 246-248. It should, however, not be assumed that all Indigenous communities treated land communally. It is also well known that many communities had practices of direct ownership, or at lEast control, over certain territories. For this reason, I stay with the term communal, while acknowledging that this is not a settled issue among scholars of Indigenous land use.

subdivide tribal lands in whatever ways benefitted White settler society. This is an example of the system of capitalism making White supremacy and settler-colonialism work for it, or what could also be understood as 'racialized capitalism'.[433] There is no market explicitly demanding Indigenous removal, but there is a political-economic system (liberalized democratic capitalism) that demands it, because there are commodities that can be sold on markets that are expanded by the process of removing Indigenous people from desirable lands.

The very act of forcing the institutional structure of private property on Indigenous people was violent on its face. This was not a gentle nudge toward a different behavioral pattern, but a blunt tool used by the state to move Indigenous bodies into White societal space. It was an act of force because they did not have recourse to go against the Act. To quote Singer, property 'rights' "regulate relations among people by distributing powers to control valued resources."[434] More directly, throughout much of North American history, private property has required violence to exist, and this continues to the present day. There are, for example, many laws in the United States that allow for the use of violence against anyone who enters private property without the consent of the owner. Put another way, it is a "right to exclude"[435] that is handed down by the state. In particular, settler-colonial property regimes, specifically capitalist in their structure, rested, like most other property regimes, upon the notion of private property, which is inherently violent as it is itself based on the negation of communality of ownership.

[433] See Burden-Stelly 2020 for a much more modern, yet relatable use of the concept of *racial capitalism*. Specifically, what I find very useful in her analysis is the idea that we cannot understand the oppression of black, brown, and Indigenous people only through the lens of race or only through the lens of class. We must always be looking at both aspects of society to understand oppression in America. However, going back to the establishment of the state of California, it is clear that capitalism plays a central role in making race, class, and of course gender, socially constructed categories useful to the goals of the capitalist system.
[434] Singer 2000: 3.
[435] Correia and Wall 2020.

The invasion and appropriation of land cannot easily happen if Indigenous people are in fact occupying the land that is the target of the appropriation. Appropriation by dispossession[436] is the first stage of the physical expropriation of land by the state or invading force. In the case of Northwestern California, these acts of removal came in the form of physical removal and relocation of Indigenous bodies to Reservations, utilizing a tool of the state called the "Act to Provide for the Better Organization of Indian Affairs in California" of 1864. This allowed for the creation of new Reservations: Hoopa Valley (1864), Round Valley (1864), and Tule River (1874). They were accomplished by executive order, replacing what had until then been five reservations set up and operated by the United States military.[437] When movement to government Reservations was resisted or didn't work, outright slaughter often became the method of removal, usually justified because of the acts of vengeance engaged in by Indians against their White occupiers.[438] The US state argued that the Indians needed to be removed because it was in their best interests, for there had yet been a successful method of controlling the settler lust for land. Importantly, this 'lust for land' was not necessarily based primarily on an inherent greed of the settlers, as some might argue. To the contrary, the inherent demands of the capitalist systems, or at the very lEast, of the profit motive, are as much a driver of the desire for land as the characteristics of any one group of settlers.

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[436] Moore 2016: 17. This is a formulation by Jason W. Moore that takes its cue from the work of David Harvey, who argued that the processes of accumulation of capital are often in the form of dispossession, hence "accumulation by dispossession." See Harvey 2010: 249. Harvey, in turn, took his cue from the work of Rosa Luxemburg, who argued that the capitalist system must create spaces of "non-capitalist strata" from which to find new sources of "primitive accumulation." See Luxemburg [1951] 2003: 248-49. Karl Marx is the intellectual root of this entire discussion, which all extends from the notion of the "primitive accumulation of capital," which he described as "nothing else than the historical process of divorcing the producer from the means of production," and that it only 'appears as primitive', because it is the zeitgeist of capital before the corresponding regimes of production take hold. See Marx 1990: 874-75. To my reading, Luxemburg's spatializing of the concept of primitive accumulation is crucial to understanding both what Marx was arguing and what Harvey was attempting to put forward. Finally, Moore's extension of the concept into "appropriation by dispossession" gets even more to the heart of the matter, because is suggests that what is really happening in most cases is, in fact, a kind of theft, for "appropriation" could theoretically be done in legal and non-violent ways, whereas dispossession is rarely anything but violent.

[437] Fletcher 1888.

[438] It is documented extensively that incidents of Indian acts of thievery of livestock (usually in response to animals being taken from Indigenous communities initially) would be the excuses used by Whites to murder Indians anywhere. There were large-scale massacres of whole families because of the stealing of a few head of cattle. See Haizer 1993: 253, 259-60.

The concept of moving groups of apparently homogenous Indians ("tribes") to reservation land was dripping with what Prashad has referred to as "paternalistic imperialism."[439] The Indian Removal Act (IRA) made it possible to remove Indians and place them on reservations to *save them* from their own "inevitable extinction" by way of violent confrontation with White society,[440] ultimately leaving them in such a weakened state as to be unable to fend for themselves.[441] They were, for a time, made up to be dependent children in need of shepherding from the ravages of uncivilized life into the civilized world of the enlightened White man, led by the Great Father, who was also the President of the United States and the head of Alta California, which in 1849 became known as just California.

For the settler-colonists of Northwestern California, indigenous land was the most important commodity,[442] and Indigeneity – which is dependent upon relation to land – stood in the way. This often meant that slaughter came long before negotiation of removal. It was not Indigeneity the colonists were after; it was the land through which significant aspects of it was formed. This points to the structural, and more importantly in my view, the *systemic,* nature of settler-colonial property regimes. Removal of Indigenous bodies from the land was not actually a step in a system(atic) process of "Indian removal," as much as a haphazard way of removing the obstacle to the demand of a structural system – settler-colonialism – to devalue certain human life to privilege other human life. Individual settlers were not making these decisions for their own benefit alone. Remarking on the metabolic relations between individual and community, Marx argued that "something is demanded of

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439 Prashad 2007: 21.

440 Here, I must invoke race, because this episode in history is one of the most race-laden aspects

441 Lindsay 2012: 231; Madley 2016: 258. Crucial to this depiction, however realist it may be, is the fact that Indigenous communities all over the North America, including many in the Northwestern California, have seen major resurgences in their populations, and in some cases – highlighted in the conclusion of this dissertation as well – large re-takings of what was formerly Indigenous land. It is of great importance that we recognize that this history in Northwestern California and elsewhere does not encompass the whole history of the American Indian from the 18th century on.

442 In my view, this includes gold and other materials, because without the taking of land, none of these resources were freely available for the taking.

the individual's power or capacity to do anything which is a foreign product, a relation determined by social conditions."[443] I interpret this to mean that in a given society, individual members are compelled to perform actions that might be foreign to their own desires, because the social conditions demand those things be done. A dialectical way of understanding the settler-colonial production of space is that it expropriates the existing communitarian production of place, and it does so through the implicit and explicit requirements of the capitalist system, not the demands of the individual colonists. However, it is often a small group of men who organize the production of space in service to capital. This is one of the inherent deceits of the capitalist system; it escapes blame in place of small groups of men working according to its laws.

A focus upon the individual deeds of each occupying colonist leads to an overshadowing of the system in place that produced those determinations. The power elite that is mentioned above in this chapter is nevertheless a strong aspect of the system. Identifying that elite group as part of the implication of the capitalist system is what I argue to be the strongest element in the historical development of the crises addressed in this document. Naming that system, capitalism, is important because it broadens the discussion of how and why settler-colonial production of space even occurred. Few others have done this in relation to settler-colonialism, but they do not bring it into relation to the question of extinction.[444] This may appear counterintuitive to some readers, particularly those who rightfully suggest patriarchy, race, and religion play more central roles in the domination of colonial spaces by their invaders. I want to suggest that my focus here, entirely placed upon the role of the capitalist system in developing, in fact necessitating, negative production of space, is not to be read as essentialist. While I am not simply suggesting "it's the system," I am, however, suggesting that all of the oppressive regimes of thought mentioned above are put to work by the capitalist system,

[443] Marx, *The German Ideology,* 1960, quoted in Ollman 1971.
[444] Estes 2013; Jacobs 2009; Wolfe 2013; Coulthard 2007, 2013.

specifically to benefit its end goals of appropriation, accumulation, and commodification of all of nature, human and otherwise.[445] Settler-colonialism shepherds in patriarchy, racism, and religiously dogmatic belief systems, all in service to the larger goal of accumulating and exploiting land, people, and resources.

Patriarchy, for example, is deeply embedded in the settler-colonial worldview.[446] Women in many of the Indigenous communities of Northern California are holders of extensive social and political power, because they have traditionally held the knowledge of the plant world, effectively being the ethnobotanists of Indigenous society.[447] To the contrary, the deeply embedded patriarchy of the invading culture was put on display when women were kept out of major decision-making power. This was evidenced when deciding how to respond to Indigenous communities who were unwilling to leave their territorial claims, for women were virtually absent from all connected public discussions.[448] Further, women were largely not considered as holders of the scientific knowledge that the colonizers most revered. The patriarchy is made more evident by the settler tendency to treat Indian women as automatically subservient to the whims and desires of White men, often resulting is brutal and regular practices of rape.[449] Crucially, it is also important to acknowledge that patriarchy, racism, and religious oppression of one form or another were all present in other economic systems throughout world history as well. Under state socialist systems of the Cold War era, there were still large land appropriations, often violently enacted, but even this was set against the ongoing struggle to survive amidst nearly constant capitalist counterrevolutions around the world, most commonly emanating from the West.[450] However, settler-colonial productions of space, within the environments

[445] Moore 2016: 52-3; Vogel 1983; Dalla Costa and James 1972; Federici 1973, 2004.
[446] Vallowe 2017; Jacobs 2009; Wolfe 2006, 2013.
[447] M.K. Anderson 2005: 41-42.
[448] Jacobs 2009: 1-24.
[449] Madley 2016: 30, 33, 73, 303.
[450] Here, I am thinking of the U.S.S.R. and its relations with China and Eastern Europe, which were quite violent toward people's ability to live independently of the socialization of land and resource ownership in the Soviet sphere of influence. This, however, did not happen until the late 19th century into the middle of the 20th. Further, settler-colonial property

of Northwestern California, were structurally predicated upon the removal, and often re-placement of Indigenous bodies and lifeways, which I move to explain in more detail below.[451]

Crucially, the physical removal of Indigenous bodies and (i)ndigenous plants from their native habitats points directly to the theorization of extermination that I am putting forward in this paper. Capital's exterminism is displayed in its systemic requirements to remove the forms of life that stand in the way of the production of the forms of life the system deems more valuable. For space to be produced in a way that would accomplish the goals of the settlers, the state, and the requirements of capitalist development, *reservations* were established as a method of 'removing' Indigenous people from the places they had already developed. Treaties were the *civilized* way to enter land ownership negotiations with Indigenous people that possessed no accepted idea of land ownership. California Indians in particularly utilized something the colonists identified as *usufruct rights* where an area that has a long history of being "tended" or at lEast occupied "becomes the domain of the gatherer."[452] This also points to the ignorance of many early anthropologists and settlers alike who assumed that Natives were 'hunter/gatherers' and *not* 'agriculturalists.' To the contrary, they were often both. When early explorers and anthropologists asked Indigenous occupants of long-held territories if the land was "owned," the answer was most often "no," but this is largely because there was no known idea of individual ownership in any of the languages used in the area.[453] Private property is both a relation and a structure, and the ways in which it is used, violently, to produce space for specifically capitalist

regimes, unlike Sovietized property regimes, were structurally dependent upon capitalization and commodification of resources. For a useful overview of this history, see Baran 1957; Prashad 2007: 72-3.

[451] It is important to note here that there are examples of settler-colonization in other parts of the world, and even in the United States, where the production of space is not directly predicated on 'removal', so this is not a universal truth about the entire history and ongoingness of settler-colonial expansion. That said, some might still argue that ongoing settler-colonial exploitation is still engaging in significant regimes of removal.

[452] M.K. Anderson 2005: 133. It is crucial here to recognize that the term "usufruct" is of European origin and runs the risk of engaging in the defunct myth that Indians were "hunter-gatherer" societies. They were not, for their gathering methods and timing was based specifically on the movement of the seasons and there were extensive management techniques that went along with those regular regimes of gathering.

[453] California Indigenous communities were both highly mobile and agriculturally astute, returning regularly to certain areas to harvest acorns, medicinal plants, and to utilize fishing sites after natural restocking. See Lee and DeVore 1968; Saur 1967.

intentions is what sits at the core of our discussion. Establishing a private property regime – enforced by a state – in space where it does not already exist precisely means that a social system of rights recognized by the state and rights *not* recognized by the state is established. In the case of settler-colonialism, these rights are created directly about the "control of valuable objects."[454] Objects of value, which, for the settler-colonial occupier were the objects that people in faraway metropoles were willing to pay for, most notably in San Francisco.

Reservations were established to 'remove' Indigenous people from the land the colonists considered valuable, to land that was not. In 1830, Governor George C. Gilmer of Georgia declared that "treaties were expedients by which ignorant, intractable, and savage people were induced without bloodshed to yield up what civilized peoples had a right to possess by virtue of that command of the Creator delivered to man upon his formation – be fruitful, multiply, and replenish the earth and subdue it."[455] The precursor to the establishment of Indian reservations – or the plan of "Indian Removal"[456] – was the designation of groups of Indians on similar land, living under similar conditions, and adhering to a "chief" as "tribes."[457] Tribalization by means of the state was a method of homogenization of the Indigenous community, which would make removal and placement elsewhere more logical. It was the production of a new place through the negation of existing meaning.

What I have so far called *negative production of space* is an attempt to describe the process by which the landscapes of Indigenous California were divested of meaning, through the expropriation of Indigenous bodies, lifeways (think: communal), and invested meaning accumulated through and from them. I understand 'meaning' from two somewhat convergent directions. First, from a poststructuralist position, I read it as a suggestion that meaning can be derived from different

[454] Hallowell 1942/1943: 133.
[455] Prucha 1984: 70.
[456] Spence 1999; Jenkins 2011.
[457] 48 United States Statutes: 984.

interpretations of the material world.[458] Second, from a more purely historical materialist perspective. In the latter sense, if we take seriously Marx and Engels' notion that "The mode of production of material life determines the social, political, and intellectual life process in general,"[459] it is then logical to suggest that the ways in which Indigenous communities produced and procured food, for example, were also some of the material ways in which meaning was invested into spaces. The landscapes that the early explorers, gold rushers, and eventually settlers saw as "wild," yet full of natural resources not made to work for capital were the products of thousands of years of Indigenous land management practices. It is worth quoting M. Kat Anderson at length here:

> "Many of the biologically richest of California's habitats were not climax communities at the time Euro-Americans arrived but instead were mosaics of various stages of ecological succession, of fire subclimaxes, intensified and perpetrated by seasonally scheduled burning… Some native people, displaced during Euro-American settlement of their lands, returned to their homelands years after relocation only to find them overgrown and untended."[460]

For the settler-colonial property regimes to do what they were intended to do, the investment of meaning by Indigenous bodies over the course of millennia needed to be erased, one way or another. The chosen path was elimination of Indigenous lifeways wherever possible, and it was frequently impossible due to rebellion, which then brought about a deepening of the extermination already underway. An important question here is, who chose that path? Was that path even chosen at all? Or was it perhaps a silent directive handed down primarily but not only through religious beliefs, patriarchy, and racism all put to work by capitalism? To suggest that path was chosen by some unified "humanity" (which in this case would be fundamentally of European origin) is fundamentally flawed. I have so far attempted to lay out an argument that suggests one set of humans—the ones attempting

[458] Barad 2007: 148.
[459] Marx and Engels 1904: 11.
[460] M.K. Anderson 2005: 156.

conquest—held noticeably different beliefs about land and resources than the ones being occupied. This is where the systemic nature of capital's exterminism appears more clearly.

Production of Space by Extermination

The project of Indian removal legalized what was already an all-out "war of extermination."[461] On September 9, 1850, California became the 31st U.S. state, and by mid-April it passed a piece of legislation called the "Act for the Government and Protection of Indians" (mentioned earlier), which took away the Mexican-given right of the presumption of innocence until guilt is proven, established legal indentured servitude, and legalized corporal punishment of Indigenous bodies.[462] This means that the first thing the new state of California legislated was the legal rights of Indigenous people to self-preservation on their established territories, and thus the right to continue many of their Indigenous lifeways.

The Wiyot massacre of 1860 on Duluwat Island – commonly referred to by locals as "Indian Island" – marks the historical breaching of the 'Redwood Curtain' as both physical *and* cultural barrier.[463] On that day, 188 Wiyots – primarily women and children – were murdered by smashes to the skull by the blunt end of axes, or stabbed and slashed by knives. The all-volunteer militia, staffed fully from the settler population, attempted to save their ammunition, since they found no "bucks" and no resistance."[464] It was widely known at the time of the massacre that the Wiyots were considered to be friendly, easy to trade with, and generally not a threat even to the most overtly abusive of the White settlers. This massacre was, in the minds of many, a pre-determined necessity, because settlers had been suggesting for a long time before the incident that there was going to only be more "trouble"

461 Madley 2016: 40.
462 California, *Journal of the Proceedings,* 1849: 384, 576, 1205; 384; 1284.
463 Please see Chapters 3 and 4.
464 *Northern Californian,* February 29, 1860. The term "buck" was a common way to describe male Indians, the same way hunters describe "taking down a buck" in reference to a male, antlered deer or elk.

with the Indians, precipitated by many other similar massacres around the region. In fact, the Wiyot massacre was one of four that happened concurrently on February 26, 1860.[465]

Redwood country, from the viewpoint of the settler, was a world of "foreboding wilderness, a place to do God's work, a giant untapped storehouse of wealth, and a place of raw, unspoiled beauty,"[466] left out of the control of man, untamed, and therefore ripe for the taking. It was explained and ultimately justified using linear causal-mechanistic reasoning. The American state and the scientific planners they employed[467] used static notions of time, space, and what it is to be a human in nature that stood in stark contrast to many Indigenous lifeways already in existence there.[468] This view of the forest and the Indigenous people who occupied the shoreline and the rivers and valleys behind it was tied to the centralized planning[469] outlook of Francis Bacon and others[470] – the belief that science must be used to improve upon the productivity and efficiency of production for the benefit of humans exclusively. Humanity, for Bacon and others of his ilk, did not include the Indigenous peoples.[471] This 'Native-as-savage' thinking was deeply ingrained in not only the early American psyche (connected to

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[465] Lindsay 2013: 327.

[466] M.K. Anderson 2005: 62.

[467] These included very early land surveyors, who often misread the ways in which Indigenous people had divided up areas of the land. To their untrained (in the ways of old-growth forests) eyes, what they saw were chaotic tracts of land that were not clearly marked and re-purposed, therefore were not being efficiently utilized. However, to the trained eye, once could see that tribal boundaries were always clearly marked. According to anthropologist Stephen Powers, they are "marked with the greatest precision, being defined by certain creeks, canyons, boulders, conspicuous trees, springs, etc., each of which has its own individual name" (Powers 1976: 109-10).

[468] Whorf 1960; Cordova 2007: 100. Events, for example, were often timed by the coming and going of animals, the ripening of important plants, and this overall synchronistic approach to time served, in the words of M. K. Anderson, as "a constant reminder that human destiny and more-than-human life were intimately intertwined" (2005: 60). Time was not considered linear, as the clock on one's wrist, but as deeply integrated with "solidly connected complex biological phenomena such as the annual flights of waterfowl, the migration of whales, and the ripening of the acorn crop" (Ibid).

[469] It is important to take note that the very idea of 'centralized planning' in this sense is indicative of the role of the state in directing the functioning and organization of 'the market' for natural resources. Previous to the development of economic liberalism, "a free-market economy was novel to the forestry sector," according to Puettmann et al. (2009: 5). Further, we also know that while wood was marketed as far back as the 16th century, until late in the 17th century most forest products were sold on very localized and controlled markets. See Mantel 1990: Ch. 2.

[470] It was to be squares and rectangles that 'plots' of land were to be divided up into, following their declaration as "unfit for farming." Scientific forest planners, most often trained in Europe and later on the East Coast of the United States, aided the American state in breaking out 160 acre 'blocks' of far Western "timberland," which could be sold for as little as $2.50 per acre to those who would use it for "timber and stone" (read: logging and mining). See *Timber and Stone Act of 1878* (45th Congress, Sess. 2, Ch. 151, 20 Stat. 89).

[471] Bacon 2002: 457-489.

how they learned of the Indian hundreds of years before), but also in the regimes of knowledge that had been used to occupy and conquer lands all over the globe.[472] Again, to be clear, deeply held European and American beliefs about racial and religious superiority over Natives had been ingrained in the minds of settlers long before they came to the far Northwestern coast of Alta California. Historian Brenden Lindsay offers much clarity on this point, noting that the "core values and ideals" of Euro-Americans included "the pioneer spirit, Christian religious teachings, national destiny, and the portrayal of Indians as an inferior, dying race."[473] The notion that the savage Indian was doomed to go extinct was as common to the 'pioneer spirit' as 'manifest destiny'.[474] I maintain, however, that it was, and largely remains, the capitalist world-system that puts all of these patterns of belief and thought to work for it. On the one hand, it is naïve to simply suggest that capitalism is at fault for all the ills of the settler-colonial occupation of Northwestern California. On the other hand, it is equally problematic to say that it is not, in the lEast, central to the implementation of these destructive regimes of knowledge. Thinking about the historical production of space helps us see this.

Indigenous space was largely understood as land that needed to be brought into the fold of masculine, dualist, and thoroughly capitalist scientific reasoning,[475] a strict scientism that sometimes resulted in a kind of propaganda of what would become the "new imperialism" of the 1890s.[476] It was, however, not fueled only by the pre-existing Euro-American core values, but by desire for land and

[472] Much has been written about the long life of the Western view of the native-as-savage, so I will not re-examine them in this study. Briefly, however, the 'native-as-savage' trope is deeply connected to the idea that all savages, or less-advanced, less scientific, less 'civilized' peoples, are destined to go extinct in the face of the march of modern man. For more information on this thinking throughout history, see Dawson 2016; Brantlinger 2003; Bender 2003; Merchant 1980; Berry 1977; M.K. Anderson 2005; Cronin 1996; and many more to this. Most notably perhaps is the now infamous "ecological Indian" viewpoint put forward by Shepard Krech (1999).

[473] Lindsay 2012: 43.

[474] In 1846, US President James K. Polk had supportively declared that Captain Frémont had a "fixed determination to acquire California." This was tightly in line with the term journalist John O'Sullivan had only recently claimed as "manifest destiny," which simply meant that it was perceived by White settlers to be their God-given destiny to get to the Western frontier and finally conquer it, no matter the methods. See Madley 2016: 42.

[475] Mellor 2013; Warren 1994, 2000; Merchant 1980; Moore 2015: 2, 19-20, 40, 69, 76, 100, 208.

[476] GoGwilt 1995.

resources, human and more-than-human.[477] The scientific investment of European and Eastern American lifeways into the far Northwest of California was, especially during the mid-19th century, in my view deeply capitalist. I will take it a bit further yet and suggest that it was specifically *scientific capitalism* that was used to justify the start of the American 'war of extermination' against Indigenous people. 'Scientific capitalism' is a way of naming the wave of scientific advancements that were, first and foremost, set upon the increasing of productivity within the sectors in which they operated.[478] A clear example of this is 'scientific forestry', outlined in the next section. The goal of the so-called 'scientific forester' was not merely to make the forest a better forest through scientific innovation – an already questionable idea to begin with – but to use scientific knowledge to specifically make the forest more efficient, i.e., more profitable to the holder of that forested land.[479] The argument here is that Western scientifically-produced regimes of truth[480] were, and remain, ineluctably intertwined with capitalist production of space, both rural and urban.[481] Althusser, in my view, addresses this through the lens of what he called Ideological State Apparatuses, which consist "essentially in guaranteeing *by force* (physical or not) the political conditions for the reproduction of the relations of production.[482] As Wolfe wrote, "territoriality is settler-colonialism's specific, irreducible element,"[483] an element that I

[477] Here my argument runs counter to the work of the Bejamin Madley 2016, Bendan C. Lindsay 2012, and many other renowned scholars of Indigenous California history. The word "capitalism" rarely makes an appearance in their writing or in the indexes of their books. I don't believe this is because they don't think capitalism played a meaningful role in the California genocides and the larger American genocide, but that their focuses remain more on settler core values as the key drivers of genocidal acts. Lindsay takes special care to remind his readers that we cannot paint all settlers as inherently possessing all of these basic core values, but that they are in many cases subsumed under them. Fair enough, but I argue capitalism and its core systemic requirements, one of them being the *negative production of space* as I have outlined it here, play an undeniably powerful role in implicating every settler in the genocidal pattern.

[478] It should be noted, however, that there are others who use this terminology in different contexts and to some degree with different definitional coordinates. Richard De George, for example, identifies it as the "stage after Communism." See De George 1995. See also Barradas 1956, whom it might be said coined the term.

[479] More on this follows in the next section.

[480] Foucault 1977.

[481] Lefebvre 1991, 2014; Marx 1967, *Capital: Vol. III*: 672, 813.

[482] Althusser 2014: 141.

[483] Wolfe 2006.

argue cannot be disentangled from its capitalist origins, dating back to the rise of capitalism itself in the sixteenth century.[484]

The occupation and subjugation of redwood country exemplifies what William Appleman Williams called 'empire as a way of life'. He succinctly defined *empire* as "the forcible subjugation of formerly independent peoples by a wholly external power, and their subsequent rule by the imperial metropolis."[485] From this viewpoint, settler-colonialism is a civilizational tool in the quest for the expansion of American empire.[486] The question of where exactly the imperial metropolis of the budding American state was is difficult to answer. We may in fact be correct to assume that metropole, at the time of the occupation of redwood country, consisted of industrialized England and the American East Coast. The settlers were, for the most part, East Coast colonial peoples striking out for the reported riches and relatively unexplored, under-utilized territories of the West, but they were also much more than that – they were Euro-American people seeking to establish their existence increasingly decoupled from British society[487] in a new place full of natural resources and tremendous hope;[488] hope that ultimately manifested as despair for those who were already occupying the land that housed those resource frontiers. Importantly, this was an American genocidal[489] occupation much

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484 I will return to this in the concluding sections of this essay.

485 Williams 1980: 13.

486 Individual settlers may or may not have had the education or presence of mind to understand that their way of life was predicated on the expansion of the European core, but they, like all members of a given society were operating within a system they had only mild influence over. It is well documented that many of the settlers originally arrived with the goal of hunting for furs (Carranco and Beard 1981: 30-31).

487 Madley 2016: 52; Coman 1912: 21. It should be noted here that British society at that time was moving increasingly away from the unrestrained capitalism of the early industrial revolution, partially as a result of the newly developing rebellions against the working conditions of the working class in England. The Euro-American settler was, in this sense, a capitalist zealot seeking freedom from any sort of state-level control of excess. This also shows that while the ethnic origins of most of the settlers were European, this does not mean that the United States has a singular cultural and political history that is only European, even if we can draw back to Europe the majority of its organizing societal systems.

488 Historian Brendan C. Lindsay writes extensively about the very early experiences of the first 'overland trail' emigrants into California. They were essentially undocumented migrants, because they had not state-supported papers and were traveling to California largely "with the intention of settling large tracts of land and making California a place such as they had left behind." This still points to the territorializing instinct of settlement, but it was not clear that capitalism or even capitalist impulses played any role in these migrants' intentions. All of that would change when gold was discovered. See Lindsay 2012: 70-71.

489 European genocides were markedly different from the American genocides, in that the Indian was not removed because they were "Indian," but because they stood in the way of the march of Capitalogenic territorialization. See Wolfe 2006:

more than it was a European one, but it would be unnecessarily limited to suggest that it was only American.[490] It was, in my view, a world-systemic process as much as an American one. America can be understood outside of the World-Ecology of the expansion of capital, power, and resources, but I argue it is worth including in our narratives.[491] Religion, ethnicity, and civilizational development drove the elimination of the California Indian, but as Wolfe would say, "access to territory"[492] had as much of a role.

Genocidal destruction of California's Indian population between the years 1846-1873 was a continuance of a "pre-existing trajectory"[493] of dramatic Indigenous population decline through violent means. The pattern was established during the earlier colonial periods, most notably during Russian-Hispanic domination (1769-1846), just as California was to become a U.S. state. Sherburne F. Cook, who long ago authored what is still considered by many[494] to be the most reliable work on the California Indian population, stated that the population during that time dropped from as much as 310,000 to 150,000, with meticulous writing on the details of a good portion of these deaths.[495] There

388 for a clear analysis of this. It should also be noted, however, that Wolfe does not go the extra step to align this territorialization with the systemic aims of capitalism, which I argue is essential.

[490] It should be noted here that while I am referring specifically to the United States as 'America', meaning not Canada, many Indigenous Canadians, or First Nations peoples, as well as many Central and South Americans, do rightfully think of themselves also as Americans. Further, from a purely geographical standpoint, America was understood to be inclusive of the whole of the North American continent until roughly the early 18th Century.

[491] I understand and respect the decisions of many Indigenous scholars and historians who have studied the occupation and conquest of Northern California to leave out – for the most part – the discussion of the role the system of capitalism played in perpetrating the genocide of Indigenous people, plants and animals. There are many reasons one might do this. For example, I cannot adequately address the role of capitalism if I am also, at all points, addressing at necessary depth the role of racism, patriarchy, and religion. I acknowledge that this is where I have found significant divergence from much of the existing literature. Settlers were willing to slaughter, belligerently even, whole families and villages of Indigenous people, not only because they were inferior in their eyes, but also because they stood in the way of turning those Indigenous spaces into Euro-American spaces for the production of capitalist value. See Wolfe 2006 for an indispensable outline of how Indigenous people were obstructions in the plans of capitalist production, which led to the 'logic of elimination.'

[492] Wolfe 2006.

[493] Madley 2016: 1.

[494] This is made evident, in my view, by the ongoing amount of citations Cook has in histories of California, by both Native and non-Native historians. Notably, Cook played a leading role in the development of the term 'genocide' through his pioneering work on Nazi mass murder, which he published in the same year as his book "The Conflict between the California Indian and White Society" (1976). Raphaël Lemkin, who coined the term 'genocide' in 1944, directly put Cook's writing to work for him. See Madley 2016: 3. Additionally, there are other key texts that cite Cook, including Lindsay 2012; M.K. Anderson 2005; Spence 1999; Pruscha 1986.

[495] Cook 1976.

are extensive accountings of the massive drop in Indian population before the arrival of settlers to Northwestern California, based largely upon the importation of diseases and the expanding of Mexican and Spanish racial hierarchies, "debt peonage," and a kind of master/slave "paternalism" that was not unlike "that which bound black slaves to white masters."[496] However, many of these important studies on population are generally inconclusive in regard to the geographical area that includes the oldest portions of the redwood rainforest, because very little was known about the Indigenous population of the far Northwestern tip of what was then Alta California until after these studies were published. While the settler-colonization of Northwestern California is quite unique in many respects it was nevertheless a continuance of established policies of indentured servitude, racial hierarchy, and paternalistic imperialism,[497] dressed in the vocabulary of 'manifest destiny' and 'civilization', and weaponized by men often in United States military uniforms. The ways in which old-growth redwood trees were dealt with mimicked the ways in which indigenous bodies were dealt with – they were removed. In the next section I show how the American 'war of extermination' against the California Indians was also a war against redwoods by the time it came to redwood country.

Expropriating (i)ndigeneity and the Rise of Redwood Silviculture

Economic liberalism was central to the development of scientific forest management. Since the rise of industrial capitalism, forest research has been calibrated to the planning and management goals that aided first in the general requirement of maximization of profit.[498] Only secondarily was ecological function, balance, and sustainability[499] accounted for. There is a long historical record of the adverse

[496] Madley 2016: 38. See also Cook 1955: 310, 316-319; Crosby 1976: 289; Weber 1982: 211, 1992, 2005; Almaguer 1994: 49-50.
[497] Brantlinger 2003; Prashad 2007.
[498] Puettmann 2009: 5.
[499] It should be noted here that the term 'sustainability' was not technically in use at the time. However, discussion of whether a stand of trees or entire forest was 'sustainable' was frequent, only it meant able to sustain production in a profitable, predictable way.

impact of scientific forestry asserting political-economic control over people whose lives are dependent upon the forest itself, in its (i)ndigenous form.[500] The Northwest of the United States, in this sense, is not unique, for the Amazon and Indonesia, which stand out as glaring examples, have also been spaces dramatically altered by Western scientific management practices dating back to the mid-17th century.[501]

What does, however, set the Northwest of California apart from the other forest ravaging in history is that it was done through the structure of settler-colonial invasion, but much later than most of the rest of the world.[502] It was one of the most recent (in the history of settler-colonization), so much so that it is not listed on most chronological lists of settler-colonial conquests, which usually stop at the year 1789. Still, like the Dutch colonization of Javanese forests, or the much earlier deforestations of the Roman Empire, it was not territory itself that the occupiers were after, but the raw materials to build profitable tributary back to a consuming center. For example, Rome, by the first century A.D. had already lost its ability to feed its rapidly expanding population, so it plundered the forests of North Africa, turning it into fields for grain production.[503] In the Northwest of California, it was every man – and indeed it was men – for himself, not every man for Britain, or every man for America. Unlike the classical empires that ran up and down the Mediterranean devastating forests to support far away metropoles and soldiers in their endless warring,[504] scientific forestry came to Northwestern California to further the cause of the capitalist World-Ecology.

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[500] By this I mean the chaotic and complex state that a forest is in before it is made to function as a plantation. While it is well-documented that forests have rarely been simply left alone to function free of any human interference, it is also widely suggested that Indigenous tenders used methods that sought to work in harmony with the chaotic nature of the ecosystems in which they exist. See M.K. Anderson 2005; Dowie 2009; Whyte et al. 2018; GóMez-Baggethun et al. 2010; Pierotti and Wildcat 2000; Narchi and Cristiani 2015; Brim and Harrison 2015.

[501] Peluso 1992: 5, 7-8, 11, 12-17, 98, 102, 145-97.

[502] Scott 1998: 93-95.

[503] Harrison 1992: 56. This may unsettle slightly the argument put forward by Wolfe that suggests 'territorialization' is the one enduring structural necessity in settler-colonial invasion. I say 'slightly' because it is still territory that is needed in order to enact the 'structure of invasion.'

[504] Ibid.

Silviculture would make its first appearance in Europe during the seventeenth century.[505] There can be no doubt that it developed very differently in different regions, but the strongest push to make silviculture a recognized science, and ideally be taken seriously by the markets as well, came from King Friedrich Wilhelm I and II ('Friedrich the Great') in his drive to introduce 'better regulations' for the purchase of timber. The rate of change in the ways forests were to become regulated by the state, and in some cases by companies, was rapid in Germany, particularly in the Kingdom of Prussia and its largest province of Saxony. In the sixteenth and seventeenth centuries it was primarily Southern and central Germany that held the seat of power regarding the general control of timber resources and other aspects of agrarian life. Prussia, by the middle of the eighteenth century, was being pushed to the forefront of the increasingly global timber trade, rising apace with capitalism and long-distance trade.[506] This is important because it shows a specific role of Prussia, as differentiated from England, France, and Italy, where there were also simultaneous, and indeed earlier, explorations of how to regulate the forest. Already, in the mid-eighteenth century, there had been two cohesive documents produced – both by Germans – utilizing a scientific methodology for interpreting the ecological and silvicultural issues of forests, written first by Hartig (1791) and then by Cotta (1817). The latter takes a decisively economic tone in the approach however, which does a lot to influence the economistic modeling that silviculture takes on almost immediately in its development. The rise of silviculture, as a scientific practice and profession, follows to some degree the rise of American industrial capitalism, and the timing of its entry into the United States makes this point even clearer, as it comes closely upon that period of early industrialization. In Northwestern California, the ongoing rise of free-market capitalism, the establishment of what would become a uniquely American silviculture, and the

[505] Du Monceau 1766; Hartig 1791; Hawley 1921. Silvicultural treatments were being advanced in Europe at the very same time the first colonies were beginning to take seriously the supply of wood they had. Some of this is addressed in the following pages.
[506] Radkou 2012: 148-149.

expanding of the already 100-year-old campaign to eliminate the Indigenous population of Northwestern America seemed to congeal into one geohistorical moment during the middle to the end of the 19th century.

The American 'war of extermination' against the California Indians would also become a war against the *coast redwood,* or *Sequoia sempervirens,* because they needed to be removed for reasons not unconnected to the reasons Indigenous bodies were removed. For the silviculturalists who would not come along until after nearly 80 percent of the previously existing Indigenous people had been removed or killed,[507] it was an unintentional war of extermination, for they were operating under the systemic pressure of 'economic liberalism,' where the main goal was not the health of the ecosystem, but the productivist efficiency of the economic system. Both the discipline of silviculture and its general application were focused upon the "study of forests to produce desired attributes and products."[508] When silviculturalists first were employed in the redwood region toward the close of the 19th century, the "desired attributes and products" of the redwood temperate rainforest were primarily old-growth redwoods, which needed to be cut down both for their growing commercial value and because their size and density often got in the way of managing other elements of the forest for the purposes of higher productivity.

The coast redwood – like 40% of all the bird species and 80% of other groups like fish, amphibians, and insects – has yet to be added to the Endangered Species List (ESL) but has found its way onto the International Union for the Conservation of Nature (IUCN) Red List, which is understood to be the "accepted standard for imperiled species classification."[509] Why the inconsistency? A clear answer has yet been offered, but some have begun to critically examine the

[507] Madley 2016: 10.
[508] Puettmann et al. 2009: 41.
[509] Harris et al 2011.

differences between the ways species become listed in each case.[510] Judging from my own research, it seems relatively consistent that the coast redwood is not considered endangered by many in the scientific community, but merely 'threatened'. Further, many local ecological activists (some trained scientists in their own right) have suggested that it is the redwood forest ecosystem itself that is really under threat, and that the coast redwood is still very strong. In the words of prominent redwood activist and ecologist Bobby Shearer, "It's more the forest type that is threatened (and OG's) than the species as a whole."[511] Shearer's statement marks an important differentiation between old-growth coast redwood stands and their young cousins which make up more than 95% of the existing coast redwood growth. In asking the question of whether old-growth coast redwood is or is not in danger of extinction, the answer is "yes," if for no other reason than the fact that the IUCN lists *Sequoia sempervirens* as "endangered," based primarily on its AOO (estimated area of occupancy) of 1400-2000 km2, which is below the threshold for a listing of "vulnerable," its listing status as of 2006. The IUCN has listed the coast redwood as "endangered" due to the fact that its overall AOO is decreasing as a result of "deliberate or accidental replacement by more competitive species in the early phases of succession after clear-felling, especially *Pseudotsuga menziesij* (Douglas fir)" (parenthetical emphasis added).[512] In other words, if *Sequoia sempervirens,* the only surviving *Sequoia* species, has a consistently declining AOO, and only approximately 4% of its old-growth population remaining, it seems logical to assume that old-growth is in a state of decline and may never be recovered. However, the remaining patches of old-growth trees (500 years or older) that are within mixed-age communities are generally understood to be healthy and show little evidence of increasing rates of decline, unless the temporal coordinates of the declination include prehistoric changes. Some have argued that this is because coast

[510] Kelly 2013.
[511] Personal conversation between myself and Bobby Shearer on March 26, 2018. "OG's" is his euphemistic way of saying old-growth redwood trees, versus the second and third generation trees that make up most coast redwoods still thriving.
[512] http://www.iucnredlist.org/details/34051/0

redwoods are dependent upon unpredictable environments, including periodic and severe fires, leading to the strongest of the old-growth trees being found in mixed-age spaces.[513]

Here we begin to see the complex political ecology that is involved in the process of listing species on the ESA and the IUCN Red List respectively. Second and third generation trees (those that are generally less than 100 years in age) are doing relatively well today, and many argue that the current distribution of coast redwood is broader than it was at the time of settlement,[514] but this is based on the understanding that when the redwood forest was still managed by indigenous methods, there was much more oak savannah,[515] tanoak production,[516] and extensive prairie cultivation that precluded the growth of new stands of redwood and fir. Early colonizers tended to see past these spatial and ecosystemic management practices, only viewing the old growth, which of course needed to be eradicated as fast as possible, not only because they were seen as profitable, but because they stood in the way of the planting of what they understood to be more productive trees.[517] A redwood does not reach maturity for 500 years, and most of the redwood trees one sees today in Northwestern California are less than 200 years old. It is within the differentiation between old-growth and new growth that the dialectic of extinction/extermination comes most clearly into view. There are still many hundreds of coast redwoods well over 2000 years in age, which would seem to be evidence that they are not under threat by anything in their natural ecological system. The remaining old growth is largely of protected status and living robustly. It stands to reason that the only way to get rid of these 'weeds of the forest' is to kill them. That said, there are ongoing studies that do in fact point to an increasing effect of climate change on *Sequoia sempervirens*, but nothing that clearly points to a predictable future of imminent decline.

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513 Lorimer et al. 2009.
514 M.K. Anderson et al 1997; Huntsinger and Diekman 2010.
515 M.K. Anderson 2005.
516 Bowcutt 2015.
517 Crucially, recent research has shown that old-growth redwoods actually increase their productive capacity in old age, which is counter to much of the historical knowledge. See Sillett et al. 2010.

Extermination of *Sequoia sempervirens* began with the occupation and conquest of the (i)ndigenous forested space of Northwestern California, the only place that these redwoods have continuously flourished since the climatic turmoil of the Quaternary period, roughly 2 million to 13,000 years ago.[518] It is worth our time to consult the historical and ongoing distribution of the coast redwood on the surface of the Earth. This is for two reasons: First, it will help us distinguish meaning between the potential *extinction* of this species and what has so far been argued to be its *systemic extermination* by means of *negative production of space* and the displacement of the indigenous tenders of the forest ecosystem these trees co-produced.

Sequoia sempervirens is differentiated from its closest genetic associates *Sequoiadendron gigantica* (the giant sequoia) and *Metasequoia glyptostroboides* (the dawn redwood) by its current relative isolation when compared to its past. Unlike the giant sequoia, which has always lived in a very small area of the Western Sierra Nevada, the coast redwood was once a much more robust species within a significantly larger area than its most known habitat along the tip of Northwestern California. It is in fact an evolutionary relic of "a genus that once boasted species distributed throughout the Northern hemisphere."[519] It is now the only living species identified as *Sequoia.* Its current range is found from the central coast of California up through a very small pocket of groves along coastal Southern Oregon. One could make a very plausible argument that the coast redwood has been on a course for extinction for about the past 2 million years.[520] Before the Quaternary period, the coast redwood and its associates were dominant in North America.[521] They were also known to be found in China and Europe, as the overall climate was much more hospitable to their survival. They are sometimes

[518] Barbour et al 2001; Van Pelt 2001.
[519] Barbour et al 2001: 7. Importantly, I have seen this claim made in many places, including Noss 2000, but there is a strikingly small amount of other resources to support this claim. Nevertheless, both Noss and Barbour are highly respected historians of *Sequoia sempervirens.*
[520] In my research I did come across such an argument, but due to my lack of training in paleontology and historical botany, I am not able to ascertain as to why this argument has not been made.
[521] Noss 2000.

referred to as a 'relic species' because such a small amount of them remain. However, where they do exist, they are robust and grow under almost all circumstances.[522] Even today some people still call the coast redwood the "weed of the forest"[523] because it grows so fast, is so hard to kill, and is so resistant to the threats that so many other softwoods and many of the hardwood associates succumb to. With current climate trends and strange fluctuations in the otherwise predictable weather patterns of Northwestern California,[524] one of the great threats to the coast redwood is – like it was during the Quaternary period – fluctuations in the amount of fog[525] available for feeding in the summer months. Weather fluctuations too far above or below the average mean temperatures, moisture levels, and lessening sunlight[526] needed to maintain a healthy coastal redwood population are all challenges that are growing in intensity. While there is a case to be made that the coast redwood is 'endangered' by extinction, a stronger case, in my view, is that this is evidence of systemic extermination. The climatic shifts we are experiencing are not cyclical, but very atypical of the normal range of Holocene climatic patterns.[527]

Early policies of removal of both old-growth coast redwood and indigenous communities were solidified into a state-backed collective policy of extermination with the development of federal forest policy directives based on silvicultural applications informed by capitalist landowners.[528]

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[522] Noss 2000; Slack 2004.

[523] This phrase "the weed of the forest" entered the conversations I had with numerous local people in Humbodlt and Del Norte Counties. It is well known by the locals that the redwood is distinguished not just by its size, beauty, and desirability of its wood, but by its ability to withstand the climatic and other threats that have taken such a massive toll on oak, tan bark and other trees in similar areas. It is thought of as weed-like because it is a profoundly efficient stump-sprouter that grows exceptionally fast in the first 20 years of life, even after a stump has been burned. It is not infrequent to see several sprouts growing out of the bottom edge of a burned-out stump, following a clear cut.

[524] Predictable because it is a temperate rainforest ecosystem, which means it rarely drops below freezing in the long rainy season and stays relatively cool and foggy along the coast during the summers. These predictable patterns, however, have been increasingly unpredictable since roughly the 1980s. Most recently it can be seen in otherwise stable fire seasons of Northern California. Some have described this as "weather whiplash," where the weather patterns swing wildly, making the temperate system suddenly intemperate. See Robbins 2019.

[525] Coast redwoods are unique in that they are 'fog-feeders', using their flat, but pointed leaves to scrape water out of the fog. See Templar et al (2015) for a great overview of how this process works and how climate change is affecting it.

[526] Lorimer et al 2009; Tennessen 2010; Templer et al 2015.

[527] The scientific community is in near 100% agreement on this fact, as has been made clear by, among other sources, the most recent IPCC Report.

[528] Barrett and Munger 1938; Annual Report of the Pacific Northwest Forest and Range Experiment Station 1938.

Silviculture, as practiced in the United States, has been based largely upon the needs of capitalist landowners over the needs of the forest ecosystems being managed. Silviculture, like any other scientific methodology, operates within socioecological systems. This is both a practical reality and an historical one, for both the forest and its owner are driven by the limitations of available capital; thus, the forester sees the logic of applying, first and foremost, the treatments that will provide the most efficient delivery of profits.[529] The case is being made here that old-growth coast redwood is being systemically exterminated, as part of a long-historical event that began with the settler-colonization of Northwestern California. To argue that old-growth coast redwood is going extinct, in the classical sense of the word,[530] is to rely upon Enlightenment era scientific rationality that allows for the externalization of the internal relations of both capitalism and scientific forestry.

Can a forest remain a forest for any considerable length of time if its old-growth trees are exterminated by a system that makes inevitable their extinction? If we take the silvicultural definition of a forest, the elimination of its old-growth is not problematic, for "the term **forest** has a special meaning and denotes a collection of stands administered as an integrated unit, usually under one ownership."[531] For anthropologist Eduardo Kohn, a forest is a thinking being that is interrelated with the human and more-than-human, the living and the dead.[532] From the beginning of acknowledged time, forests have formed the foundation of civilizations, as well as the foundation for the functioning of the Earth system itself. A forest is significantly hampered in its productive qualities, as well as its uses as a home for non-human species, if it is understood only as a machine to produce commodities for human civilizational consumption. Have we reached the point at which all of civilization is doomed, because our forests have become doomed? I cannot claim to be qualified to answer that

[529] Smith et al 1997: 16.
[530] Meaning that it is a necessary component in the evolution of all species.
[531] Smith et al. 1997: 11.
[532] Kohn 2013: 75-78.

question. However, from what I have so far outlined, it seems as though one thing is clear: *negative production of space* can plausibly be understood as one civilizational technique that must be reversed if forests are to remain viable places for the continued production and reproduction of life on the planet.

Chapter 6: *Cenes* of Mass Extinction

> "The ideas of the ruling class are in every epoch the ruling ideas;
> i.e., the class which is the ruling *material* force of society,
> is at the same time its ruling *intellectual* force."[533]
> -Karl Marx

The exterminism of the capitalist system has so far been highlighted through the lens of the systemic removal of more than 95 percent of old-growth coast redwood trees from the temperate rain forest of far Northwestern California.[534] Then I theorized a capitalist civilizational tool of extermination in *negative production of space.* The goal, if not explicit then implicit, was to highlight a general theoretical position I am putting forward: that this crisis moment – one concerning both extinction and climate – is systemically produced, as opposed to a preternatural outcome of the socioecological effect of some homogenized "humanity" upon the Earth system. As highlighted in Chapters 3 and 4, scientific narratives of 'endangerment', as they have been applied to the coast redwood tree, or *Sequoia sempervirens,* often lack analysis of the effects of the systemic requirements of capitalism and settler-colonialism. This is not to downplay the importance of scientific evidence of the ecological causal mechanisms for the death and future threats to the life of coast redwood trees. To the contrary, scientific analysis is indispensable, but so is understanding the social pressures that belief systems, economic systems, and political systems place upon the actions of individuals and communities living within them. In highlighting the *negative production of space* as the 'divestment of meaning' in existing

[533] Marx, *The German Ideology*. See Tucker 1976: 172.
[534] See pages 21-76.

space, I pointed to the genocides of Indigenous bodies, as well as (i)ndigenous plants and animals. This helps to clarify that both the coast redwood tree and the Indigenous people who had shared spaces with them for millennia – and continue to do so – were only under threat of extinction that any other species would be in under normal circumstances – meaning threats associated with climatic changes and unforeseen events that bring with them disaster. This is where the Productivore's Dilemma comes back to the center of the discussion. Where are the dividing lines between species being decimated by systems that implicitly demand their removal and species going extinct due to competition or regular cyclical climatic events?

To address this question with much more clarity, which I seek to do in the next two chapters, large chunks of historical time will need to be considered. To do this, I will begin with my own interpretation of Karl Polanyi's *Great Transformation.*[535] Then I will outline the concepts of the *Anthropocene* and the *Great Acceleration,*[536] ultimately correlating them within the Great Transformation. Finally, I will outline some of the strong critiques of the Anthropocene from a multitude of positions, landing upon what I think is the strongest critical companion to the Anthropocene, the *Capitalocene,* or the 'age of capital'.

Great Transformations

Industrial revolutions have happened many times in human history, going back tens of thousands of years. As Crane Brinton wrote, "revolution is one of the looser terms,"[537] so one must be certain about what they mean by that word when using it. In the context of industrialization, the idea of revolution

[535] Crucially, as will be shown, Polanyi's own ideation of the Great Transformation is further shown to align with the numbers associated with the Great Acceleration, which happened during the post-WWII period wherePolanyi believed the Great Transformation would occur. While I interpret Polanyi's work differently, I owe a debt of gratitude to Gareth Dale for helping me understand this crucial bit of information regarding Polanyi's own thinking on the matter.
[536] Steffen and McNeill 2007; McNeill and Engelke 2014; Steffen et al. 2015. For an excellent overview of the various arguments about the dating and explanation of the Great Acceleration, see Davies 2016: 45, 100-101, 197, 208-209.
[537] Brinton 1965.

is made simpler. Friedrich Engels attempted to explain the rapid changes in the social and economic processes of production – later to be coined by Arnold Toynbee as the "Industrial Revolution" – as social and economic changes of historical importance that occurred "with the force of a revolutionary event."[538] Wallerstein and others have pointed to the idea of a multitude of *industrial revolutions* going back as far as the human record is kept.[539] In the most simplistic sense, and the most applicable here, *industrialization* is the process of inventing methods of production that increase the rate at which the means of subsistence are more rapidly reproduced. Revolutionizing the means of production through rapid industrializations of immense scale is an altogether different quandary. This is where Karl Polanyi's notion of the Great Transformation, depending upon one's interpretation of it, is so useful to our understanding of how society changed to match the new productive structures brought on by industrialization in the modern age. To show this, however, it is important to discuss the arguments within the book *The Great Transformation*, as well as some of the differing ideas of what Polanyi understood the transformation to be. I will begin with the source material and then move into critical interpretations.

Polanyi argues that the rapid transformation of historical importance he is concerned with might have been slowly rolled out over a rather long period of time, but its slowly unfolding character "in no way affects the startling nature of the changes involved…All transactions are turned into money transactions, and these in turn require that a medium of exchange be introduced into every articulation of industrial life."[540] Like Engels, Polanyi points to the transformation of production from traditional to industrial as nothing less than a social and economic revolution. Again, humans have been industrializing the processes of producing food and tradeable goods as long as there has been settled society, but the water wheel, the irrigation ditch, the pulley system, the iron plow, the 'spinning Jenny',

[538] Himmelfarb 1984: 282.
[539] Wallerstein 2011: 52-3, 102; White, Jr. 1963: 277; Cox 2014: 15-16.
[540] Polanyi 1992: 43-4.

and the steam engine, among many others, are revolutionary because of their direct material impact upon the speed and efficiency with which human labor can produce the means of subsistence. Crucial to Polanyi's thinking, however, was that these industrial revolutions of scale were not the problem as much as the system that was putting them to work for it. He wrote:

> "Just as, contrary to expectation, the invention of labor-saving machinery had not diminished but actually increased the uses of human labor, the introduction of free markets, far from doing away with the need for control, regulation, and intervention, enormously increased their range. Administrators had to be constantly on the watch to *ensure the free working of the system*."[541]

Clearly, Polanyi was steadfastly against the idea put forward by Adam Smith and the economic liberals that a free market could only be Laissez-faire, or free from government intervention. To the contrary, he rightfully argued, in my view, that a Laissez-faire market – to the degree that it is not pure fantasy – can only exist with extensive planning.[542] People, human beings, are the ones who decided to implement the system in this way, but most of the people affected by the system had no hand in planning it. Let us remember that point toward the end of this chapter.

Polanyi takes as his starting point the rise of what the economic liberalists have historically called the 'self-regulating market,'[543] which has a set of definable mechanisms based on certain internal relations. In an "avalanche of social dislocation,"[544] the Industrial Revolution was the maturation of an event that had begun much earlier with the rise of enclosures, which were the end result of the conversion of open arable land to pasture, most often for sheep, and often against the will of the

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[541] Ibid: 147 (emphasis is mine).

[542] Ironically, the planning of society and of economies was, and remains, the most unplanned of all exploits of capitalism. The fiction of free markets was planned from the beginning of the liberal capitalist onramp, while planning of societies to make way for the oncoming traffic of market trading is constantly being made up as we go along. All of this is part of what Polanyi called the "liberal creed." See Polanyi 1992: 141-86.

[543] Adam Smith and David Ricardo also utilized this framing, though often not in the same way. Whereas Smith saw it as really functioning mechanism, which he called the "invisible hand," David Ricardo saw it as a kind of necessary feat of social engineering, but nevertheless a function of a healthy capitalist market. To some degree John Stewart Mill also believed this, but with the adage that certain parts of social and economic life should be guaranteed to every citizen by the government, what many would today call something like 'social democracy'. See Smith 1910 [1776]; Giovanni and Tosato 1980; Mill (2009) [1848].

[544] Ibid: 42.

commoners. With the rise of world-capitalism in the early seventeenth century,[545] enclosed land would become worth two or three times what unenclosed land was worth.[546] Likewise, Marx acknowledged a century earlier than Polanyi that "A cultivated field is worth more than one of the same natural quality."[547] The reason for this is simple: ground-rent, or "the form in which landed property is economically realized, valorized"[548] is socially more important than other forms of land. It is the capitalist mode of production applied to agriculture that separates the two worlds that Polanyi is suggesting there is a transformation from and into. While Polanyi was not ostensibly a Marxist, there are some important overlaps. It is worth quoting Marx again, at some length:

> The form of landed property with which we are dealing is a specific historical form, a form *transformed* by the intervention of capital and the capitalist mode of production, whether the original form was that of feudal landed property or of small peasant agriculture pursued as a livelihood; in this latter case *possession* of the land and soil appeared as a condition of production for the immediate producer, with his *ownership* of the land being the most advantageous condition, the condition for *his* mode of production to flourish.[549]

Marx is making a crucial distinction here between a farmer possessing, even owning, property for the sake of production for his own consumption (presumably his family's too) and potentially selling as a merchant and possessing the land as a method of pursuing profit first and only secondarily for local production. Indeed, he then goes on to say that "in agriculture it presupposes the expropriation of rural workers from the soil and their subjection to a capitalist who pursues agriculture for the sake of profit."[550] Risking over-simplification, I argue that the greatest moment of the much longer Great Transformation is the move from farming for family and community subsistence to farming for profit (or agriculture). It is a move from what the anarchists call 'mutual aid' to what the capitalist might call 'market aid'. Crucially, Polanyi himself did not necessarily argue this point. To the contrary, he simply

[545] See Wallerstein 2011: 102. I am using this phrase "world-capitalism" to point to the reality of the developing of a global system of trade between the European core and the rest of the known world.
[546] Polanyi 1992: 36.
[547] Marx 1991: 757.
[548] Ibid: 756.
[549] Marx 1991: 751.
[550] Ibid.

outlined this history as part of the falling apart of Western civilization in the eighteenth century, only to be rebuilt with capitalist tools in the nineteenth. Here, I believe he undersells his own conceptual worth. I will return to this later.

In this viewpoint, the Industrial Revolution is but a part of a much larger process. Polanyi writes, "The *transformation* implies a change in the motive of action on the part of the members of society; for the motive of subsistence that of gain must be substituted."[551] All social transactions become based upon the 'medium of exchange' and all the income people gain must be done so as a result of selling something, their labor, or the fruits of their labor, through a market mechanism.[552] For Polanyi, this transformation goes back to the early seventeenth century with the rise of the enclosures. He quotes an official document of the Lords of the Realm from 1607: "The poor man shall be satisfied in his end: Habitation; and the gentleman not hindered in his desire: Improvement." On the one hand, this statement goes against the purely profit-driven goals of the capitalist by guaranteeing the poor man his basic right to housing, while on the other hand, it also shows that reality "by which the poor man clings to his hovel doomed by the rich man's desire for public improvement which profits him privately."[553] To clarify, my interpretation of the Great Transformation is that it was a process that began with the fall of feudalism and continued on through the late Industrial Revolution of the nineteenth century, making possible what Polanyi himself had in mind, which was a transformation away from the fictitious free market system he so laments in his book, toward a more managed economic system.[554] It was an extended event that encompassed the Industrial Revolution, not an event caused by it. Nevertheless, the rise in carbon dioxide emissions, increased rates of

[551] Polanyi 1992: 44 (emphasis added). Notice that he uses the word 'transformation' here, but in later words, which I will explain below, he does not claim this was the transformation he was really referring to in the book so titled.
[552] Ibid.
[553] Ibid: 36-7.
[554] According to Gareth Dale, one of the world's foremost experts on Polanyi's thinking and writing, Polanyi did not in fact set out to write the Great Transformation with that title in mind. To the contrary, he had that terminology in mind as he wrote it, and only under pressure from the publishers did he title it the Great Transformation.

deforestation, and increasing rates of species extinction all seem to move in relative harmony with the rise of the use of industrialized agriculture and fossil fuels.[555] The most spectacular increases came long after the late English industrial revolution of the nineteenth century, when industrialized agriculture was made increasingly capitalist.[556] This is where the Great Acceleration narrative begins to draw attention. However, before we move into that, it is important to address a few more key aspects of Polanyi's transition narrative.

Where many in the intellectual lineage of the Anthropocene may fail to mention the word 'market', Polanyi places it at the center of his explanation of what was transformed: "What we call land is an element of nature inextricably interwoven with man's institutions. To isolate it and form a market for it was perhaps the weirdest of all undertakings of our ancestors."[557] The same sentiment is echoed in the work of a long line of Marxist ecological thinkers and historians who came after him.[558] What Polanyi points to as the "fictitious market" is of course not fictitious, because it literally subordinates all of the institutions of society to its own mechanisms. Some have pointed to this as the 'subsumption of nature', where capitalist institutions seek to control nature,[559] a viewpoint I am not sympathetic toward, for as I have sought to suggest in the previous chapters, nature cannot be subsumed under anything, and instead, capitalism and its market mechanisms are all systems operating within nature. Problematically, however, the idea that capital makes nature work *for* it, as opposed to capital working over and against it – an idea connected to the 'metabolic rift' thesis of Foster et al. which I will outline later – is an idea that has its own dialectical challenge. That is, how does capital entrain nature to work for it if capital cannot or does not subsume under its control, nature? My

[555] Scott 2008.
[556] Wheat, for example, was the largest individual contributor to national income in England from 1700 to roughly 1840, and the largest sector of the national economy of England was agriculture until 1840. See Brunt 2004; Crafts 1994: 144-59.
[557] Polanyi 2001: 187.
[558] Marx 1963; Foster 2000; Bender 2003; Hornborg 2013; Moore 2015.
[559] Boyd et al. 2001; Rossi 2013.

argument thus far, and which I will hope to clarify further here and in the conclusion, is that if we understand capitalism as just that, a system put in place to make nature – inclusive of humans – work for the benefit of the appropriation, accumulation, and circulation of capital, we begin to see how capital[560] – as a relation[561] – does in fact exist both *in* nature and *against* nature as a dialectic. Polanyi and Marx were, in my view, more closely aligned with the idea that these revolutionary transformations in the processes of production were always already transformations of, and within, nature.

Crucially, Polanyi points out that "after 1815 the change is sudden and complete," and this is because, in his view, the French Revolution opened up the flood gates for the Industrial Revolution to establish "peaceful business as a universal interest."[562] Again, we see here that this 'great transformation' is not merely about great changes in technology, but great changes in the apparatuses of social and economic control. This 'universal interest' was "fired by an emotional faith in spontaneity" and a "readiness to accept the social consequences of economic improvement, whatever they might be."[563] He paints this picture through the lens of a move from habitation, or basic homemaking, and improvement to "habitation versus improvement."[564] On the one hand, liberal market forces come to demolish liberal civilization, while on the other hand, institutions disconnected from the market (the welfare state) rise to defend the viability of habitation versus the oppressive nature of state-sanctioned improvement. This is what Polanyi identified as the "double movement."[565] This push and pull between the rights of people to have a roof over their heads and meals on their tables versus the right – often exclusive of habitation – to improve their living standard through selling their labor and goods on the market is the seemingly never-ending systemic relation of capital.

[560] This formulation is highly connected to the World-Ecology framework. See More 2015; Cox 2014, 2020.
[561] I use this phrase as a reminder that Marx himself saw capital not as a set of things, but as a relation.
[562] Polanyi 2001: 7.
[563] Ibid: 35.
[564] Ibid.
[565] Polanyi 2001: 40.

The rise of 'enclosed land' as a commodity was both an ecological and socioeconomic revolution. Enclosing land that was previously considered 'common' or 'communal' was not just an act that changed the social order, but it changed the ecological order. Another way to understand it would be to say that it changed the ecological *dis*order. That is, land enclosure brings with it the state-centric thinking of modernity. James C. Scott refers to this as "high modernity," or the "aspiration to the administrative ordering of nature and society."[566] With the Lords (the actual holders of the land) changing the physical structure and distribution of the land in a way that entrains it to the purposes of the capitalist market, nature (inclusive of humans and non-humans) in feudal spaces was being transformed into capitalist spaces. I have previously described the *negative production of space* as a 'civilizational tool' for the expropriation of meaning from already, and in some cases very, long-established places.[567] Polanyi's own description of this process helps to clarify this notion even further. He writes, "They (the lords and nobles) were literally robbing the poor of their share in the common, *tearing down the houses* which, by the hitherto unbreakable force of custom, the poor had long regarded as theirs and their heirs'."[568] In this regard, we can see a similarity between the 'acts of removal' on the far Northwestern California coastal region in the nineteenth century – highlighted in Chapter 2 – and these actions several hundred years earlier in Western Europe.

The Great Acceleration

It must be said that this transformation of industrial society between the fall of feudalism and rise to dominance of capitalist agriculture is a fine example of an event that could be understood to span many different lengths of time. This interpretation is in harmony with the thinking of Moore who

[566] Scott 1998: 88.
[567] See Chapter 4.
[568] Polanyi 2001: 37 (all emphases added).

points to the fall of feudalism as the marker for the real beginning of the capitalist world-ecology,[569] and where Wallerstein points to as the beginning of the capitalist world-system.[570] I posit that if we interpret Polanyi's Great Transformation as a much larger, longer-lasting event mapped out, as he does in his work, we find that Polanyi's argument is strengthened. This interpretation harmonizes very well with what Maslin and Lewis interpret as the "Orbis spike," which coincides with a significant dip in atmospheric CO2 in roughly 1610. They write that "The Orbis spike implies that colonialism, global trade and coal brought about the Anthropocene," highlighting what they point to as "unequal power relationships between different groups of people, economic growth, the impacts of global trade, and our current reliance on fossil fuels."[571] Lewis and Maslin stand out as scientists of the Anthropocene that have taken very seriously the social and political impacts of which event or date is chosen as the start to the Anthropocene. They wrote this in 2015, and since that time, a much later date has already been chosen, a date they argued would point to a "story of an elite-driven technological development that threatens planet-wide destruction."[572] They, like Jason W. Moore, Alfred Crosby, and many world-systems thinkers, clearly form an alternative narrative to the official stratigraphic one that has captured popular attention.

The burning of fossil fuels, rising and falling population, and globally increasing rates of consumption all combine to create *The Great Acceleration,* as it is argued by its proponents. I would like to suggest that the Great Acceleration takes on much more meaning when placed in relationship to the Great Transformation, as it has been interpreted here. With a preponderance of data that points to massive increases in the rate of release of carbon dioxide into the atmosphere, primarily through

[569] Moore 2002, 2003, 2014, 2015.
[570] Wallerstein 2011.
[571] Lewis and Maslin 2015.
[572] Ibid.

the burning of fossil fuels, industrial agriculture (particularly beef farming),[573] and dramatic increases in the rate of consumption of goods produced under the power of fossil fuel energy, some have pointed to 1952-80 as the period of time we might call the Great Acceleration.[574] Steffen et al. have described the Great Acceleration as the second phase of the Anthropocene, which arrives just after 1945, when "human enterprise" became exponentially more impactful upon the earth system, in their view. They based their analysis on the set of graphs that show "levels of population, worldwide GDP, fertilizer consumption, paper consumption, foreign direct investment, international tourism, and so on undergoing a nearly vertical takeoff[575] in the middle of the twentieth century."[576] Some have referred to this as the 'hockey stick' phenomenon. Here we begin to see the relationship between the Great Acceleration and the proposed onset of the Anthropocene. The dominant popular scientific narration of the Anthropocene is that the Great Acceleration – during the post-WWII economic boom – marks its beginning. It is inherently an argument that is based in liberal economic historical terms.

The Anthropocene Working Group (AWG), the group of stratigraphic scientists charged with naming the new epoch using what are widely understood to be standardized stratigraphic techniques,[577] made it clear in the most directly related document connected with this naming procedure that "the AWG acknowledges keen and broad interest in the concept of the Anthropocene, as well as the significance of the term for addressing and connecting to societal questions. The role of

[573] According to the FAO, industrial beef, milk, and pork farming make up 14.5% of all GHG emissions, with cattle making up 65% of livestock sector emissions. See http://www.fao.org/ag/againfo/resources/en/publications/tackling_climate_change/index.htm

[574] Davies 2016: 197. This is not to say that all of these actions are comparable in their specifics. However, when their effects are considered in tandem, it is easier to understand the Great Acceleration argument that Steffen et al. are making.

[575] On the other hand, the inherent weakness of the Great Acceleration argument is that it is somewhat ahistorical in its reliance upon crude measures like GDP and even GDP per capita. For example, both were "taking off" at steep rates before *and* after WWII. From a Marxist perspective the Great Acceleration suffers from historical shortsightedness because it does not specifically historicize these economic explosions that offer analyses of causes and conditions.

[576] Davies 2016: 45. See also Steffen et al. 2007 for the original analysis of these graphs, followed by a renewed and refined analysis in Steffen et al. 2015.

[577] This is clearly stated to be at the expense of looking at any of the "alternative interpretations of the Anthropocene" put forward from outside of the confines of the geological and atmospheric sciences. See Zalasiewicz et al. 2017: 4.

the AWG, as constituted, is to evaluate the relevant stratigraphic evidence."[578] Stratigraphic evidence for the Anthropocene is tricky, however, because the lines in the rocks are not yet visible. The art of aging, in this sense, is one based on a lot of projecting into the future according to the recent past. Many studies have been produced that analyze the rock strata going back to the dawn of the nineteenth century, but the Anthropocene – as a concept – is in fact derived not from those studies, but from "contemporary observations of Earth system processes compared to a Holocene baseline."[579] Zalasiewicz and his colleagues argue that Crutzen and Stoermer's original formation that the Anthropocene begins in tandem with the early stages of the Industrial Revolution, is based largely on ice-core samples that contained much higher CO2 levels than at any point during the Holocene previous to the Industrial Revolution.[580] As mentioned earlier, the question of how to interpret the impact of the Industrial Revolution (presuming we are talking about the late English industrial revolution of the late eighteenth and early nineteenth centuries) plays heavily into how one is to interpret the starting point of the Anthropocene. That said, in this section I am primarily interested in outlining the argument for the Anthropocene as given by the stratigraphic evidence provided by the AWG. Below, I get into more detail about both dating and interpreting the Anthropocene in relationship to other historical events.

Where to pinpoint the start of the Anthropocene, be it the popular Anthropocene or the geological one that we are more concerned with here, is the subject of limitless debate, but there are a few key points that must be made before moving on to a discussion about beginnings. Zalasiewicz and his colleagues admit that they are using "broad ecological terms" to address "deep time."[581] Using the thought experiment of alien archaeologist and geologists coming to earth some hundred million

[578] Zalasiewicz et al. 2017: 4.
[579] Ibid.
[580] Zalasiewicz et al. 2017; Crutzen and Stoermer 2000; Crutzen 2002; Zalaciewicz 2008.
[581] Davies 2016: 81-83.

years in the future, Zalasiewicz suggests they would find clear enough human records to point to human existence lining up with the historical record of increasingly shallower sediment lines in the ocean. He calls this the "Urban Stratum," or the remnants of coastal cities.[582] He claims that there would be an observable human stratum visible in the geological record, but in order to make this claim, he engages in some magical thinking. The idea that the aliens who discover this geological record would be able to thus understand the domination of the human species on the planet simply by looking at the skeletons of dead human bodies seems at odds with any sort of objectivity. Davies points out that what the aliens would not likely have is "the *illusion* of a transcendent human essence," and that it might help us, here and now, to advance the "ecological politics and criticism of our own time"[583] to learn to look at the current historical moment *not* from the position of human exceptionalism, but from the point of a post-human interspecies egalitarianism.[584] If all species are coexisting on the same plane, then questions about systems become central to the discussion. It could be understood that in an imagined egalitarian world, the systems under which all species exist take on the most power to influence the behavior of said species. If no species is dominant, something else likely is, and I want to suggest that systems play that role – politically, socially, and economically.

Let us momentarily expand this thought experiment to areas that are not urban. What would the aliens likely find under the beaches of the Lost Coast in Northwestern California? It is hard to say at this point what the sediment layers would look like, but they would likely find mangled human skeletons, the remnants of giant fossilized trees, and perhaps evidence of mass killings of both humans and animals. Even Zalasiewicz clearly points out that the only way the aliens could accurately analyze these past human fossils would be to place them under categories of "broad ecological terms," that

[582] Zalaciewicz 2008b: 189.
[583] Davies 2016: 83.
[584] Boehm 1999; Plumwood 2001; Bernstein 2015; Linzey and Linzey 2018.

would not likely "capture anything that one might describe as embodying the essence of humanity."[585] Nevertheless, his lesson is not lost, because in bringing to the surface of the debate this deep futuristic accounting, Zalasiewicz is clarifying – whether he means to or not – that the hundred million year ahead geologist would be essentially forced to look at "plastics, grasses, humans, plankton, and carbon dioxide molecules"[586] as bonded together in the very rock record being studied.[587] We are now led again to the conclusion that the system under which so much of the supposedly human-caused destruction has occurred likely plays a dominant role in the destruction of human society and Earth's environmental functions. The disasters of capitalist invention – plastics, for example – cannot be shown in the stratigraphic record to be purely of human origin if in fact the system under which they were deemed necessary is made central to the analysis. However, we must still do some significant analysis of the Anthropocene before moving on.

Spiking the Anthropocene

As a result of the alarming increases in population, consumption, and GHG during the time of the Great Acceleration, some have pointed to the year 1950[588] as the most plausible 'golden spike' for the onset of the Anthropocene itself. A *golden spike* is the short name for a GSSA (Global Standard Stratigraphic Age), which is a physical marker in the rock strata that is literally a gold spike hammered into the rock strata at the point at which one epoch ends and another begins.[589] This is the preferred geological method of marking the date of the onset of previous epochs because there was no way to

[585] Zalaciewicz 2008: 236-238.
[586] Davies 2016: 83.
[587] I realize I am leaning very heavily on Jeremy Davies here. I do that on purpose, as I argue very few writers have so eloquently outlined in such detail the many complicated relations – intellectually and otherwise – involved in the writing of the Anthropocene.
[588] Zalasiewicz et al. 2017.
[589] These spikes are chosen "to represent the transition between geological intervals," which can usually be seen in the rock strata where one layer seems to transition into another. Once this transition point is recognized, "a golden metal marker may then be hammered into the relevant layer of rock" (Davies 2016: 86).

witness in real time the changes in the environment. Geologists are, at lEast in this method of dating, left with only the changes of color in the rock strata and the fossil record to guide their decision-making process as to where to place the spike. As Davies points out, "Stratigraphers of the Anthropocene face some similar challenges for the opposite reason, a super-abundance of data, while they also have the advantage of being able to choose a date based on precisely known historical records."[590] The key problem that geologists have regarding assigning the start of the Anthropocene is not a lack of evidence, but the challenge of having to wrestle with the historicity of that evidence. In other words, if they were to assign a precise date – which is the goal of the golden spike method – one could make the case for late eighteenth century or the mid-twentieth century. Another contender for the start of the Anthropocene is Columbian exchange, of which 1492 would be the start date.[591] But of course, the challenge there, again, is history. Did Columbus' arrival to the so-called "new world" change anything in the geological record? Or, did the conditions that laid the path for Columbus' passage also create the means by which the geological record would ultimately be impacted, with Columbus but a player in the game? I argue it is much more the latter than the former. Importantly, I am placing emphasis above on the role of stratigraphers and geologists, but they do not automatically deserve priority consideration in such a complex question as when did the Anthropocene start, especially with the social, political, and environmental contexts in which it is being debated.

There is certainly more than one way to interpret this idea, and the Anthropocene narrative. Further, if we are to take the AWG at its word, that their naming of the epoch is based solely on the stratigraphic signals, then why even talk about Columbus, or the Industrial Revolution for that matter? Why not simply report on the levels of CO2 in the atmosphere and leave it at that? My critique here is to suggest that geology should not be excluded from sociological history or environmental history

[590] Davies 2016: 86.
[591] Zalasiewicz et al. 2015; Barnosky et al. 2014.

simply because it is a different discipline, nor should it be given special status. However, because the AWG decided the naming and the dating of the Anthropocene by way of a vote, I am left wondering whether geologists of varying backgrounds had occasion to consider other, more social factors. Critical geologists,[592] for example, may bring a very different set of analyses to the question of stratigraphic signaling.

There is, in my view, a limitation in the Anthropocene narrative as laid out by Crutzen, McNeil, Stoermer, Zalasiewicz, and Steffen, in that on the one hand, they claim they cannot in good conscience attend to the "societal questions" associated with the Anthropocene, while on the other hand it is a complex knot of social relations that they point to as the root causes of the key stratigraphic evidence they used in the AWG to make the decision to officially name this new epoch the Anthropocene. The group cites the following outcomes as evidence of the Anthropocene: "Marked acceleration of rates of erosion of sedimentation; large-scale chemical perturbations to the cycles of carbon, nitrogen, phosphorus and other elements; the inception of significant change to global climate and sea level; and biotic changes including unprecedented levels of species invasions across the Earth."[593] Importantly, these are all measures of quantity, not quality, which leaves much to be discussed. As McNeil and others have pointed out on numerous occasions, all these changes are induced through human behavior. The crucial missing element remains, which is that these behaviors do not start from nothing. It is not a natural human imperative to destroy every space we enter, nor is it a natural human instinct to consume as much as we can, have as many babies as we possibly can have, or to burn fossil fuels, even though this is a commonly held assumption by many. As I have already pointed out, Crutzen and others have argued that the period following World War II, specifically the 1950s, was

[592] I include this term only because I know of the existence of geologists who are of a critical-theoretical strain. I have encountered them at academic conferences, most notably the Dimensions of Political Ecology conference in Kentucky and recall themes of the critical interpretation of time in rock strata.
[593] Zalasiewitcz et al. 5.

when massive increases in human activity began to take on epic proportions. However true it may be that the human species – to the degree we can even coherently talk about anything being done at the scale of the species – significantly increased the intensity of industrial activity on the surface of the planet following the two World Wars and throughout the Cold War (approximately 1947-1991),[594] the offensive war of Western led development must be brought into the discussion.

'Developmentalism,' or what Arif Dirlik named "the ideology of capitalism,"[595] was a powerful tool in the industrialization of the so-called 'developing world'. In one sense, the wealthy 'developed' countries of the Global North[596] incentivized – and continue to do so today – rapid Western-centric industrialization, even (and some might argue especially) if those developments lower living standards or adversely impact Indigenous and minority populations. To exemplify the point, many governments in low-income, developing parts of the world were led by developed nations overwhelmingly to prioritize speedy industrialization for the global capitalist market, often at the expense of investments meant to raise the overall quality of life of their citizens.[597] When many of these countries, for example India, the Philippines, and Latin America, participated in British and American aid programs, the

[594] Those who study and write about the Cold War often are engaged in debates about when it really started and whether it is not still underway today. Further, in our current historical moment, some have argued we are in the midst of a "new Cold War" with China and Russia. How that can be considered "new" is questionable in my view. Were Russia and China not part of the first Cold War?

[595] This concept is mentioned throughout the manuscript and utilized in Chapter 4 specifically. See Dirlik 2014.

[596] This is a term I am somewhat uneasy with but is very often used to describe the wealthy countries of the world, as compared with those that exhibit the highest levels of poverty. There are two other key ways to consider this grouping of countries. The most well-known, and yet also perhaps the most out of date for various reasons, is the First World/Second World/Third World method of breaking up the countries of the world by income and development level. Importantly, it is the Second World countries that are often left out the discussion when this set of classifications is invoked. The Second World was a movement against capitalism. It was a conglomeration of countries that attempted to retain a communist governmental style and society against the ongoing and increasing domination of Western capitalist hegemony. See Prashad 2007: 6-7, 46, 219, 258, 278-9) for an extensive overview of the rise and ultimately the demise of the Second World movement. Another much lesser-known concept is the One-Third/Two-Thirds World thesis, which is a specifically feminist technique to push against the 'inside-outside' dichotomy that exists in the North/South or First/Third World grouping, as well as local/global. Mohanty writes that the One-Third/Two-Thirds paradigm "allows for teaching and learning about points of connection and distance among and between communities of women marginalized and privileged along numerous local and global dimensions" (Mohanty 2003).

[597] Today, just as during the 1970s and 19080s, there are countries that attempt to push against this developmentalist approach, but they are often punished for this by the wealthy countries that depend upon the cheap labor and raw materials they can provide.

requirements that the funding countries imposed were focused almost exclusively on industrialization and freeing up markets for capital investment.[598] The role of 'developmentalism' is crucial to understanding not just the outcome of human activities on the planet, but the systemic pressure placed – in a highly uneven way across space and time – upon different populations across the world. The popular scientific Anthropocene narrative tends to jettison discussion of the systemic relations, politically, socially, economically that contribute to the determinations that support their central argument that humanity is the world changing event to bring about a new epoch. To be clear, the argument is not that those scientists in the Anthropocene Working Group and other supporting scientists are somehow involved in a grand propagandistic scheme to avoid blaming capitalists. To the contrary, I am arguing that despite the very important scientific contributions they have made, they have – perhaps unwittingly – placed emphasis on the human species, as the expense of considering the power of the capitalist system. Due to this lack of social analysis within the process of articulating the scientific parameters of the Anthropocene, placing the golden spike in the right place is as much a guessing game as it is a scientific process.

Due to the debatable aspects of the popular scientific narration of the Anthropocene, there exists an extensive debate, poetic at times, about not only where to place the golden spike, but also what to even call this new epoch that we are supposedly already in. A significant contingent of people, myself included, have argued that the Anthropocene is not an historically accurate title, for it lacks the historical analysis of colonialism, capitalism, patriarchy, slavery, racism and imperialism that can all be pointed to as systems of oppression of one group of humans over another. In particular, a strong argument has been made by many, including myself, that a more appropriate name would be the

[598] See Pirani 2018: 89 for an analysis of how the United States demand for unlimited access to natural resources severely impacted living standards of the citizens of India, the Philippines and especially Afghanistan, all countries that moved heavily in the direction of fossil-fuel production following massive US aid programs being implemented in the 1950s and 1960s. In Bogotá, Columbia the US "insisted on questions of hemispheric defense, reducing economic policy to a warning to Latin American countries to abandon "economic nationalism," which was a kind of shorthand for Communism or at lEast strong socially controlled markets (Escobar 1995: 89).

Capitalocene.[599] Before outlining that, however, I will outline some of the key arguments regarding the various interpretations of the Anthropocene that differ from what I have been calling the popular scientific Anthropocene.

In the urge to name *Homo sapiens* the cause of the *sixth mass extinction,* a thesis deeply connected to the Anthropocene narrative, there has been a very strong tendency to point to the Columbian Exchange – and the discovery of the New World story that goes with it – as the point at which it became obvious that humanity was drastically increasing the rates of extinctions of many otherwise balanced species, as well as introducing alien species to spaces they would otherwise never have inhabited. It is possible that this narrative is more appealing to people of Europe and the Americas than people from other parts of the world. Journalist Elizabeth Kolbert writes: "The "discovery" of the New World initiated a vast biological swap meet – the so-called Columbian Exchange – which took the process to a whole new level." She goes on at some length to outline many different species in North America that are overpopulated, thanks to deliberate importations by humans during the time period, including the starlings of New York City that were introduced in 1890 and the introduction of rabbits to Australia on the very same year Darwin's *Origin of Species* was published.[600] There is a long list of other accounts of *Homo sapiens* being the cause of the so-called sixth mass extinction, but the point being made here is that the notion of the rising 'background extinction rate'[601] has also been rising precipitously in a way that mirrors the rise in greenhouse gas emissions (GHG), consumption, and overpopulation. This leads to the ease with which some would suggest that the beginning of the Anthropocene, the point at which humans became the greatest threat to the Earth system, would be roughly the same point at which Europeans began to colonize much of the rest of

[599] Moore 2016, 2017, 2018; Cox 2015, 2020; Cox et al. 2018; Haraway 2015; McBrien 2018.
[600] Kolbert 2014: 210.
[601] Myers 1988, 1991; Dempsey 2016: 37-39.

the world, and most especially North America. That said, we must consider the other interpretations that the AWG felt it has an obligation not to consider.

Outlining the *cenes* of the Epochal Moment

Cenes represent endings in the taxonomy of epochal naming. Ironically, *cene,* in its Greek origins is *kainos,* or 'new'. When an epoch ends,[602] it is most often through a mass extinction event – typically caused by an extraterrestrial object slamming into the surface of the earth or some combination of other Earth system-altering processes. Unfolding from this sudden deleting of life, a new epoch begins. With the end of a world comes a new one. Foucault argued that to 'write the history of the present',[603] we must seek to consistently re-problematize all the problems of society, less they become consistently *reified*, an idea that Lukács wrote at length about. Foucault also famously proclaimed that 'society must be defended', but he was not suggesting that the system that society operates within must also be defended.[604] It is human society itself that stands at the center of the storm of causality of what has been dubbed the *sixth mass extinction.*[605] In our haste to find a grand bogeyman for the ongoing crises brought on since the rise of capitalism, we have placed the blame – in this framing – upon the entire species being, *Homo sapiens.* There is no "we" in the proclamation that the Earth has now entered the *Anthropocene,* for that proclamation was made largely by a small elite group of wealthy and overwhelmingly male scientists.[606] Nobody seems to have asked "us" (can I say that?) what "we" think the new epoch should be named. There is an obvious class divide there as well, as this is partly

[602] I should note here that there are many other geochronological concepts and divisions of chunks of time, other than the epoch. In fact, the Epoch is a measure of time that is between the Period and the Age. The reason I focus mainly only on the epoch is that this is the frame of reference that the Anthropocene refers to. For a visual overview of geochronology, see https://www.geosociety.org/documents/gsa/timescale/timescl.pdf.
[603] Foucault 1977.
[604] Ibid 2003.
[605] Leakey and Lewin 1995. There are many others who have used this terminology, but Leakey and Lewin were the first to put it in print.
[606] The overwhelming majority of the geologists, atmospheric chemists, and paleontologists who have most vociferously argued for the naming of the Anthropocene are indeed white men.

because the social economics of the historical changes addressed in the Anthropocene narrative are rarely addressed in any obvious way.

Extinction is a keyword that plays an important role in the ongoing process of naming this epochal moment. Crutzen and Stoermer's *Anthropocene* is the one that sparked it all, put forward in the early 2000s, as I have already mentioned. However, a half-decade earlier, Leakey and Lewin had published a book called *The Sixth Extinction: Patterns of Life and the Future of Humankind,* in which they argue that "Dominant as no other species has been in the history of life on Earth, *Homo sapiens* is in the throes of causing a major biological crisis, a mass extinction, the sixth such event to have occurred in the past half billion years. And we, *Homo sapiens,* may also be among the living dead."[607] This would become, with the slow (at first) popularization of the Anthropocene nomenclature, the 'Anthropocene extinction', the first mass extinction caused by another species. As far as evolutionary biologists and paleontologists have been able to tell, no one single species has ever been able to demonstrably impact the level of biodiversity on the planet until now.[608] Those species that humans find problematic, such as pathogenic viruses or bacteria, "lack the cultural standing that might make them tragic or elegiac figures," as argued by Heise.[609] It can also be argued that humans, like any other 'species', lack the ability to 'experience ourselves as a species'.[610] The plot only thickens from here.

Since the rise in popularity of the most dominant Anthropocene argument, several other arguments have entered the fray, each of them derived from an internal or external critique of the Anthropocene narrative, as it has been presented by the biological, geological, and environmental political literatures. They are at once presented as alternatives to the Anthropocene and as *geopoetics* meant to give it what it is missing. Donna Haraway's *Chthulucene* harmonizes consonantly with James

[607] Leakey and Lewin 1995: 245.
[608] Cafaro 2015.
[609] Heise 2016: 35.
[610] Chakrabarty 2009.

Lovelock's Gaia theory, which she argues does not go far enough, for we still lack a name for "a temporality that resists figuration and dating and demands myriad names,"[611] which she argues is *Chthulucene,* a "timeplace for staying with the trouble,"[612] a concept that runs deep in her current thinking. The *Capitalocene* is a term that came into use simultaneously by both Moore and Haraway, yet first put out into the world by Andreas Malm in 2009, while still a graduate student at Lund, Sweden. Moore argues that it is not only a specifically Marxist, world-historical rebuttal to the Anthropocene's consistent substitution of abstract linear time for occurring history, but also a "play on words … a *geopoetics*"[613] that 'names the system' – capitalism – in its suggestion that scapegoating humans is less than genuine.[614]

Importantly, the goal of these geopoetic rebuttals to the Anthropocene is not to simply argue that the Anthropocene is a useless term, or in fact wrong (though some have argued this in the past),[615] but to suggest that there is more than one interpretation of the Anthropocene and therefore that maybe settling upon one concept is neither useful nor accurate. Other poetics of this sort include the *Plantationocene*[616] and the *Necrocene,*[617] articulating capitalism as a 'necrotic' system that feeds upon past death (think: fossil fuels) to accumulate and expand. In short, there are numerous viewpoints on how to address the key crises that the Anthropocene seeks to illuminate, but most of them are deeply critical of the spatiotemporal coordinates of time and space that the argument relies upon, as well as the vast histories that are overshadowed by the reliance upon 'humanity' as the cause of the planetary shift between the Holocene and the Anthropocene, ultimately allowing social systems controlled by a

611 Haraway 2016: 51.
612 Ibid: 2.
613 Last 2015.
614 For a brilliant analysis of the use of "scapegoating" in the extinction crisis, see Debney 2020.
615 I have said as much myself in the past. See Cox 2015. See also Lepori 2015.
616 Gilbert and Epel 2015.
617 McBrien 2016.

small minority of the world's population to go relatively unexamined. This brings to the forefront the consideration of *Homo sapiens* as 'geological agent'.

There is something frighteningly ironic about naming the epoch after the beings that have supposedly become the great asteroid of the new impending end of the world. How can it be the 'age of the human', when it is the human, supposedly, that destroyed it? The supposedly already underway 'sixth' mass extinction is pointed to as one caused by humanity's species being, *Homo sapiens,* and yet the Earth scientists who advocate for the Anthropocene are advocating for naming the new epoch after the deliverers of the death nail. Further, what is at stake in the constructed meanings of 'humanity' and '*Homo sapiens*'? Something is amiss here. After all, the last mass extinction, the C-T mass extinction event, was not named after the asteroid that caused it. Nor are the other four mass extinctions in history named after the causes. What is it about this mass extinction, and the clearly connected notion of the end of the epoch, that is different? Slavoj Žižek might be onto something with his claim that humans might in fact be naming the epoch because, in fact, they are 'masters of disaster,' for, "we like to be guilty since, if we are guilty, then it all depends on us, we pull the strings of the catastrophe, and so in principle we can all save ourselves simply by changing our lives."[618] Indeed, if not for the needs of humans, why must we name it after ourselves? The short answer is, I suggest, we mustn't, for there are many alternatives, some named above. But, before moving in that direction, I would like to digress a little further into the underlying claims that are made in the various Anthropocenic arguments.

Critical social theorists are increasingly engaged in the difficult task of thinking beyond the human. However, they are human too, so there is only so far one can go in this direction. Kathryn Yusoff has put forward ways of thinking beyond human impacts to *inhuman* impacts. She argues that the Anthropocene "proposes a new geological epoch that designates humans as beings capable of

[618] Žižek 2011: 423.

geomorphic force, shaping Earth systems on a par with inhuman forces."[619] This statement gets to the heart of one of my critiques of the Anthropocene narrative, namely the very fact that a strict focus upon the geochemistry of fossil fuels fails to take into consideration the instrumentalization of fossils as fuel under specifically capitalist historical social relations. Where Yusoff perhaps does not go far enough in the suggestion that humans, via the Anthropocene argument, take on 'geopower',[620] is that this geopower, or the capability of humanity to exert geological agency, is a direct result of processes of capital accumulation. Through specific capitalist organizations of extra-human nature humans take on this power, and they do not take it on evenly. Geopower is thus capital-power. However, Yusoff then suggests, brilliantly, that "From this stratigraphic glimpse it could be concluded that the actual extinction that is presupposed in the Anthropocene is not the totality of life, but rather the subject of late capitalism."[621] Here, she is pointing to the importance of understanding that the geological impact of humans demands understanding the impact of capitalism upon human identities, as well as its complex and uneven development across space. The mere fact that humans are involved in the furtherance of a system that is destroying the planet is not in itself evidence that humans, writ large, are the cause of the crisis. Correlation does not imply causation.

The geological agency that is implied in the Anthropocene argument is an agency that is bound up tightly with the normative assumptions of atmospheric, Earth, biological, and conservation sciences. One of those key assumptions, in my view, is that *Homo sapiens,* unlike most any other species on the planet, is subsumed under a global capitalist system that is itself somewhat homogenous. Few scientists – with rare exception[622] – will come out and say such a thing, but what they will do is explain 'human' impacts on Earth's environment as impacts caused by a seemingly undifferentiated, globally

[619] Yusoff 2013.
[620] Grosz 2012: 975.
[621] Yusoff 2013.
[622] One great example of scientists willing to address the system of capitalism and its impact upon the practice of doing science is the group Science for the People, which was started in the 1970s and has recently begun to become active again. See https://scienceforthepeople.org/.

abstracted human.[623] The violence that this imaginary does to Indigenous communities and people of color, as well as women globally, should not be underestimated. The very existence of private property, for example, is predicated on having the right to use whatever resources exist within it, and from that proceeds the rationality that these rights are relational, in that they are held directly or indirectly against other people who do not have rights to those resources.[624] Ownership of land in the case of settler-colonialism invariably means the taking of land from previous occupants, and most often under quite violent circumstances, which has been highlighted in this manuscript. This relative unevenness of ownership, or even simply control, of land points to the irrationality of a globally abstracted human as a focus of analysis. The same could be said of global internet access, or access to electricity, or any other measure of social access, for it is, like land, unevenly distributed. The violence of the unification of the human is found in the relationship, systemically, between those who do and do not have access, land, resources, and capital, among other things, to exploit.

Johnson and Morehouse contend that "the 'Anthropocene' appears as a rough place-holder for an undefined and arguably unprecedented historical condition underpinned by environmental uncertainties, which demand critical reassessments of how material engagements take form, hold fast, and/or break apart in space and through time."[625] Thinking of the 'human' as a unified force of nature, as opposed to a dynamically diverse force *in* nature, has real material implications. Michel Serres argues, "Suddenly a local object, nature, on which a merely partial subject could act, becomes a global objective, Planet Earth, on which a new, total subject, humanity, is toiling away."[626] If 'humanity' is a

[623] Crucial to this discussion is the recognition that those who support and/or take as their frame of reference the popular scientific Anthropocene are not the only ones willing to think of "the human" as a unified force of nature. To some degree scholars who are much more critical of the Anthropocene also allow themselves to engage in such a totalizing imaginary. Here I am thinking of the work of Yusoff (2013), which is mentioned above. While I think her work is of major importance to the discussion of the Anthropocene, she has herself made a case for thinking of the human species having its own agency over and against the rest of nature. Others are much more direct in their use of a unified humanity. See Leakey and Lewin 1995; Scranton 2015; Malm and Hornborg 2014.
[624] Blomley2003.
[625] Johnson and Morehouse 2016.
[626] Serres 1995: 5.

total subject, as opposed to a 'partial subject', we are presented with a completely different way of thinking about changes in the Earth system as they relate to the human-environment connection. From a dialectical perspective, the Anthropocene narrative could benefit greatly in its viewing of humanity as a geological agent if it also recognized the dynamics of the diversity mentioned above. We move from humanity as a bounded, linear, collectivized totality that is governed by rigid laws to one that is enmeshed in an always already conflictual state of reality, with determinations based not only within humanity as an abstraction, but within the systems that exert powerful limitations on the actions of an existing humanity that differentiated at all scales. The latter view unsettles many aspects of the Anthropocene argument, while the former view reifies them.

'Uniformitarianism' is duplicitous, and this is because, on the one hand, it is not a theory that pushes against the 'anti-catastrophist' sort made popular by Darwin and Lyell at the dawn of the late English Industrial Revolution, but at the same time allows for the chaos of unprecedented events.[627] According to Gould, uniformity of 'natural laws', 'geological processes', 'rates of change', and a generalized equilibrium of the Earth system were all key aspects of the anti-catastrophist understanding of 'Deep Time'.[628] Darwin was solidly in the 'anti' camp.[629] The Anthropocene is thus set apart from the other epochal 'cenes', for its view of the 'human' is one of uniformity across space and time, a Darwinist and Malthusian framing of the debate, one that asserts humans act in a vacuum, only under the conditions of an external nature, not under the conditions of economic and social systems. It is a view that is reminiscent of the 1970s sociobiological movement, supported by Ehrlich's 'population bomb'.[630] On the other hand, the Anthropocene is not strictly Darwinist[631] in that it is very much a catastrophist argument, based on the central idea that humans have become the

[627] Benton 2003.
[628] Gould 1987.
[629] Pievani 2013.
[630] Ehrich 1971.
[631] Darwin, unlike Cuvier did not believe in catastrophic extinctions.

proverbial asteroid, bringing impending doom to all life on the planet; it is at once Darwinist and Cuvierian. It is, at best, a confused idea, and at worst, what Erik Swyngedouw has been known to call a new 'opiate of the masses', an idea that all humans, regardless of their positions in nature, can apply to the understanding of themselves.[632]

This sociobiological Anthropocene, if one can call it that, appears to be a dual argument at odds within itself, such that it is both catastrophist and Darwinist. In its original formulation, we must remember, it was a geological neologism, not a biological one. The biological, paleontological, and conservation arguments for the loss of biodiversity are quite clear in their recognitions of the 'key drivers': "habitat loss, the impacts of alien species, over exploitation, pollution, and climate change, in many cases synergistically magnifying each other's harms."[633] Conversely, the arguments of Crutzen and Stoermer were based on the passing of the thresholds of the Earth system, commonly referred to as 'boundary conditions', leading to systemic collapse.[634] While the intellectual drivers of the Anthropocene concept are rarely biological scientists, as recently as 2011 some key Anthropocenic thinkers have pointed directly to *Homo sapiens* as the 'ultimate drivers of the Anthropocene'.[635]

The geological Anthropocene thus argues that a unified narrative of epic proportions – the human-environment narrative – is a history that will be shown in the stratigraphic signatures analyzed in the future.[636] This argument renders *Homo sapiens* the doomed destroyers of the planet, while at the same time ontologically distinct from 'natural history' of the Earth, a history we are supposed to believe is independent of the human yet threatened by it. On the one hand, there are two seemingly separated histories – the 'human' and the 'natural' – while on the other hand, these histories are automatically conjoined through the enveloping process of earthly degradation. The degradation that

[632] Swyngedouw 2013.
[633] Cafaro 2015; see also Sodhi and Ehrlich 2010: Ch. 4,8; Primack 2014: Ch. 7-10.
[634] Crutzen and Stoermer 2000.
[635] Steffen et al. 2011a/b; see also Zalaseiwicz 2008, 2010; Kolbert 2014; Leakey and Lewin 1995; Wilson 2002, 2014.
[636] Veland and Lynch 2016.

is under the feet of the destructive 'human' is most often described as a fouling of the 'climate', a notion that takes on many diverse readings. Attending to the complicated entanglements of meaning that 'climate' and 'climate change' represents, Claire Colebrook writes, "We are at once thrown into a situation of urgent interconnectedness, aware that the smallest events contribute to global mutations, at the same time as we come up against a complex multiplicity of diverging forces and timelines that exceed any manageable point of view."[637] On the one hand, humans are intricately connected with every other species on the planet, and even with all the other materialities that exist therein, both terrestrially and extra-terrestrially. On the other, we are a differentiated mass of earthly matter that acts in seeming unity against the rest of the planet.

The Anthropocene, at lEast as it is argued from its geological bases, offers little recourse but mass suicide. As William Cronon explained, "If nature dies because we enter it, then the only way to save nature is to kill ourselves."[638] The word 'nature', and so much of what is contained within it, only exists in tandem with the existence of the human collective mind. To kill humanity would be to kill nature too. That there is a 'web of life'[639] inclusive of the human, and indeed nature, is undeniable, but if humans were not here to intellectualize it, none of this would likely be of any import, or would it? None of us can know. What is known, however, is that the Anthropocene does not offer a way out of the conundrum it presents about humanity's role in bringing about the death of its own species being. There is a reason for that, in my view, and it is rather simple: a fundamental lack of systemic thought, to which the notion of the *Capitalocene* speaks with great fluency. There is much at stake in how we choose to identify the epochal moment we are now living through.

[637] Colebrook 2014: 11.
[638] Cronin 1995: 83.
[639] Capra 1996: 4.

The Capitalocene

It would be a mistake to think of the *Capitalocene* as an alternative, or rhetorical challenge to the Anthropocene. I have advocated just such a thesis previously – that the Anthropocene argument is socially inept in its historicity, to the point at which the Capitalocene should come to replace it[640] - but I have since evolved my position on that. A much more useful approach, in my view, is to think of the Capitalocene as an empathetic critique of the Anthropocene, aimed at dialectically joining the contingencies of geological time, nature, and the complex historical relations of human social systems. However, the Capitalocene brings two crucially important aspects into the discussion, both relatively unquestioned in the geological Anthropocene argument as put forward by supporting scientists, namely the difficulties of defining 'nature' and the role of 'labor' in the historical development of the environmental (and other) conditions that give this unique historical conjuncture its place.

The Capitalocene, as theorized by Moore, brings to the surface the socioecological conditions for the weakening of Earth's ability to work for itself (i.e. the work of forests and streams) absent the organizing domination of socially-devised systems of 'accumulation by appropriation,' as Moore puts it.[641] While not attempting to jettison the geological history of the Anthropocene, the 'Age of Capital' challenges the 'Popular Anthropocene's Two Century model of modernity',[642] what Moore has called the "lodestar of Green Thought since the 1970s."[643] If we understand the Capitalocene as another name for capitalism's five-hundred year history, several important, yet shadowed, aspects of the Anthropocene are brought into the light. Most importantly, the unpaid work/energy[644] appropriated through capitalist means of 'women, nature, and colonies'.[645] The settler-colonial appropriation of

[640] Cox 2014.
[641] Moore 2017b.
[642] Ibid.
[643] Moore 2017a.
[644] See Chapter 4, fn. 84.
[645] Mies 1986.

land, animals, and even Indigenous bodies in Northwestern California at the mid-point of the nineteenth century – as outlined earlier – serve as examples of what Mies is referring to.

The Capitalocene argument, particularly as it is put forward by Moore, contrary to what might seem obvious at the start, is *not* an argument about geological history, and for a reason that is equally contrary to common wisdoms. That is, the 'Age of Capital' "precedes and precipitates the 'geological signals' necessary to discern a new geological era. That era – the Anthropocene – will outlast capitalism by a great many millennia."[646] If we return for a moment to the question of temporality, we begin to unravel the mystery of the Capitalocene in its own temporal trickery, and it gets there not only through a rethinking of historical time, but through a rethinking of space as ineluctably relational. The Anthropocene has its own time – its geological time – and the Capitalocene has its own temporality that follows more closely along the lines of human history, post European feudal collapse.[647] In the Capitalocene, nature includes humans, and humans are a "natural force,"[648] where human thought, Marx argued, gives birth to ideas which are "material forces."[649] And it is here, in this historical-relational space, that the Capitalocene does its best work. Human ideas exist across time and space, even when the bodies of these humans are only scarcely visible on the scene. So, this geopoetic allows us to ask: if the whole of humanity cannot act at once, and surely they cannot, then how can human society be the key driver of the *sixth mass extinction*, or the Anthropocene for that matter?[650] This is what Moore refers to as the 'falsifying power' of the Anthropocene argument, that "there is little question that a unified narrative is urgently needed,"[651] but that the way in which the Anthropocene

[646] Moore 2017b.
[647] Moore 2003, 2014.
[648] Marx 1973: 612.
[649] Marx 1978: 60.
[650] To be fair, nobody arguing for the Anthropocene has made such a simplistic argument as to say all humans acted in unison across space and time to affect the crises we see today. On the other hand, however, it is crucial to note that many of the most dominant arguments in support of the Anthropocene do in fact refer to the human species as a unified geological force.
[651] Moore 2017b.

unifies "the earth-system and humanity within a singular narrative is precisely its weakness."[652] This dialectical analysis of the problem is crucial to finding a way to understand what are the possible portals, if any exist, through which we can travel to address the crises of this historical moment.

The human of the Capitalocene is not a universalized subject, nor an object of geological agency, so much as another sentient being within the 'web of life', though one with some tremendous powers of production. The Anthropocenics are content to point to humanity's mere existence – which they infer is predicated upon an inherent destructiveness – as the cause de jour of the impending doom that is the *sixth mass extinction.* The Capitalocene offers a deep challenge to that analysis, on two major accounts. First, it suggests that while capitalism may have been an invention of humans, it is nonetheless a tiny fragment of the global human population (then and now) that holds the keys to the machines of production that the capitalist system demands must grow in efficiency unimpeded, or perhaps mutate in ways that allow it to function even if left only with monopoly power.[653] Second – and I argue this is the most important piece of the puzzle – the history of capitalism is a history of capital's exterminist logic. Existing places, communities, and whole species needed to be exterminated for new profitable spaces to be constructed. The systemic extermination of the coast redwood tree is of course a key example. The same practices persist, from the closing of once-thriving malls (taken over by online commerce)[654] to the removal of huge swaths of ancient rain forest for the development of beef cattle farms.[655] Further, the very disappearance of suburban malls offers clear evidence that it is not humans, writ large, doing all of this destruction, as the capitalist system itself is what has been demanding the expansion – which could be seen as a retraction in a sense – of the digital frontier of

[652] Ibid.
[653] In fact, the concentration of ownership of the available capital on Earth has consistently shrank since roughly the 1970s and arguably since the rise of capitalism itself. See Phillips 2018.
[654] Kuntsler 1994; Rosenthal 2019.
[655] "World Appetite for Beef Making Mincemeat Out of Brazilian Rainforest" 2004; Meyer et al. 2017.

commodification, not some innate human desire to no longer enter large buildings to buy commodities. This is the production of needs and wants on display.

The rise and now potential demise in some places of coal is no different. Crutzen and Stoermer argued that coal changed everything,[656] but coal by itself is meaningless without social systems put in place to commodify it or give it special prominence in society. During England's second industrial revolution (1870-1913), coal output on a global scale far outstripped its use during the first industrial revolution (roughly 1750-1830), when the steam engine was still a novelty, as opposed to the main mechanical driver of the worldwide demand for oil.[657] In Britain coal was accidentally discovered in the sixteenth century by farmers who were beginning to use steel tillers, occasionally causing sparks to fly when ripping up seams.[658] While it cannot be denied that coal, very cheap coal, was at the center of English industrialization, it was not coal that made this possible, for what is coal without the specific socioecological arrangements that made it the source of energy it became? The answer: millions of years of embedded fossilized death. It is the system of capitalism that created the demand for the purposeful upending of past death to fuel modernity, for it demands upon cheap resources to expand its value-making potential.

The Great Acceleration of the Capitalocene

Energy, the main reason for burning of fossil fuels in modern society, can be understood as delivered in three ways, as *commodity, state benefit,* or *non-commercial energy* that is produced within the communities that form the need for it. Only the last method is not directly controlled and delivered through the

[656] Crutzen and Stoermer 2000. See also Malm 2015 for what a better, more historically grounded argument about the rise of coal is generally. Nevertheless, Malm also seems to fail to connect this back to the system that demanded that coal become something other than a fire-catching rock.
[657] Pirani 2018: 12-15.
[658] Nef 1967. Importantly, this is just when it was found by British farmers who eventually helped make it a valuable ingredient in industrial production. Thousands of years before that, coal was mined in China, but for largely different purposes than those of the modern industrial factory.

capitalist market. Importantly, as Simon Pirani pointed out, "Until the eighteenth century, only a small proportion of the energy consumed anywhere was traded."[659] Put another way, energy consumption was not a factor in environmental degradation by an undifferentiated humanity until the eighteenth century, when it began to be traded on a global scale. Deforestation and the overuse of soil, for example, were common, but these were processes that did not usually cross seas. As pointed out in Chapter 3, during that same time period it was necessary to attempt, at lEast, to exterminate all of the indigenous peoples who stood in the way – as it was in many earlier periods – of the early attempts to appropriate the free work/energy and resources of the forests, mineralized metals, and flora and fauna in service to capital accumulation, in this case by dispossession, or what I have argued herein called systemic extermination.[660] The Great Acceleration is highly connected here. Was this acceleration of the impact of industrialization solely an outcome of increased technological advancement, to which all humans are slavishly connected? Or is there something much more nuanced that resides at the core of this concern? I believe it is the latter more so than the former.

The productive capacity of the human species is at the center of the discussion of the Great Acceleration, for it brings together "U.S. hegemony, Green Revolution agriculture, Fordist production and consumption, cheap oil, and a population boom," as Jeremy Davies has pointed out.[661] Further, the post-war boom of the 1950s and 1960s would be the backdrop for making increasingly cheap (as measured by consumption price) fossil fuels the foundation for the continuance of that boom for what political and corporate elites saw as a growth pattern that would last for many more decades.[662] Arguably, those elites were right. All these historical developments not only compose the Great Acceleration, but they are also the direct products of the human ability not just to consume a large

[659] Pirani 2018: 38.
[660] Here, I am indeed making a connection between Moore's notion of 'accumulation by appropriation' and systemic extermination. They are not to be understood as the same thing, but systemic extermination can be understood as a civilization technique that requires accumulation by appropriation.
[661] Davies 2916: 197.
[662] Pirani 2018:79.

variety of the plants and animals around us for food and energy, but to produce the environments that allow for that consumption. In short, the Great Acceleration helps to form what I have been calling the productivore's dilemma, the crippling question of whether "we" humans are destroying the planet or if we are in fact being exterminated by a system that depends upon the destruction and reconstruction of different natures (human and otherwise) for profit? There are no satisfactory answers to this question, which is of course what makes it a dilemma in the first place. What we can do, however, is critically interrogate what is at stake in the various responses to these dilemmas.

One way to understand the geohistorical role of the Great Acceleration is to view it as the predictable outcome of the maturation of the Great Transformation. As with all stretchable events, like ages and epochs, pinpointing a beginning and an end is both impossible and unimportant, but we must at lEast have a sense for the span of time in which these events unfold. What is crucial, however, is to understand the social, political, and ecological signals that give proposed rises and endings to these events. For Polanyi, the Great Transformation, as it has been interpreted here, is brought on with the fall of the feudal land order and the rise of the market-oriented production regimes of a rapidly industrializing agriculture, the turning of dirt into money through specifically capitalist social arrangements. For John McNeil, among others, the Great Acceleration is a similar phenomenon, only we are talking about the move from localized production of fossil fuel energy to globally produced energy that is traded as a commodity. We can see that the last 200 years is the time during which the most precipitous rise in CO2 emissions and other polluting gasses occurred in recorded history.[663] There is a generally accepted thesis that the Great Acceleration begins in the post-World War II period, in roughly 1945. In principle, this is rational because that is the timeframe in which we are told we start to see "human activity" pushing the Earth system to its breaking point, based largely on the concentration of CO2 in the atmosphere. Importantly, the proclamations of the Great Acceleration

[663] McNeil 2015.

narrative were very nearly predicted decades earlier by Barry Commoner, as Ian Angus has pointed out. He writes, "his analysis of its social, economic and political causes is markedly superior"[664] to the work of many recent scientists working on the Anthropocene, but he lacked the elegance and clarity of measurement that John McNeil et al. can produce.

Capital's five-century run of near global domination goes much farther than the Anthropocene into the historical memory of ecological degradation, because it is in fact an argument about 'geo-history rather than geological history', though they are ineluctably intertwined.[665] Coast redwood trees that live an average of 1200 years, are nearly impervious to infection, and survive all but the most historic fires, become 'endangered' or at high risk only beginning in the late twentieth century. As argued in Part I, the very point at which settler-colonial invasion and occupation of Northwestern California begins, we see the seeds of systemic extermination planted through *negative production of space* and the settler-colonial property regimes that make it possible. In this sense, the Capitalocene was kept at bay in that region of the state. At the same time, it could be said that the late nineteenth century industrial revolution of England was in full effect while the settler-colonization of Northwestern California was also coming to fruition. Thus, the capitalist world-ecology was developing unevenly all around the world. What might be easily pointed to as a key aspect of the Anthropocene (the Industrial Revolution) was evident in England, while a much more primitive form of development was happening in Northwestern California. In short, the settler-colonization of Northwestern California cannot rationally be connected to the Anthropocene, for there were more than 200 years of capitalist exploitation in America before that, and this is to say nothing of other regions of the world.

[664] Angus 2015.
[665] Moore 2017b.

Perhaps the Capitalocene had its own 'great acceleration', and it coincided not only with extensive economic booms in Asia,[666] but with the settler-colonization of the redwood temperate rainforest, which was the last frontier of the Westward push of Euro-American occupation and conquest of Indigenous land. Let us call that period 1850-1990, for those are the years during which the rise and demise of the redwood industry occurred, along with all of the other industries connected to that forest (i.e. gold, salmon, tourism, conservation). Zooming out, however, I suggest that the Capitalocene, seen as its own chunk of time, can be understood to include the temporal coordinates of Polanyi's Great Transformation, and the great acceleration of the Anthropocene.

In this admittedly ambitious chapter, I have sought to outline the stretchable moments of uneven human history that point in the direction of what I will seek to clarify in the next and final chapter, a long period of systemic extermination. Whether it is Karl Polanyi, the scientists of the Anthropocene, or Jason W. Moore, long stretches of time are being placed into frameworks of analysis of the establishment of the environmental and economic crises we are facing in this new age. In what follows, I will argue that all these chunks of time can be – though they certainly do not have to be – thought of as elements in a much longer stretch of time that encompasses them all. Through that mechanism of extending the temporal foundation, the system of capitalism is more legible than it is when we break up the moments of the Capitalocene into, among other things, the Great Acceleration and the Great Transformation. This *Long Extermination* is the subject of the next and final chapter of this manuscript.

[666] Importantly, there are multiple ways to interpret the Asian economic boom that many are focused on today as something that began a long time ago, in fact occurring contemporaneously with the settler-colonization of the Northwest of California. See Brandt et al. 2014.

Chapter 7: *Conclusion*: The Long Extermination

"And why all the fuss about extinction?
After all, 99.999 percent of all species that have ever existed
are already extinct, and ultimately, none will escape extinction.
Time and chance happeneth to all."
- Richard Levins and Richard Lewontin

It is not only the ability of humans to produce their environments to meet their own reproductive needs that troubles the environment, but the historical ways in which they have done it. With that observation comes the confounding reality that not all humans produce their environments in the same ways. It is from that point of view that this manuscript has taken on the question "extinction or extermination"? I have called this dilemma the "productivore's dilemma."[667] In each case, there is no comfortable way to solve the problem of the collective destructiveness of humanity's activities. *Homo sapiens* can turn elements of more-than-human nature into energy and sustenance in ways no other species can.[668] This omnivorous capability does not, however, make humanity inherently more destructive. As I argued early on, bears and salmon are also omnivorous, and yet these are species not pointed to as destructive of their environment, quite the opposite.[669] If productivores possess the ability to produce the world around them, they must also then possess the ability to produce it in ways that do not inherently cause systemic extermination.

The answer I have offered to the Productivore's Dilemma is that we are not witnessing the *sixth mass extinction,* we are witnessing the maturation of the exterminism of the capitalist system into

[667] Lewontin and Levins 2007: 103.
[668] Our ability to turn most anything into food and then to produce environments conducive to the reproduction of that food is what Pollen was rightfully concerned with in the Omnivore's Dilemma. His inquiry, in my view, did not go far enough, however, because he never asked why that changed so drastically with the advent of industrial farming. Nevertheless, as I mentioned early in this manuscript, my choice of using Pollen as a bouncing-off point in naming my inquiry the Productivore's Dilemma is not meant as a polemical rebuttal of his work. I believe his work to be important and relevant even today.
[669] Salmon, for example, are frequently pointed to as "ecosystem engineers," particularly in the realm of stream habitats. See Moore 2006; Lackey et al. 2006; Janetski et al. 2009.

an event of epochal proportions, which I have outlined as the *Long Extermination*. In the case study of *Sequoia sempervirens,* I have attempted to exemplify this idea through outlining the bringing-to-endangerment of a species that has only become threatened in the last approximately seventy years. The goal of this manuscript was two-fold: One, to outline the above question of 'extinction or extermination' in a useful way, and two, to attempt to answer that question in a way that is applicable broadly. On that last point, there are many pitfalls, one of them being the creation of yet another totalizing, all-encompassing analysis for a problem that is far too large to be analyzed that way. In that sense, keeping the question directly tied only to the coast redwood might have been a lot easier in retrospect. However, by placing the question into dialectical relationship with the threatened status of the coastal redwood tree, the Anthropocene and its Great Acceleration, and eventually to *Homo sapiens,* the question is more aligned with the depth of the climate and social crises we face today. Answering complex dilemmas with causal-mechanistic statements rarely dissolves the dilemmas at hand.

It is far too easy to suggest that all these crises are resultant from human consumption, or even the inherent destructiveness of the human species, and then to leave it at that. Mass suicide seems to be the only option left when it is indeed *Homo sapiens* who are understood in the popular imagination to be the cancerous tumor in the Earth system. Perhaps unsurprisingly, this dissertation argues that the tumor is the capitalist system itself. Settler-colonialism, racism, patriarchy, and the constant manufacture of inequality on a global scale – all addressed to some degree in this dissertation – are all systems of oppression that operate in tandem with and through the system of capitalism. Put another way, capitalism is a system that has put these structurally oppressive networks to work for it for centuries. Most importantly, this manuscript has sought to contribute one key element, which is to suggest that the system of capitalism is itself laden with exterminism, and thus the crises it has brought along with it are evidence that we are in a long extermination event, with extinction events, as undesirable as they are, being but subsidiary to the larger systemic moment.

Before moving on, it is important to lay out the arguments that have been made thus far, so that the conclusion – that we are living through the late stages of a long extermination event – can be clarified in the coming pages. In the early chapters, the focus was placed upon the contested endangerment of the coast redwood tree, taking the position that it is not under threat of extinction, but threatened by 'systemic extermination'. *Sequoia sempervirens* has been brought to its own endangerment by the requirements of the social, economic, and ecological system in which it lives. Through critical historical analysis, even a revising of the historical record (i.e. offering a different view of the Redwood Curtain), that argument was made into a case study of what I referred to as 'capital's exterminism'.[670] The historic and ongoing tendency of capitalism to destroy life that is deemed less valuable (read: less profitable), to make or produce life that is more valuable (read: more profitable to produce) is shown through the historical development of scientific forestry, or silviculture in Chapter 4. I focused upon how both the roots of scientific forestry and the way it was implemented in Northwestern California follow a long-historical trajectory that relies upon the strategic removal of undesirable, or under-valued, species. Later it is shown that it is not only plants and animals that needed to be removed in order for the redwood rain forest to become a profit generating space, it was also the Indigenous people and lifeways that existed there for millennia before the arrival of settler-colonial capitalists. This 'negative production of space' is then highlighted as a civilizational tool meant to accomplish the goals of removal of place and remaking of space. From that point, it was necessary to zoom back out and look at the chunks of time in which all these things happened, while also acknowledging that they are still happening today. Through a broad discussion in Chapter 6 about the Anthropocene, its many discursive alternatives, and what I argued is its strongest alternative, the Capitalocene, we arrive here. The challenge now is to suggest what all of this means.

[670] As noted early on, this phraseology is not my own, but comes from conversations with Jason W. Moore.

It is crucial to remember that extinction is a process experienced by the living; it is performed, and it is a story that is told through different lenses, by different people in a myriad of contexts.[671] For that reason alone the oversimplified logic of an extinction event both caused and narrated by *humanity* does not suffice. If the argument presented in this dissertation have merit – collectively suggesting that this is an extinction event caused by 'systemic extermination' – then I suggest that the rational interpretation is that there are humans, animals, and plants being exterminated by systemic forms of domination (think: settler-colonialism, racism, imperialism, slavery) and annihilation (think: negative production of space and genocide); not people exterminating, but systems. As Vandana Shiva argues, the tendency to think of peasant farmers and forest dwellers, for example, as users or "consumers" of biological diversity – as so many Western biological scientists do[672] - we ought to think of them as *producers* of biodiversity, because they are achieving "production and conservation" at the same time.[673] This Third-World-ization of the poor, often rural farmer, and for that matter the urban slum-dweller, as the destroyer of ecosystems gives cause for the development of the viewpoint that all humans are destructive; that urban poor Bangladeshis are no different than urban middle and upper-class Americans, or urban inner-city poor and working-class people. What they all share in this view is that they are human. Tragically, in this narrative, they are class undifferentiated. One way to combat that simplified and violent logic is to historicize the ways in which capitalism has sought to organize nature

[671] For a very nuanced introduction to this see Rose et al. 2017: 2-8; De Vos 2007; van Dooren 2014. The emerging field of "extinction studies" has done a lot to increase the depth and breadth of how we tell 'extinction stories.' While I take some issue with the specifically animal-focused gaze that scholars in this area take, I am still very appreciative that they go to the lengths they do in articulating that extinctions of species are end-stories, slow disappearances of long term impact. In some ways, my work is an extension of this work into the human dimension that Rose, De Vos, Chrulu and van Dooren have decided not to focus on. Additionally, it is admirable that they acknowledge this in their work, while also critiquing very strongly the work of Elizabeth Kolbert (whom I have critiqued herein as well) who tends to pain the human as either "the (often heroic) conservationist struggling to hold onto disappearing species" or an amorphous and monotonal "threat." (Rose et al. 2017: 6).

[672] Many of the most popular accounts of the historical decline in biodiversity lean on the argument that humans are intrinsically bad actors and that we must restore biodiversity through understanding the 'intrinsic value' of nature, which of course enforces the long-established dualisms of 'nature-culture' among others. See Ehrlich and Ehrlich 1981: 241; Myers 1979, 1988, 1990.

[673] Shiva 1997: 7, 2014. See also the very concise overview of Shiva's work by Dempsey 2016: 49-51.

– inclusive of the human – in a way that homogenizes humans across historical and ongoing socioeconomic and cultural differences. This dissertation has attempted to explore that notion by focusing on the relatively modern example of Northwestern California, an area that was, until the middle of the eighteenth century, geographically isolated and heavily populated by a diversity of Indigenous communities.

In arguing for exterminism over extinction, this manuscript is not providing a roadmap out of the trouble of the capitalist world-ecology. Perhaps that is a weakness. However, by revising the historical accounting of the bringing-to-endangerment of the coast redwood tree and placing that in conversation with the ongoing discussion of the sixth mass extinction and the Anthropocene, there is at least another position from which to consider potential solutions in the near future. I will return to that at the end of the chapter, but first, it is important to think about the transposition of the sixth mass extinction into the Long Extermination.

From the Sixth Mass Extinction to the Long Extermination

Spaces and places long ago annihilated in the quest for the land and resources necessary to expand the frontiers of commodification[674] are left behind in the form of capitalist spatial organization; they are like bruises on the soil, only bruises heal quicker than centuries. A finely tuned 'working forest' is evidence of both past erasure of ecosystemic chaos and Indigenous landscape management, and the rise of modern capitalist enterprise. The Anthropocene, as I have outlined in this manuscript, does not only include the history of the development of humanoid devastation, but the development of new forms of oppression and domination of landscapes in the pursuit of making those spaces profitable. Chaotic forested landscapes being converted to parking lots are not so different from National Parks being the locus of corporate wood and pulp production. Whereas the science of the

[674] Moore 2015; Peluso 1992, 2012.

Anthropocene and the collective data of the biodiversity crisis make for a solid case of the rise of a mass extinction-like event, the historical sociology of the environmental history of capitalism points in other directions. The Anthropocene, as an event, invites deep inflictions of temporal chaos, because it is not only related to modern society but to the geological signals of all human life on the planet, many of which will only be visible thousands of years from now. It seems time remains the essence in the end. Events like the Anthropocene, of course, do not get named until the after-effects of the phenomenon have already begun to take place.

What if the extinction event underway[675] were to be understood as an event of the kind that Fernand Braudel once referred to as 'infinitely stretchable'? Let me be clear in saying that while this manuscript does not support the general thesis of the popularized Sixth Mass Extinction, it does support the scientific evidence that suggests that there is indeed a mass extinction-like event underway.[676] What is on offer here is not a direct refutation of that point, but a way of viewing this phenomenon that is more attuned to the systemic drivers of this event. This viewing leads to a very different description. The Anthropocene appears as one such stretchable event, for its beginning is dependent upon who is doing the interpretation, and its end is elusive at best, and at worst non-existent.

The argument is that the Anthropocene is a constituent part of a much larger, systemically derived extermination event. The capitalist system is pointed to as having the agency to cause events to be put into motion. Otherwise, the focus remains on the individual people who pressed the buttons, made the decisions, and wrote the rules. This is not to suggest that the tiny minority of the world's population that have access to the buttons and levers of power should not be held accountable.[677]

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[675] A note of clarity: while I do not support the general thesis of the Sixth Mass Extinction – which should be evident throughout this dissertation – I do support the evidence that background extinction rates and other indicators are pointing to something like a mass extinction event.

[676] Pievani 2014; Wake 2012; Plotnick et al. 2016.

[677] The work of Peter Phillips is striking in this regard. As cited earlier in this manuscript, his research on what he calls the Transnational Capitalist Class actually names the names and the organizations that have the most access to the levers of

Crucially, even within the 'bully species' thesis, it is not the powerful subset of the human species that largely makes the decisions for the rest who are targeted, but *Homo sapiens* all together.[678] The popular geological Anthropocene narrative fails to address these points in a demonstrable way, but more importantly than that, an event with such porous boundaries of beginning and end, such that it is dependent upon human interpretation, seems rather pointless to consider at all, without taking up the social, cultural, and political critique that must come along with it. Carbon dioxide, for example, is a gas that all life on planet Earth would die without. Many scientists of the Anthropocene perspective argue that it is *Homo sapiens* – humanity's species being – that make it become plentiful and poisonous in the atmosphere. Clearly, they have a point, but it is only a partial one. Humans did in fact turn carbon dioxide into an agent of mass death. However, they did this under the duress of a system that required it. This must continue to be critically interrogated if the Anthropocene is to take on more explanatory power. Thankfully, this is beginning to happen, not only in this manuscript, but through the deliberations of many critical scholars in geography and the Humanities.[679]

Taking the Temporality of The Long Extermination

My argument goes like this: society is witnessing the rapid maturation of an event that began with the rise of what Wallerstein called the European capitalist world-system in the sixteenth century,[680] Braudel called the 'world-economy',[681] and what Moore has called the rise of the capitalist world-ecology.[682] All of which point to a project of capital accumulation that continues relatively unabated today. It is

power, globally, what C. Wright Mills before him called the 'Global Power Elite'. Phillips identifies 199 "managers of global capital" who are "interconnected through numerous networks of association." See Phillips 2018: 11; also Mills 1999.

[678] Leakey and Lewin 1995; Glavin 2007; Kolbert 2014.

[679] Amato and De-Salle 2012; Blanco 2013; Bendik-Keymer 2014; Dawson 2016; Moore 2017, 2018.

[680] Wallerstein 2011.

[681] Braudel 1979. To clarify, there were/are multiple world-economies in Braudel's view. He wrote specifically about the European world-economy, but his basic framework could also be applied to nearly any region of the world. "World" in Braudelian terms is something not inclusive of everything, everywhere, but is a socially, economically, and otherwise constructed sphere of activity.

[682] Moore 2003, 2017.

an event that holds within its historical-geographical orbit Polanyi's *Great Transformation,* as I have interpreted it herein,[683] and Crutzen and McNeil's *Great Acceleration.* Both historical conjunctures could be understood as Braudelian events (read: infinitely stretchable), as well as linear historical episodes. The *Long Extermination* is the name I am giving to the historical period referred to here. I realize it is not a perfect term, and that it will likely leave many questions unanswered, but what it also does, in my view, is direct our attention to not simply the doings of *Homo sapiens* in a vacuum, but to our doings under the direction of a globally dominant system of economic and social organization that depends upon what I have termed *systemic extermination.* There are implications, many of them positive, to taking on this viewpoint, which I will return to at the end of this chapter.

Braudel wrote in the 1950s that "Infinitely stretchable, the event becomes linked, by design or by chance, to a whole chain of events, of underlying realities that then become impossible, it seems, to disentangle, one from the other."[684] If the so-called endangerment of the coast redwood tree is inseparable from the settler-colonization of Northern California, then so it must be said that the endangerment of *Homo sapiens* is inseparable from the 500+ year history of the domination of the Western world by capitalists. Is the disappearance of the white rhino not directly connected to the European underdevelopment of Africa? Is the violence of the American ghetto separable from the violence of the police state? The unsurprising answer to these questions, and many like it, is *no.* However, "no" is not enough. Validity without analysis is not helpful. Analysis will bring us from simply describing the impending extinction of species to describing the systemic pressures that made extinction inevitable upon a time scale it might not otherwise be.[685] As I have already argued in previous chapters, the coast redwood remains, even today, one of the most resilient plant species the

[683] See Chapter 6.
[684] Braudel [1958] 2009: 174.
[685] It is important to state that all species go extinct, including humans. It is not extinction that is the question being addressed here, but why extinction rates are being raised up like never before.

world has ever known, nearly impervious to rot and infection, for example. Nevertheless, only roughly 4% of the old growth coast redwoods remain, and this is for very clear reasons (i.e. clear-cutting, silvicultural growth regimes, capitalist profit motives). The 'endangerment' of the coast redwood was brought about by social-systemic pressures, not merely competition from, say Douglas fir, or oak.

Questioning whether something was 'going extinct' versus 'being exterminated' became increasingly important the further back in time I went. As I outlined in earlier chapters, there are many differing approaches to naming endangered species, and in many cases, there is not full agreement on whether certain species – including the coast redwood – ought to be labeled as such. When thinking with the same logic that I applied to reading the Indigenous history of the redwood region and the coast redwood tree, it became increasingly difficult to accept the thesis that *Homo sapiens* were the cause of the decline of the *Sequoia sempervirens*. Did humans do the chopping down of redwoods, the physical removal of Indigenous people from their ancestral lands, the removal of gold from the river valleys, and the production of space via annihilation of existing place? Yes, they did. These actions laid the groundwork, literally and figuratively, for the endangerment of the redwood, the spotted owl, the marbled murrelet, and the grizzly bear, to name just a few. My historical analysis of capital's exterminism via *expropriation of meaning in place* and the *negative production of space* suggests that the humans that perpetuated these settler-colonial property regimes did not do so in a political, social, or economic vacuum.

We act individually in the world, but we act within the constraints of nature, and that nature includes the systems of domination that these individuals act within. Marx's thinking in the *German Ideology* is useful here: "The first premise of all human history is, of course, the existence of living human individuals. Thus, the first fact to be established is the physical organization of these individuals and their *constituent relation to the rest of nature*."[686] He then clarifies further, regarding the whole human

[686] Tucker 1978: 149 (emphasis added).

species, that "They themselves begin to distinguish themselves from animals as soon as they begin to *produce* their means of subsistence, a step which is conditioned by their physical organization."[687] By way of Marx, the implication is clear. The systems that are developed to order human activity in a given society, and then to maintain that order in perpetuity, have a great deal of influence on the ways in which *Homo sapiens* go about producing space and place to match the needs of production and reproduction. It is much easier, and scientifically measurable, to suggest that the human species is the antagonist in the ongoing crisis of extinction in the world today than to suggest that it is also, and perhaps more so, the global system of capitalism that is really the antagonist. Nevertheless, it is worth considering when that system really became such a blunt tool of damage to the Earth system, its people, plants, and animals.

The Beginning of the End of the World-System as We Know It

I suggest that the Columbian Exchange mentioned in the previous chapter comes into relevance again, here, because what was – until then – a relatively regionalized relationship of the European world-economy and other world-economies, becomes connected through the growing capitalist world-ecology (i.e. capitalism as a global project, even if not yet named)[688] after 1492. The "world" became connected after that at a level not seen before, and it was connected through the undeniable geographies of capitalist exploration – the finding of new territories to exploit for profit. In many of these cases, poverty and starvation were barely in existence upon the arrival of European explorers. The so-called 'primitive' societies that European capitalists encountered when coming to the "New World" were societies maintained around utterly different boundaries of life than what would be brought to them.

[687] Ibid: 15 (emphasis in the original.)
[688] Moore 2015: 13. Moore identifies the capitalist world-ecology as many things, but most distinctly, in my view, as "project and process."

As Polanyi wrote, "It is the absence of the threat of individual starvation which makes primitive society, in a sense, more humane than market economy, and at the same time less economic."[689] Obviously, this statement is oversimplified in that it doesn't take into account the always already existent threat of starvation that may come from a bad stretch of weather or even times of ill-peace between warring Indigenous communities. That said, the sentiment is clear: the Columbian Exchange was not just about the bringing of disease, extermination of populations, and the dramatic imposition of religious dogmas, it was also about the imposition of the threat of starvation as a motivator to behave – at the individual level – in ways that promote the advance of capitalist profit. Certainly, it cannot be argued that only with the rise of capitalism do we see the imposition of starvation as a motivation for human subjugation. However, what can plausibly be stated is that only with the rise of capitalism as a global project of expanding frontiers of commodification and accumulation by dispossession and appropriation do we begin to see the production of poverty, and particularly hunger, as a means of economic advancement for those in the business of development.[690]

As mentioned in the previous chapter, one of the possible points for the start of the Anthropocene is the Columbian Exchange, but this is not because of the spread of capitalism and its creation – in some sense – of the fear of starvation as a motivating social pressure, but because of the use of raw materials by humans. In other words, the argument is not that "the system" created a certain set of motivating factors of behavior, but that the behavior of humans is at the center of the crisis. The system is implicated everywhere, but it is 'humanity' that is pointed to as the cause of the impending doom of the extinction crisis. I want to suggest something altogether different, that the real start of the Anthropocene – or more accurately the *Capitalocene* – is in fact the historical *conjuncture* of the global advance of the capitalist world-ecology, which I will claim in concert with several others,

[689] Polanyi 2001: 172.
[690] This has been argued extensively by many critics of global development discourse. For an extensive outline of the way "hunger" is constructed socially in the development discourse, see Escobar 1995: 23, 29, 102-123,195.

what Braudel referred to as the 'long sixteenth century' (c. 1450-1640).[691] 'Conjuncture' is used carefully here, because it refers to the "combination of movements" of a given time in history, as explained by Braudel. He uses this phrase to name what G.H. Bousquet called the "undulating rhythmic profile" of social movements that can increase or decrease in their intensity at given points in any period. He further expands on this to explain that a 'social movement' "can be taken to refer to all the movements at work in a given society," and thus "the combination of movements" forms the *conjuncture*.[692] The Columbian Exchange was a kind of conjuncture in this sense, because many different social movements needed to coincide to make it possible, not lEast of which was massive investment from the Genoese, the powerful merchants of Seville who were the major investors of "New World" exploration all the way through the middle of the sixteenth century.[693] In other words, at the turn of the fifteenth century, global financial order was already playing a strong role in the manufacturing of the "New World" in the imaginations of the European core.

The fall of the feudal system in Western Europe coincided with the first major consolidation of the European capitalist world-economy and the rise of the capitalist world-ecology. This is crucial to making the case that capitalism itself is not merely a system of economic organization, but a system of organization of all of nature, as Moore has asserted, and what I argue is *systemic extermination*. Thus, it is important to take a moment to consider the argument that the extreme capitalism of today is not a creation of the late industrial revolutions of England, but of the fall of one system and the rise of another. This is where Marx, Polanyi, Braudel, Wallerstein, and Moore all converge. As discussed above, Marx believed that the way humans organize themselves upon the surface of the planet is as important as the fact that they exist at all. Similarly, as discussed in the previous chapter, Polanyi argued that the move from farming for the sustainability of family and community to farming for the

[691] Braudel 1971, 1979; Moore 2010, 2015.
[692] Braudel 1979: 71.
[693] Ibid: 164.

market was to subordinate land and labor (the source of all human existence) to the whims of the capitalist class.[694] Braudel based much of his argument about the rise of capitalist world-economy on the growth in dominance of the Dutch. Once they had conquered, from a trading perspective, most of Europe, "the rest of the world was a logical bonus, thrown in as it were."[695] Flippant language aside, his point is not lost, because the Dutch continued their trading conquests using the same general methods to "impose her commercial supremacy" everywhere they went, be it Europe, Indonesia, or America.[696]

Moving the traditions of Braudel and Wallerstein into an explicitly environmental historical realm, Moore argues that the inability of the feudal lord/peasant relationship to reinvest nutrients into the agricultural soils of the sixteenth century caused the ecological demise of feudalism and the ascent of capitalism.[697] One was not destined to follow the other. To the contrary it was a mix of power politics and peasant rebellion that made the rise of capitalism all but certain toward the beginning of the long sixteenth century. With large increases in population came expansions of commercial-style agriculture in both Africa and Europe.[698] As with all expansions of the commodity frontier, even the earliest of those frontiers, capitalist class relations were in play. In the case of the last throes of feudalism, the "struggle for rent" was, according to Hilton, "the 'prime mover' in feudal society."[699] The politics of power played a central role in the downfall of the feudal order and the making-inevitable of the capitalist order. Crucially, these power dynamics played out ecologically, as well as politically. Transitions from one phase of capitalist development to another phase, such as primitive to more advanced forms, necessitate ecological crises, not the other way round. In other words, in the

[694] Polanyi did not spend much time discussing "class," so this must be read as my interpretation. He did however say that the inclusion of land and labor in the market was effectively to "subordinate" all of society to the market. See Polanyi 1992: 75.
[695] Braudel 1979: 207.
[696] Ibid.
[697] Moore 2002.
[698] Moore 2002.
[699] Hilton 1976: 115.

world-ecology framework of which much of this manuscript owns its foundation, an ecological crisis is not a Cartesian land-soil-people crisis, but an *epochal* crisis. Moore sums it up this way: "Such crises are so serious that one mode of producing wealth, nature, and power gives way to another."[700] This is the 'crisis of feudalism' that Moore references in his writings.

The move from a linear Promethean historical narrative[701] to the environmental-historical is one way to view in more specificity the so-called 'extinction crisis' of the Anthropocene as the *Long Extermination* of the *Capitalocene.* At all points in the advance of capitalism on the global scale, resources, spaces, and in some cases – as in Northwestern California – whole communities needed to be annihilated in order to make way for the progress of the storm[702] of capitalism expanding out from the European core. However, Marx reminds us that "All production is appropriation of nature on the part of an individual within and through a specific form of society … it is a tautology to say that property (appropriation) is a precondition of production."[703] In other words, it was capitalism that made property – in fact a specific understanding of the concept as "private" – a necessity for said individuals to produce their means of reproduction. What was the redwood temperate rainforest before settler capitalists arrived to turn pieces of it into privatized wonderlands of future prosperity? In the pages of this manuscript, I have attempted to suggest some of that using the work of Indigenous scholars and the thinking of radical geographers on the concept of the production of space. Unfortunately, suggestion is all we have. My suggestion is this: the end of the world-system as we have known it began with the ecological crisis that emerged in the move from feudalism to capitalism. That move, that 'great transformation' away from agriculture for the sustainability of community to agriculture for the sustainability of the capitalist system, also marks the rise of the Long Extermination.

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[700] Moore 2015: 125.
[701] And by this, I mean the classical approach to narrating history as the successive chain of advancement events that lay the path to the current day. See Mokyr [1990] 2014; Landes 2003.
[702] This phrasing is partially barrowed from Andreas Malm. See Malm 2018.
[703] Marx 1973: 87.

Toward De-Extermination

Outcomes are made inevitable when systems are in place that demand them. Jameson aptly pointed out that "The mobilization of space for the purposes of its production makes harsh demands."[704] I have argued that the supposed 'endangerment' of the coast redwood tree was made inevitable by the systemic requirements of capitalism. One of those requirements, in my view, is *negative production of space,* which I have outlined here through the production of space within the specific historical context of settler-colonial property regimes in Northwestern California. I have also argued that it lives within the knowledge regime of scientific forestry practiced in that same space, because of the clearing out of Indigenous bodies and (i)ndigenous trees. I have presented the 'negative' in the form of the 'removal,' by way of the expropriation of meaning from existing place, and by way of the inherent *exterminism* of that process, an exterminism that is intrinsic to capitalism itself.

One thing that is at stake in suggesting capitalism is the common enemy and not 'humanity' is that a certain portion of the human population (a very small one) needs to be stopped. To some extent this form of de-extermination becomes a top-down, not unlike the current neoliberal framing of sociopolitical problems. Perhaps a way to combat this tendency to produce a kind of hegemonic alternative to the existing hegemon is to move from de-extermination to *de-exterminsim.* I do not profess to know exactly what this looks like, but I suggest that a 'de-exterminist' ethos must be one that is embedded within systems, just like the exterminism of capital is. In other words, the de-exterminism must be deeper than a counter-revolutionary set of beliefs added upon the exiting Western, white male gaze. There must be true systemic change, beginning from within the part of the human population that is most endangered. As Yusoff put it, "There can be no address of the planetary failures of modernism or its master-subject, Man, without a commitment to overcoming extractive colonialism. Attending to the *economy of flesh* that underpins geologic practices is to attend to an ongoing

[704] Lefebvre 1991: 336-37.

moment of origination and natal alienation, geophysics of flesh that is Black and Brown."[705] Put another way, the problem of capital's exterminism – which brings with it the already pre-existing racism and patriarchy present long before its rise – cannot be adequately challenged with the color-blind and class-unconscious tools that created it in the first place. There must be a politics and economics that is de-exterminist, and in so doing, it must be a bottom-up, or perhaps inside-out movement. Any top-down approach to challenging capital's exterminism will fail.

Capitalism is the species-level affliction that must be assertively dealt with if we are to find a way to produce space that puts something in, restores, or aids in socioecological functioning. Of course, there are many ways in which the taking out of some elements of existing place/space is necessary to produce in this positive sense. For example, some conservation biologists have come out strongly in support of projects based on 're-wilding'. Re-greening of areas long covered over by the built environment would be a great step in the right direction, but it is not without controversy, particularly when we are talking about areas that are already dealing with abject poverty.[706] The most impoverished places in the world are indeed urban, and that is the trend for the foreseeable future as well.[707] Further, the artificial development of new so-called 'wilderness' spaces are anything but ecologically sound in many cases.[708] In both cases, built environments would need to be removed in order to produce space in a way that restores the socioecological aspects of the land that were expropriated in previously capitalist productions of space. Let us, for now, call this *positive production of space*. The dialectical method suggests that if there is a 'negative' form of the production of space, there must also be a 'positive' one. Further, if capitalism is inherently a necrotic process,[709] then it stands to

[705] Yusoff 2018. Additionally, Yusoff's recent work on critical interpretations of race in the Anthropocene offers considerable challenges and opportunities for my own, and I hope to engage with it more deeply in the future.
[706] Lemenih and Kassa 2014; Palmer et al. 2006; Gallagher et al. 2018.
[707] Osotimehin 2011; Kundu et al. 2014.
[708] Conservationists have argued that in order to accurately estimate what a fully functioning ecosystem needs in order to be fully restored to its 'wilderness'-like state would require setting the baseline at tens of thousands of years ago, before most of the large mammals were exhausted. See Davies 2016: 19.
[709] McBrien 2018, 2019.

reason that a *positive production of space* can only come from a life-*giving, anti*-capitalist mode of producing space, or investing new, life-giving meaning into space to create place.

One could reasonably ask, 'where is the outside' to this unwieldy totalization of the Long Extermination. In other words, what is the periphery to the core of the long-historical event? In producing space in a positive, life-giving way, we may also be producing an outside to this seemingly all-encompassing juggernaut. It is crucial to the narrative I have sought to unpack in this manuscript that we acknowledge that there has always been, and will forever be, communities (both human and more-than-human) that are never fully engulfed in the flames of the Long Extermination. The Sinkyone are considered an "extinct" tribe, and yet people who claim to have direct lineage to that community are leading efforts to return land and to manage it in ways that Sinkyone elders would likely approve of. Coast redwood trees that have been standing for more than 3000 years are also living proof that there is an outside to this event; that there has always been a slow revolution in the making, a revolution from the trees.

Another way we can describe the *positive production of space* is the opening of space for the investment of meaning by the people who were once removed from the land, whose lifeways were made impossible there. One example immediately becomes applicable. In 2004, a large portion of Indian Island, or Duluwat Village, was returned to the Wiyot tribe 144 years after it was taken from them by settlers through the mechanism of genocidal violence, supported by the California state government. As described by Dr. Cheryl A. Seidner, Cultural Liaison to the Wiyot Tribe, "We are like salmon, we come home."[710] On December 4, 2018, the Eureka City Council voted to return the remainder of the island back to the Wiyot tribe officially.[711] Additionally, through the development of the 2010 Klamath Hydroelectric Settlement, the Yurok Indians of the Upper and Lower Klamath

[710] PBS 2019.
[711] Greenson 2019: https://www.Northcoastjournal.com/NewsBlog/archives/2019/10/21/duluwat-island-is-returned-to-the-wiyot-tribe-in-historic-ceremony.

Basins have regained control of large swathes of the landscape which will be "reproduced by being deconstructed by the removal of four damns in 2020."[712] The Klamath River Basin is the traditional home of the Yurok, the Hupa, the Wiyot, and many other Indigenous peoples, all of whom depend greatly upon the salmon cycle. Restoring that cycle of life is in effect restoring the meaning invested by Indigenous people in that area for millennia before the building of a hydroelectric dam was even a remote possibility.

An important and always evolving movement in redwood country is to return land to its Indigenous inhabitants along the coast that once was the ancestral territory of the Sinkyone,[713] Wailaki, Pomo, and Yuki Indigenous communities. This is the area often referred to as the Lost Coast of California, because the rugged mountains and covering forests were avoided, even cut off, when Highway 1 was constructed in the 1920s. After many decades of activism and even physical fighting to save areas along the Lost Coast, a not insignificant amount of land, adjacent to the Sinkyone Wilderness State Park, was returned to Indigenous management in 2008 through the establishment of the InterTribal Wilderness Council, who fought to gain control of 3,900 acres of ancient forest in 2008.[714] The ITWC continues to press further to gain more of the land lost during settler-colonization. Movements like these are key elements of ending the systemic extermination. Importantly, these movements are not based on a thinly veiled attempt to be 'recognized' by the colonial powers that be. To the contrary, these movements to take land back and manage them according to traditional ecological knowledge frameworks are efforts at resilience and survivance. As Glen Coulthard has

[712] Jenkins 2011.
[713] The Sinkyone are considered an "extinct" tribe, but the Indigenous people who live in the area routinely talk about the tribe as "exterminated." Sally Bell was the last surviving member of the Sinkyone Tribe, who watched her mother, father, and baby sister be killed by White settlers. She wrote, "Then they killed my baby sister and cut her heart out and threw it in the brush where I ran and hid. My little sister was a baby, just crawling around. I didn't know what to do. I was so scared that I just hid there a long time with my little sister's heart in my hands." See Nomland 1935.
[714] Rosales 2010. Also see Berkes 2015.

argued, the politics of recognition is really a colonial politics of seeking approval from colonial power structures that have no intention of righting wrongs or engaging in real systemic change.[715]

Another future-Earth scenario is possible, one that does not feature vast wastelands where there used to be lush forests, one of survivance. It requires the making-inevitable of productions of space in ways that internalize the return of previously expropriated meaning. Traditional, Indigenous-led land management regimes, as well as new meaning invested into these spaces by new generations of Indigenous people would be an indispensable move in the right direction. Evidence of this can be seen in land reclamation movements all over the world.[716] With the investment of new anti-capitalist meaning into existing space-place relations, the extermination event suggested in this manuscript might be slowed and potentially repurposed in the direction of undoing the historical injustices that have brought the Earth system to the crisis-laden condition it is in today. Until then, it is a question of recognition of the ongoing ecological violence that capitalism brings in its wake. It is now well-known that a not very long list of multinational corporations – the largest of which are oil and gas companies – produce more than seventy percent of the carbon dioxide produced by the human species. A significant, if not most important, as aspect of reversing the tide of systemic extermination is stopping these people from doing what they do. Perhaps it is the act of turning the systemic extermination machine on its producers that I am suggesting. Whatever may come, it is likely the elder redwood forest will continue to stand tall in the face of the fires of the Capitalocene, reminding us of all of what was and what could be.

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[715] Coulthard 2007.
[716] Sauder 2009; McCarthy 2016; Viancos et al. 2017; Kēhaulani Kauanui 2018; Trujillo 2020.

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