

THE ECOLOGY OF OWNERSHIP: A NEW PARADIGM FOR AN OLD PHENOMENON

by

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DEDICATION

This dissertation is dedicated to the two most wonderful people to have ever walked this planet, my parents: Bob and Tomi Rickels. If they were physically here to celebrate the completion of this document and my degree, then the universe would be complete.

My parents are, and were, the pot of gold at the end of the rainbow that I was placed in by divine providence at birth, for which I am eternally grateful, and marvel daily at my fortune.

My parents met at graduate school in Missoula, Montana in 1959. Thus, the charms of the cosmos align around education for us: they were both educators and professors throughout their professional lives, and were truly great teachers outside of the classroom as well.

And, my Mumsie didn't finish her PhD because my brother Rob and I came along... so this dissertation is especially for her.

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GLOSSARY

Conspecific: of the same species.

Dicta: text accompanying a legal ruling, usually providing the background or reasoning for the ruling.

Heterospecific: of different species.

Interspecific: occurring or existing between species.

Intraspecific: within a species or within or between individuals of a species.

Niche Construction and Cultural Niche Construction: the reciprocal effects of organisms on the environment and the environment on organisms, where ecologically, culturally, and evolutionarily transmitted and influential through inheritance and/or legacy.

ABSTRACT

An unchallenged, culturally-constructed paradigm of ownership lies at the heart of social and environmental problems: this has reverberating impacts on research frameworks in both the humanities and sciences.

This study reviews the history of the formation of Western worldviews of, and contemporary social norms and understandings around ownership. It then documents how the Western paradigm of ownership scaffolds and perpetuates exploitation and exceptionalism at the foundation of contemporary industrial societies.

The foundational nature of ownership as an organismal phenomenon is then explored, and a novel new paradigm of ownership is proposed. The eco-evolutionary theories of niche construction and cultural niche construction are engaged to further illuminate the nature, function, and significance of ownership, and its broad utility to lifekind generally.

To conclude, an ecologically and organismally-suffused paradigm of ownership is shown to have a variety of benefits to research in the life sciences; to analysis of societal norms, beliefs, worldviews, and schemas in the humanities; and to the study of the organism-environment interdependence of ecological and evolutionary change. Exploring ownership through these lenses enables new insight into the rich contours of interconnectivity of ourselves with – and our utter dependence upon - the Earth system.

ONE: INTRODUCTION

“Not everything that is faced can be changed, but nothing can be changed until it is faced.”

-James Baldwin¹

Ownership has been, and continues to be of widespread interest. Not only to each of us –human or otherwise–in our daily lives, but for millennia, it has been inscribed into the contemporary and historical record as a topic of rumination, debate, and concern.

I will argue here that this lengthy and wide-ranging conversation has proverbially ‘missed the forest for the trees.’ I make the case that to see the forest that is ownership, it must first be understood as a powerful paradigm that has acted to occlude our capacity to fully comprehend it. When seen in this fresh light, ownership can then be appreciated as a foundational phenomenon that is evolutionarily, ecologically, culturally and biologically pivotal to, and embedded within, the living Earth system.

But why is this exercise important? Below, I will trace the problematic consequences of the paradigm, whether it be unquestioned, unconscious, or intentional. These include its role in dispossession and exclusion, its nurturance of worldviews of exceptionalism, and its scaffolding of the forces of exploitation, extraction, and extinction.

Further, the existing paradigm obscures our capacity to examine ownership for its emergence from, and its fundamental and ongoing interactivity with, the Earth system. The consequence of this is profound in that it impedes our understanding of Earth and its organisms, acting as a blinder to research and our understanding of the agential living world around us. Perceiving ownership, instead, as a fundamental phenomenon of the Earth system makes possible its investigation in consequential new

¹ Baldwin, J. (1962, January 14) As much truth as one can bear. New York Times, 11-38

ways, potentially accessing profound insights into organisms, systems, and even trajectories of future change that can become clear when underlying patterns resolve into meaningful insights.

By engaging in this exercise, we become capable of incorporating the insights of recent shifts in ecological evolutionary thought, where we can then find illuminating explanations for the phenomena we've explored: explanation for the paradigm's existence and for the existence of ownership itself and, perhaps, arrive at hopefulness for our shared, Earthly future.

Countermapping the Ontology of Ownership

In early 2024 I encountered a methodological framework that has helped structure how i have come to understand what I am doing – particularly where it has not been intuitive. This is the idea of “countermapping,” from an article by Walsh and Rupik (2023), that references the work of Rasmus Grenfeldt Winther, who extends the concept in his 2020 book *When Maps Become the World*. Countermapping is not new. It has a history of use in social activism and conceptual reframing in marginalized groups. A central idea that Winther examines in his book is that at times, our map *of* something conceptually begins to take the place of the *actual* thing, and ‘illicity reifies’ the map at the expense of the reality of what is being mapped.

Winther says that countermapping is a way of challenging dominant ways of understanding and conceptualizing space, ideas, and relationships – dominant paradigms, in other words, in the ways we are taught to see and understand the world. In this dissertation I grapple with a dominant paradigm, and present an alternative paradigm – ownership as a phenomenon of the Earth system. Two maps, as it were. Therefore, countermapping is a useful metaphor for what I am doing.

What is the nature of each of these maps? As I argue below, the first arises out of the Western dominion worldview that has great power throughout the world, via the ideas and economic influence of

Western cultures. This map is cognitive; a framework or a schema, but its effects are tangible, leaving profound transformation in its wake across the globe. It formulates ownership as exclusion, exploitation, extraction, enclosure, extirpation and control, within frameworks of separation, objectification and alienation. It presents ownership as something that “civilization” engages in, and questions whether nonhuman beings (and certain other humans) do so. Its revered central concept is “private property” into which the terms above are deeply woven, and it is thought by many to serve as a guiding beacon to human advancement.

Perhaps due to its status as a conceptual default in the West, private property is often mingled with other property and ownership–related concepts in a confusing, definitional brew. Our institutions, such as law, will delimit them as needed for specific purposes, but this adds confusion as there is continual reappraisal of the terms and their usage and meaning in law literature and its attending institutions. Further, in this paradigm, private property sits atop a conceptual ladder of ownership-adjacent concepts, and they all, excepting limited applications of concepts of territory, seem to be conceived of as existing and operating separately from “nature,” which historically includes people believed to be “natural” (also termed “savages” in the past) along with all other living things. These living things are, and have been operationalized and objectified as property in order to serve the needs – quite often within the framework of private property – of particular human beings.

My countermap – my proposed paradigm – instead posits ownership as an ecological and evolutionary phenomenon, residing in the agency and exigencies of most, if not all organisms. It plays a significant role in shaping short and long term organismal success and evolution, especially when what is owned can be transmitted to chosen recipients in short and longer time scales. In this paradigm, ownership, as a phenomenon, is embedded into the Earth system via the co-creative influence that organisms have within and upon the Earth. How this can be so is much more intuitively grasped when

ownership is understood as a phenomenon of four fundamental qualities: agency, relationship, information, and effect – “AIRE.” My countermap suggests, then, a new conceptual structure of ownership and its associated phenomena and epiphenomena based upon these building blocks.

Niche construction theory, and cultural niche construction theory², offer excellent frameworks (that I explore in Chapter 5) for perceiving ownership as a phenomenon of organisms within the Earth system. These theories reveal what underlies the emergence and perpetuation of the dominion worldview of ownership and how it lies at the very heart of our anthropolypse.³

Synopsis

Part 1 of Chapter 2 reviews the history of presently understood human cultural frameworks of ownership in the West, and focuses in on the idea of dominion and dominion ownership. Part 2 of Chapter 2 focuses further on particularly important concepts associated with ownership. Part 3 briefly explores transcendent iterations of ownership in human experience. Chapter 3 explores ownerships foundational nature – how it functions in the lives of organisms, and how it is woven into organisms in fundamental ways. Chapter 4 presents my new paradigm, including both the conceptual restructuring of ownership itself, and the core attributes I identify within it. Chapter 5 discusses another new paradigm, the Extended Evolutionary Synthesis featuring niche construction theory, and it explores how the phenomenon of ownership can be understood through the lens of niche construction and cultural niche construction, ecological engineering, and ecological inheritance. Chapter 6 puts these ideas into practice,

² Because these concepts will be encountered meaningfully prior to Chapter 5, abbreviated definitions for each of these will be useful: niche construction and cultural niche construction concern the reciprocal effects of organisms on the environment and the environment on organisms, where ecologically, culturally and evolutionarily transmitted and influential through inheritance and/or legacy.

³ While this is a neologism I created, in making sure of that fact I discovered the origins of the word “apocalypse” have to do with revelation – revealing, uncovering, insight... paradigm shifting.

further illuminating their utility. Finally, Chapter 7 summarizes my arguments; suggests their meaningfulness, benefits and potential implications; shares lessons learned from this research journey; and concludes the dissertation.

Methods and Methodology

Hermeneutic phenomenology, also known as interpretive phenomenology, originates from the work of Martin Heidegger...Heidegger is interested in human beings as actors in the world and so focuses on the relationship between an individual and his/her lifeworld.Hermeneutic phenomenology, then, seeks 'to understand the deeper layers of human experience that lay obscured beneath surface awareness and how the individual's lifeworld, or the world as he or she pre-reflectively experiences it, influences this experience [35].'Hermeneutic phenomenology is rooted in interpretation. (Neubauer et al., 2019, p. 94)

Philosophically, my approach could be described as hermeneutic phenomenology. However, the most salient characteristic of methods and methodology is the highly interdisciplinary approach I have taken with my topic. The disciplines that I draw from most extensively, such as philosophy, history, anthropology, ethology, social psychology, biology, ecology, American Studies and Native American Studies, each have epistemological hallmarks that have informed my work.

Philosophy, with its critical questioning, related to the nature of the society of which we are a part, and to our worldviews and belief systems, is central to this work. Its manner of examination, sometimes into such extended realms as to become distant from everyday life, offers templates for deep exploration of topics and themes that are otherwise left unquestioned. I see myself as working very much within and using the tools of that tradition: particularly where the intent is to illuminate the real word and real phenomena as it interacts with real experience.

History, anthropology, American Studies and Native American Studies share methods, including the use of primary sources (i.e., documents, objects, constructions, and works of art from the relevant time periods), the content of primary or secondary source interviews and observation (such as

ethnographic research or research done within Indigenous frameworks which differ in marked ways from traditional Western ethnography), but also, and significant to us here, an approach to research that emphasizes interpretation and analysis that can result in new understandings, new insights, and new meaning being made. This certainly includes the analysis of previous research, and synthesizing it into new theories, via novel analysis: all of which is congruent with my own research method and methodological framework.

American Studies: A Users Guide by Deloria and Olson (2017), a monograph that delves deeply into the utilization of interpretation and analysis in research, explores how a “text” can be the foundation of rich exercises in research, yielding new insights, ideas, and arguments. This study is much aligned with their approach, yet it differs in scale. While they extol the possibilities within a detailed examination of something that may perhaps seem small and insignificant, and deriving a great deal from that exercise, I engaged with something arguably gigantic – ownership – as my “text.” Yet, I believe it is the same process, as the “text” itself – in their case or my own – is one of ambiguous, neglected, oftentimes invisible or of an inconsistently described nature. Thus, insight and revelation are possible when one focuses careful attention upon it.

I also feel a great kinship with Indigenous research philosophies. In *Global Epistemologies and Philosophies of Science* (Ludwig et al., (Ed.), 2021), an outstanding piece by Maori scholar Carl Mika delves into problems of method. In particular, the contrasts between Western methodologies and Indigenous methodologies. Mika argues for the holism and interconnectedness that are hallmarks of Indigenous research philosophies. These are important principles of inquiry for work revealing the interconnectivity of a phenomenon that has been used, so successfully, to divide us.

In the natural sciences, there is, of course, the scientific method. Early in the history of science, however, observation was the primary means of data collection, which of course is also utilized in the

disciplines I discuss above. Natural History, a field that is very important to the history of science, focuses principally on observation. Biologists have recently begun to argue for a return to wider use of natural history methods.⁴ Observational methodologies are relevant to my work. By conceptually tuning in to *ownership as a phenomenon of life kind*, I began an observational practice of ownership, that enabled further insight into its ubiquity, its behavioral expression, and its fundamental attributes shared across species. This led me to posit my “AIRE” description (not a definition, but a *description*; a distinct term within the Natural History lexicon) of ownership.

The scientific method, of course, underlies so much of the work of ecologists, biologists, animal behaviorists (ethologists), and even social scientists – whose research is legion within my reading regimens. These scholars naturally work in multiple sub-specialty areas, too. But the scientific method, as I will discuss, has some weaknesses within its need for countable, quantifiable, model-able, statistic-amenable data. These are powerful ingredients for reaching understandings of natural phenomena that may otherwise elude us, but they also reify worldviews of separation, objectification, inanimacy, and dissociation. As I discuss later, new insights in biology and evolution may finally be working against these worldviews, moving knowledge-seeking towards greater harmony with the complex, interconnected, multi-causal reality in which we actually live.

The most influential theoretical frameworks to my thinking and work have been Niche Construction and Cultural Niche Construction theory (NCT and CNC) from within the extended evolutionary synthesis (EES). In learning about these theories, I soon perceived their applicability to my central research interest(s) around ownership, particularly in how organismal expression of what I had

⁴ The disdain for it was beginning to be a problem three generations ago already: great animal behaviorist Niko Tinbergen said “Contempt for simple observation is a lethal trait in any science” (Bateson and Laland, 2013, p. 716). Joan Strassman reiterated this in a Big Biology podcast interview (Woods, et al., 2023). She recently published *Slow Birding* (2022) with a robust focus on observation.

begun to view as ownership phenomenon was fundamentally demonstrative of organism-environment interaction. To use a term that is found in philosophy, cultural criticism, and American Studies methodologies, it is intersubjective.

NCT and EES came about through a blending of observation and the scientific method. And also, fundamental ideas within them really precede the modern synthesis (where genetic transmission is at the center of evolution), These ideas can be seen in the work of Darwin, in other works of natural history, and in the traditional wisdom and knowledge of non-Western persons.

Their central observation is that gene-centric evolutionary theory is extremely useful, yet unable to fully explain a wide range of things that matter to understanding the way that living things develop, change, respond, react and interact within the inherently interactive and interdependent Earth community. Work correcting this deficit has led to exciting insights in epigenetics and related fields, and improved understandings of biological development.

Together, the variety of disciplinary frameworks I've engaged with offer a range of methods (tools) and methodologies (the approaches to using those tools) for a wide-ranging inquiry – methods and approaches that are also often employed within the extensive literature that undergirds my own arguments.

These include the variety of evidence I use to make my arguments, from historical to cultural data and from the ethological to neurological to ecological to biological data that rest at the center of the conclusions of the many scholars whose work I draw from in my leading method, which could be termed 'meta-synthesis' (despite its more frequent association with research in medicine). A meta-synthesis fundamentally brings together significant amounts of qualitative or quantitative data and synthesizes it into, potentially, new theoretical frameworks.

However, my most marked epistemological influences – as regards to *manner of thinking and inquiring* as well as by the *compelling nature of the ideas* themselves – have been the fields of philosophy and history of science. These offer a plethora of theory, methods, methodological frameworks, ideas, tools, scholarship, and sheer potential with which to examine our entire, fascinating and ever-enlightening world.

Intellectual Histor(ies) of Ownership

It is typical of a dissertation to present a literature review at or near its beginning. Because of the broad nature of the literature I engaged with, and the fact that these literatures often do not and have not intersected, a literature review would be cumbersome and repetitive in my case. This is because important sections of my dissertation discuss or draw extensively from the intellectual history of relevant disciplines.

However, there are certain fields that play a narrower role in my monograph yet remain relevant. These I will summarize below, adding abbreviated discussion of their literature where doing so would enhance reader comprehension later.

One challenge to summarizing literature for this study stems from the definitional and lexical mixing referred to earlier, which then creates the same when examining their respective intellectual histories. As will be elaborated upon later, the intellectual history of “property” spans more than two millennia. Textual evidence we have of thinkers grappling with ideas about property goes back to the ancient Greeks and Romans in the West. There is certainly a worldwide intellectual history of property as well, but that is regrettably outside the scope of my present work.

The cultural construction of property notions within the emerging legal systems of Western societies worked in concert with the Roman Catholic Church (such as in the form of particularly foul

Papal Bulls like the Inter Caetera, also known as the “Doctrine of Discovery” of 1493) to reify notions of property over time. These had profound impacts on the dynamics and end results of colonial dispossession of Indigenous peoples and their homelands, along with the treatment of the natural world and its living things.

Later, such as in the United States, Judicial decisions (influenced by these thinkers and the church’s decrees) continued to shape the form and effects of notions of property, as a concept entwined deeply within legal, political and economic systems.

This continues to be true today, and legal scholars in the West and elsewhere continue to debate property, its meaning and its definitions. This, of course, is how many might attempt to trace the intellectual history of ownership, due to its regular conflation in the literature with property, where it does not possess a *distinct* intellectual tradition of its own. However, ownership does have a distinct intellectual tradition elsewhere.

Psychological Ownership

Floyd Rudmin is an early pioneer in this field, though he attributes important founding work that brought property theory into the realm of psychology to Polish economist Leon Letwinski in the early years of the 20th century (Rudmin, 1988).

According to Jon Pierce, an important contemporary scholar in the field, an 1890 seminal pronouncement by psychologist William James regarding the significance of the study of what is ‘mine’ was an important early step in what has now become a field of study;⁵ Pierce and Peck (2018) argue that it opened the door for the field, and say that psychological ownership is:

... the “state in which individuals feel as though the target of ownership or a piece of that target is ‘theirs’” (i.e., “It is MINE!”; Pierce, Kostova, & Dirks, 2001, 2003, p. 86). Among some of its most defining characteristics are as follows: a sense of possessiveness serves

⁵ Note, though, that this idea is related to the *sum* concept Locke also talked about (see Chapter 2).

as its conceptual core; it answers the question “What do I feel is mine and a part of me?”; it reflects being psychologically tied to the target of ownership; it is a unidimensional construct; it reflects conditions whereby the individual experiences the target of ownership as part of the extended self (Pierce & Peck, 2018, p 6).

Another early and still relevant scholar in this field was sociologist and ethnographer Ernest Beaglehole. He studied Native North American Indigenous people (the Hopi) and the Maori of New Zealand, and had a particular interest in ownership. Some of his work used the term ownership (“Ownership and Inheritance in an American Indian Tribe” 1934) but he used the term “property” in the title of his 1931 book *Property: A study in social psychology*.⁶ His work was a combination of ethology, ethnography and psychology, and the zeitgeist of his era was reflected in his language regarding small-scale cultures and lifeways, which he refers to as “savage” and “primitive.” However, much of his work still has value.

Years after his very comprehensive 1931 book, what became known as (per Pierce) the Psychology of Ownership, inclusive of Beaglehole and Litwinski’s early work, emerged. It is now understood as a social science around possessiveness, possessions, territoriality and territory as investigated within a framework of human experience via motivation and behavior, regarding what one owns and is agential in regards to.⁷

The field encompasses the research of Lita Furby about children and possessions in the early 1980s, a seminal work on possessions by Dittmar (1992), and the many publications of Floyd Rudmin, whose work I cite frequently below. Its goals and focus have more recently become aligned with consumer, organizational and management social sciences and social psychology methods (see Pierce,

⁶ Which I have a recently published version of, and I cite and is still being cited in the field today, such as in Pierce and Peck (2018).

⁷ However, the term agency is not used in this way in this field at this time.

2003; Pierce & Peck, 2018). Findings are often used to engage consumers in purchasing and product desire (Kirk et al, 2017).

A recent popular press publication related to this field is *Possessed* (2019) by Bruce Hood. Hood is an experimental psychologist at the University of Bristol in England who works and publishes frequently in the popular science realm. His book is very interesting but falls prey to human exceptionalist tropes surrounding ownership that I discuss in later chapters.

Finally, another area of interest is acquisitiveness. I have less familiarity with this literature as it came to my attention much later in my research, but it is related to the work done within psychological ownership. University of Michigan psychologist Stephanie Preston has published numerous interesting papers on the topic over the past 20 years. Her work on hoarding behavior and its interspecific relevance and potential for insight has similarity to the nature of some of my arguments.⁸

As Intertwined with Physiology and Neurology

A more recent strain of ownership research in the realm of psychology regards the sense of self that results from sensory or neurological awareness of ones' extremities under experimental conditions where their location is misrepresented. Discoveries in this field rest on increasingly sophisticated research equipment and technology and publications are found primarily in the medical, neuroscience and physiological literature. The cross disciplinary work on limbs and self-sensing is relevant to paralysis compensation technologies. (See *The Ego Tunnel* by Thomas Metzinger, 2009; Khan & Turri, 2022; and Braun et al., 2018).

⁸ See Preston in *The Oxford Handbook of Hoarding and Acquiring* (2013).

Cross Cultural Research on Property

Published cross-cultural research by Western peoples (anthropological and ethnographic) usually endeavored to describe property systems within their more general ethnographic and anthropological studies of unfamiliar societies, often based in field work or data derived from field work. But “ownership of property” has been of enduring independent interest as well. Floyd Rudmin, wrote extensively about the topic (1994, 1996). According to his 1988 paper, “Dominance, Social Control, and Ownership: A History and a Cross Cultural Study of Motivations for Private Property,” Rudmin says that

One thread of continuity that runs through the long history of cross cultural research [in the West] has been the attempt to explain or justify the ownership of property and its various manifestations. Scholars have thought it necessary to examine the social and psychological functions of property in “natural” societies, be they hypothetical, historical, or actual. “Natural” peoples were studied, in order to determine the fundamental motivations for private property and how these lead to various contemporary property regimes. (p. 132)⁹

This has been true for millennia in Western scholarship. Aristotle is said to be the first to initiate cross-cultural research centered on property systems though the primary source of this does not survive, according to Rudmin’s 1996 paper.

Morgan’s (1877) *Ancient Society* was perhaps the most influential of the early cross-cultural studies of property, certainly for its influence on Marx and Engels (Averkieva 1961, Engels 1884/1902, Koranashvili 1980,1982, Marx and Engels 1888/1965). The ethnological notebooks of Marx (1972) provide further evidence of the need felt by political economists to validate their work with cross-cultural evidence. (Rudmin, 1988, p. 134)

Much descriptive material thus exists that attempts to categorize and draw conclusions regarding how these systems operate in cultures throughout the world. Multiple studies done over the past 50 years utilize the *Ethnographic Atlas* (1967) in their work. The dataset draws from worldwide ethnographic and anthropological research to categorize cultural behaviors and practices so that other

⁹ Interestingly, Rudmin here mixes the implied meaning of the phrase “ownership of property” with his later more specific reference to “motivations for private property.”

researchers may engage in data-based studies of cultural phenomena, including property/ownership practices and patterns.

Notwithstanding the likelihood of interpretive inconsistencies, cultural biases, and the potential of downstream research flaw effects¹⁰, the findings from this dataset have been useful to a number of works I refer to, particularly Rudmin (1994, 1996) and Aikenvald (2013). However, the data elides and excludes much variation found within and between societies, is usually presenting categorization from the perspective of an outsider with a Western worldview and perspective, and does not consider nonhuman enactments of ownership.

Critical Race Theory, Indigenous Studies And then there are scholars that examine property or ownership or territory through multiple and often blended academic lenses. For instance, Brenna Bandar melds law and critical race theory in her study of history, colonialism and dispossession in her insightful monograph *“Colonial Lives of Property; Law, Land and Racial Regimes of Ownership”* (2019). Moreton-Robinson has a similar take in *The White Possessive: Property, Power and Indigenous Sovereignty* (2015). Both of these books are interested in and deeply explore topics similar and complementary to mine, but their focus is specifically on exposing hidden narratives and worldviews surrounding *race* and owning/property.

Power, Hierarchy, and Relational Dynamics This aspect of the study of ownership phenomena is diffused within a wide variety of disciplines, including literature pertaining to the study of nonhuman beings. The conventional study of territory/territoriality is often concerned with the power of either groups or individuals in regards to space. Later (Chapter 2, p. 97) I touch on the hidden bias within the use of the term power in these contexts. Interestingly, likely due to the shifting utilization and meanings

¹⁰ “Tabulated nonsense? Testing the validity of the Ethnographic Atlas.” (Bahrami-Rad et al., 2021).

of the term “ownership” in lay and scholarly parlance, it is not really a field of study itself (that is, ownership and power), but it is found within the broader *study* of power (i.e., Chabot-Hanowell and Smith’s much-cited article “5 Territorial and Non-territorial Routes to Power” (2012)).

Western political science and economics are very much – perhaps even fundamentally - about the intersections between ownership and power, particularly as they relate to unequal access to wealth, privileges and resources. This is true, as well, of legal systems and their study. Particularly, of course, of property law. But this relates to the nature of these systems, which are products of the Western world view.

I have drawn minimally on the literature of the fields of political science and economics in this dissertation. These fields study phenomena that emerge from the existence of dominant paradigms, including that of ownership. Thus, they contribute to understanding the ensuing patterns and events, the models and predictions, and the methodologies of perpetuation and protection of ownership phenomena, rather than explicate some of the core questions I attempt to tackle as to paradigmatic invisibility, its consequences, and ownership’s fundamental nature. Thus, economic and political systems will appear in our discussion, but their literature will feature minimally.¹¹

Evolution of Ownership

In another area of the academic literature there is a long-running inquiry (over a century) into ownership and property that centers on the notion that it *evolved into* existence. Theories regarding how

¹¹ To press the point further, I suggest that economics and political science are built upon ownership phenomena, and are derivative of it. They both emerge from cultural, religious and moral worldviews, which I argue are influenced by ownership as a phenomenon, and by particular ownership phenomena. So, here my task is elucidating ownerships’ building blocks (cultural or biological), not discussing the details of derivative phenomena themselves. Exceptions regard their demonstration of cultural niche construction in action, such as in dispossession, exceptionalism, and how these emerge from niche construction and cultural niche construction to enable certain humans in certain human groups to have the greatest advantages. Here, this is notably related to resource and wealth accumulation.

that occurred are posited and investigated, often through the lens of game theory and nonhuman primate behavior. An implicit thread in this literature is the idea that ownership/property has climbed a (implicitly hierarchical) ladder of complexity, both in the sense of incidents of emergence in nonhuman beings and especially within the behavioral strategies of human beings (See Bowles (2004) p. 39; Rudmin (1988) quoting Rousseau on this idea (p. 134), Gibson (2020) pp. 14-16, and Pearson (2000)). An early example we will refer back to later, from Ernest Beaglehole who dabbled into this realm of the topic as well:

...a caution is required as to the meaning connoted by such terms as proprietor, ownership, landed property, or rights to a tract of country. It is rarely possible to apply these words to primitive societies in the sense in which they are applied to higher societies and to our own in particular. With us, these words have a connotation presupposing the existence of highly developed systems of legal and economic conditions and sanctions which are meaningless when transferred to native society. (Beaglehole, 1931, p. 130)

Later work (including popular publications like *The Territorial Imperative* (1966) by Robert Ardrey) posits human territoriality as an animal instinct underlying human behavior and social formation that undergirds cultural evolution. The book was controversial but influenced interdisciplinary debates related to human behavior (Laland and Brown, 2011).¹²

Early publications, such as “On the Rudiments of Possession and Property” by Lee Ellis (1985), is an example of literature that blends interests and findings in psychological ownership with insights from primate behavior to support human ownership behaviors having evolutionary roots.

But it is a series of publications by British biologist John Maynard Smith on evolutionary game theory beginning in the early 70s’ that becomes enormously influential in subsequent work on the evolution of ownership related phenomena, such as property, possession, and territory. According to Google scholar, the 1982 article “Evolution and the Theory of Games” has been cited 7,021 times: and

¹²Also see <https://everythingstudies.com/2021/06/23/rereading-defenders-of-the-truth/>

this is just *one* of his articles. The work is referenced extensively and developed further in a wide variety of publications.

This contributes to a body of interdisciplinary literature that I drew from often in this study, despite differences with my approach and conclusions (discussed further in Chapter 6). Particularly relevant is an article I will discuss in Chapter 6 by Hare et al., 2016. Demonstrating my contention regarding the influence of Maynard Smith, they also cite the 1982 article calling it an “early and still influential model of ownership” (p. 1179). According to Google scholar, accessed on September 7 of 2024, nine articles citing the 1982 article were published in the previous two weeks.

While ownership – in its myriad manifestations – is a phenomenon always being shaped and altered, at root, I suggest that it did not arise at some point, instead, it is a phenomenon associated with life/agents organizing themselves in space and in relationship to other life/agents, for fundamental purposes such as managing conflict and maximizing access to necessary resources. These are things lifekind have been engaged with for a very long time.

Coming from a Central, Western Bias

Nearly all that I have cited and discussed above come to the questions and debates of their intellectual circles and research projects actively (and usually, but not always, unconsciously) centering Western worldviews and ideas about property, ownership, territory and possession as the default model in their work (this is supported in Blomley (2016, 2022), Singer (2000, 2002, 2008), and Freyfogle (1996, 2004). I would argue that this is true even amongst the scholars whose work directly challenges these frameworks and ideas, [i.e., Bandar, Morton-Robinson]. The cultural baggage of the term property is delivered to us from its formations over time, and its recent and current deployments within and across contemporary societies, from the smallest to the broadest scale.

Who Gets to Define Ownership? In many ways, this question lingers at the center of this study. Until now, in Western thought, defining this phenomenon has been left to philosophers and theologians, legal theorists and the judiciary, economists and politicians of the Western world. The human experience of the phenomenon is very much a “folk” or “lay” experience however, as it underlies significant aspects of our day-to-day experience (Rudmin, 1988; Blomey, 2015). How it is defined within our social structures and their rules is how we understand it when any dispute occurs, however.

This latter is the doorway through which I entered into my interest of ownership. When humans come into conflict about ownership – with one another or with the rest of the living world – is when *how* it is defined and lived out begins to matter most. I believe this is why this work matters: because both the size and the lineage of these conflicts can be minor, or they can threaten the lives and landscapes of an entire planet.

TWO: THE OWNERSHIP PARADIGM

...at any given time a community will hold a general sense of what property is all about and what it means to own a thing... Eric Freyfogle, 1993, p.1294

What is ownership, exactly?

This chapter will attempt to answer this question in terms of what ownership is *understood* to be in the Western world. Later we will discuss what I posit that it *is*.

Part 1 – A Paradigmatic History

As I delved into understanding ownership, I found a disjointed debris field of ideas, beliefs, implicit, explicit, absent and inconsistent definitions, and most (and worst) of all, cultural, racial and species bias within all of the above. Loughmiller-Cardinal and Cardinal (2023) say that when terms are “contextually ambiguous, either ontologically or operationally, it severely limits the explanatory utility of the concept (p.2, 2023).¹³

Perhaps this is a result of ownership’s ubiquity. How one might attempt to answer the question ‘what is ownership?’ can differ markedly in correspondence with the context of the question and the realm to which the question is addressed. Is it an economic context? Political science context? Psychological context? Cultural? Legal? Philosophical? Is it a biological question? A geographical one? Historical?

¹³ Scholars (and I) remark on this problem repeatedly in the literature I cite below, as well.

The fact that answers would differ between all of these areas of inquiry provides some insight into a Britannica Academic Encyclopedia¹⁴ definitions' statement that "it is difficult to find a least common denominator of "ownership"" (Ownership, 2023).¹⁵ Ownership is something people often feel they have innate – even personal - knowledge of what exactly it is. After all, many say, humans swim together in a cultural soup of ownership (Blomley, 2015; Khan and Turri, 2022; Rudmin, 1991). Wacks (2023), says that, "ownership is at the epicenter of social organization" (p. 58).

Yet there is a great deal of definitional ambiguity in both scholarly literature and elsewhere, and oftentimes "ownership" is not, or is not clearly defined, even where it is ostensibly a central topic of the work (such as in *Possessed*, by Bruce Hood, 2019).

There are certainly problems with this. As noted above, neglecting definition is imprecise scholarship with potential for reverberating misunderstanding. And, by not defining ownership, readers are expected to "know" – i.e., consult their own ideas, experiences and beliefs about ownership. This perpetuates confusion and/or bias. Not defining also suggests that there *is* only one universal definition, and it is the one 'everyone' knows already.

This is symptomatic of how Western culture (and Western worldviews) frame the concept of ownership: as *universal*, *conclusive* and *exclusive*, and that any definition or usage that contradicts this is

¹⁴ I utilize the Britannica resource (here and below) due to its extremely useful summarizations of contested terms and ideas that I grapple with at length in this text. Britannica provides a 'state of the idea/term' utility that is useful to the thread of my arguments.

¹⁵ The full entry is as follows: "Ownership, [is] the legal relation between a person (individual, group, corporation, or government) and an object. The object may be corporeal, such as furniture, or completely the creature of law, such as a patent, copyright, or annuity; it may be movable, such as an animal, or immovable, such as land. Because the objects of property and the protected relations are different in every culture and vary according to law, custom, and economic system and the relative social status of those who enjoy its privileges, it is difficult to find a least common denominator of "ownership." Ownership of property probably means at a minimum that one's government or society will help to exclude others from the use or enjoyment of one's possession without one's consent, which may be withheld except at a price."

not truly ownership. Thus constructing a framework that excludes all other iterations from being ownership at all: a framework of *dominion*.

The Emergence of the Dominion Worldview of Ownership In Historical Perspective.

Dominion, the idea that humans are destined to be here and to be in charge, runs deep in our culture. Ian McHarg, a famous conservationist, once declared that all environmental degradation can be laid at the feet of the Bible. Genesis 1:28 lays it right out: “and God blessed them, and God said unto them, be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moves upon the earth.” It is an idea that permeates most of Western culture – the idea that we, humans, have dominion over the environment around us, to do with as we see fit. (Brookshire (2022) p. 275-6)

The history of Western cultures’ property and ownership concepts/beliefs is also a history of worldviews of dominion. Here I will introduce what I call the “dominion worldview of ownership”¹⁶ – the moniker I will use to articulate the novel characteristics that constitute Western worldviews and practices/behaviors of ownership.

“Dominion” is used frequently in the history of property, in religious language, and elsewhere (See Christman, 2000, p. 17; Freyfogle, 1993; Gibson, 2020, p. 16; Greer, 2018, p. 356; Mossoff, 2003, pp. 402-403; Rudmin, 1988, p. 151; Singer, 2007, p. 8). It is not a new concept: what is new is my usage of it as a *worldview of owning*, my attempt to trace its thread of continuity through the origins of what we now call “Western” culture, and my argument that its existence – the Western worldview of owning - has helped blind an influential block of humanity to this worldview’s unique contribution to our present global state of ecological affairs.

¹⁶ Both a worldview and a worldview in particular about – and originating in – ownership phenomenon and behaviors.

What I term the dominion *model* of ownership has parallels, I found later in my research, with the “ownership model” discussed by Singer (2000, 2008) and cited and discussed by Blomley (2022):

The tendency is to think that property, like territory, is obvious. This reflects the dominance of an ‘ownership model’ that shapes our understanding of what property actually is and how it should be structured (Blomley, 2004). The ownership model is present in popular discourse, academic argument, and judicial decision-making:

What is property? One might think this was a simple question. Property is about rights over things and the people who have those rights are called owners. What powers do owners have over the things they own? Owners are free to use the property as they wish. They have the right to exclude others from it or grant them access over it. They have the power to transfer title – to pass the powers of ownership to someone else. They are also immune from having the property taken away from them without their consent or they must be adequately compensated if the property is taken by the state for public purposes. (Singer, 2000, pp. 2–3)

According to the ownership model, property is reduced to private property – the two become synonymous. Property is also reified. It is imagined as ‘about rights over things.’ (Blomley, 2022, p. 14-15)

Prior to reading Blomley’s work, I had also noticed this pattern of Western thinkers (and practitioners, by default) increasingly and then entirely perceiving *ownership itself* as defined as the principle characteristics of *private* property in the Roman law¹⁷ sense: exclusivity and direct, vertical control *over* something. Thus, not only is there hegemony of the ownership model, but its meaning bespeaks the hegemony of the private property model so central to Western legal systems and schemas.

The history of Western ownership ideas scaffolded the emergence of this “ownership model.” This makes sense, as it is the nature of social norms and ideas to arise from the historical trajectories of a society. However, what is notable here is that this *notion* has been weaponized during and following the colonial era to dispossess non-Europeans of their territory, property, possessions and lifeways, as non-European notions, systems and practices *did not conform sufficiently with the European ownership*

¹⁷ Roman law is discussed later in this chapter.

model. Furthermore, it has been, and is also used to maintain physical and cultural hegemony over nonhuman beings. And the model has now been internationally codified, due to the influence of Western legal and economic systems, as *what it means to own*.

It took over two thousand years to fully consolidate this conceptual shift amongst a small segment of humanity – those of European origins and history. But to date, it has profoundly shaped general understanding of the phenomenon for all human and nonhuman beings worldwide.

As the subject is vast, and represents a substantial existing literature that originates over a broad time span and from within an expansive range of fields, much elision will be necessary to summarize my understanding of that history, but I will attempt to do so.

To be clear, when I use the term “Western culture” I generally mean culture as “that complex whole which includes knowledge, belief, arts, morals, law, customs, and any other capabilities and habits acquired by man [sic] as a member of society” (Appiah, 2016, par. 3, quoting Sir Edward Burnett Tylor’s 1871 definition) with regard to persons of primarily European origin. Of course, as with many of the concepts I grapple with, ‘culture’ has been repeatedly redefined and argued about as well, “Kreber and Kluckhorn [1] enumerated more than one hundred and sixty distinct definitions for the term culture” (Loughmiller-Cardinal and Cardinal, 2023, p. 1).

The “West” is almost invariably meant to include the Greco-Roman world as a central starting point for many of its most significant ideas and intellectual/philosophical traditions. According to Appiah (2016) “Western culture” is actually a fairly recent construct. LaFreniere (2023) says it could only be described as such beginning around 900 CE, though Appiah’s argument places that several centuries later. Either way, its legacy is very real and it has had a profound impact on our present world.

What is the Western Worldview?

Interesting recent research by Joseph Henrich and others have posited that people from Western, Industrialized, Educated Rich and Democratic (WIERD) societies (roughly, Western societies, but particularly European societies) think in ways distinct from other peoples. He argues that this stems from both the widespread literacy that comes out of the Protestant reformation, and the effects of previously instituted cultural changes by the Holy Roman Empire and the Roman Catholic church on family and kinship practices (Henrich et al., 2010; Henrich, 2020 and Henrich et al., 2022). Within these and parallel fields of study can be found also-relevant insights into the emergence of individualism, which is interwoven with the emergence of individualistically-oriented (the autonomy of the individual against the rights/needs of the collective) ownership behaviors/systems.

The New York Times, in reviewing Henrich's book, engagingly summarizes it this way:

Roughly, we weirdos are individualistic, think analytically, believe in free will, take personal responsibility, feel guilt when we misbehave and think nepotism is to be vigorously discouraged, if not outlawed. ... the non-WEIRD majority... identify more strongly with family, tribe, clan and ethnic group, think more "holistically," take responsibility for what their group does (and publicly punish those who besmirch the group's honor), feel shame — not guilt — when they misbehave and think nepotism is a natural duty. (Dennett, 2020, para. 3)

As may already be obvious, one's perception of owning and property would be deeply shaped by differences such as these. Johnathon Haidt (2012) says "*The WIERDer you are, the more you see a world full of separate objects, rather than relationships*" (p. 113, italics in original). He goes on to say that characteristic WEIRD thinking involves "detaching the focal object from its context, assigning it to a category, and then assuming that what's true about the category is true about the object (p. 113).

The History of Western Thought Regarding Property and Ownership

In the West, early evidence of focused query into the nature and characteristics of *property*¹⁸, along with its moral and philosophical contexts - including those postulated as causes for its very existence – is recorded amongst the ancient Greeks with Pythagoras, in the 6th and Plato in the 5th century BCE (Rudmin, 1991). Richard Schlatter claims “the philosophers of Greece built the framework on which all subsequent theories of property have been constructed (Schlatter, 1973 p. 11).”¹⁹

Rudmin (1988) says that,

According to Schlatter (1951), Greek property notions were carried to Rome via Stoic philosophy....Virgil [70 – 19 bce] and Seneca [4 bce – 65 ce]... made much of an ideal Golden age, when men were not divided and bound by private property, when all was naturally abundant and owned in common (p. 131).

Greek thought also lay at the foundation of much of Roman thought and philosophy, and Cicero, the influential 1st century (BCE) Roman orator and statesman (and proponent of “natural law”) is known to have kept ideas about property and ownership, first recorded as original to Pythagoras and Aristotle (4th century BCE), in intellectual circulation (Rudmin, 1991).

“Natural law,” the idea originating with the Stoics of ancient Greece that has “deeply influenced legal theory in the West” is the idea that “there is one law in nature, the law of reason” (Greer and Lewis, 1991, p. 140). Its ideas came out of Roman jurists of Cicero’s time observing certain commonalities between the laws of different states. The resulting idea of the existence of universal

¹⁸ Note that in this part of my dissertation, I will be using terminology in ways that I argue against later, as this reflects the authors work I am utilizing, where the word property is used interchangeably with ownership. This is common in Western historical (and even most contemporary) literature on this topic. Below I make the case that ownership is what they are all talking about.

¹⁹ This book was originally published in 1951, but is a moderately revised edition of the book cited by Rudmin in the quote that follows. Also, note the Western culture myopia in this statement. All of these early (through 20th century) sources exhibit unabashed Western culture bias regarding ownership, property and possession.

laws, like the ‘equality of men’ (which of course, was quite limited to certain men), have persisted to the present. This foundational idea of equality, of course, is in contrast to the inequality of these societies, particularly the Roman empire (as well as our own!). Thus, thinkers of that time, through to the enlightenment era, expended much ink in their attempts to justify or make sense of what also seemed natural – that some people were equal and some were destined to be beneath them (Schlatter, 1973; Greer & Lewis, 1991).

Schlatter (1973) follows this important thread in detail in his explorations of the origins of private property. His study reveals the remarkable trail of thinkers, over the course of more than two millennia, working to find plausible, and typically divine justifications and reasoning for inequality, wealth accumulation, exclusion and exploitation in the evolving Western world.

In Greco-Roman antiquity, human social configurations were undergoing broad changes, cementing into ever more hierarchical and patriarchal social structures, and more politically and socially complicated and populous societies (LaFreniere, 2023). In that place and era, inquiry into what was ‘right’ or divine or appropriate, or questions about the manner in which the state functioned, was the primary purview of philosophers. Therefore, leading thinkers of Greco-Roman societies over time, such as Pythagoras, Plato, Aristotle, Cicero, Seneca and Virgil, were all understandably contemplating aspects of those changes which centered on possessions and wealth, which are common and contested features of more populous, stratified and socially onerous societies, as the GrecoRoman world was becoming.

It makes sense - as wealth inequalities became more pronounced via the social allocation of and delimited access to resources, contemplation of who had greatest agency over resources, landscapes and the rules that govern them, would naturally focus on who had possession of, and/or power over the wealth, and what that meant for a “good” society. Examining and debating the merits of communal

ownership systems of land and other entities in juxtaposition with private/individual ownership systems of land and other entities would be of understandable interest and concern.

Schlatter says that Plato and Aristotle both believed that the ruling class were “the only true men” capable of governing themselves and others with the reason innate to natural law, and that slavery was a “necessity” because:

...some men were natural slaves-beings in human form but without reason, more like animals than men - who could with justice be used as the instruments of another's good. The proper economic function of the rulers is to consume property and that of the slave to produce it. Consequently, the rule of equality does not hold as between the two groups. (1973, p. 19)

This differentiating perspective applies to societies whose attributes diverge from their own as well. This dynamic played an influential role in ancient Greece and Rome, according to the thesis of the 2012 book, *Savage Anxieties; the Invention of Western Civilization*. Author Robert A. Williams explores the role of the “savage” as the animating “other” that helped to feed identity and worldview formation in Greco-Roman antiquity. He argues that this central contrasting metaphor had deep influence in the cultural evolution of the West. It centers, as well, societal contrasts around ownership. He says:

From its very beginnings in ancient Greece, Western civilization has sought to invent itself through the idea of the Savage... a distant, alien, uncivilized being, unaware of either the benefits or burdens of modernity. Lacking in sophisticated institutions of government and religion, *ignorant of property* and laws, without complex social bonds or familial ties, living in a state of untamed nature, fierce and ennobled at the same time... (Williams, 2012, p 1, [emphasis added]).

An ongoing philosophical exploration in antiquity of the merits of communal versus private ownership models grows out of, and continually references the notion of the “natural-ness” of ownership systems. Invariably, “natural” peoples are synonymous with what are termed “savages” or “barbarians” or “primitives” in the meaning and in the translations of the texts that reach us today, thus this inquiry is of a body with this centrally important contrasting metaphor. As are the connections

between property (especially as privately owned) with civilization and communal ownership with savagery.

Natural Law, Antiquity and Rome

“Natural” law, as understood and written about by Cicero (106-43 BCE) is meaningful here also because of how it is believed to transcend cultural difference (absolutist and transcendent) and is conceptually centered on differentiation (man as above/distinct from nature) and hierarchy (God above man as lawgiver/arbiter/judge) (Schlatter, 1973; Boyle, 1989).

In the words of Cicero:

true law is right reason in agreement with Nature; it is of universal application, unchanging and everlasting....It is a sin to try to alter this law, nor is it allowable to attempt to repeal any part of it, and it is impossible to abolish it entirely....[God] is the author of this law, its promulgator, and its enforcing judge. (Wacks, 2023, p. 85)

This body of thought has had great influence on conceptions of the latitude of rights of the individual in society, particularly with regard to private property.

During a slightly earlier formative period in Greece, in their work as thinkers, both Plato and Aristotle engaged in novel efforts to categorize and organize the nature of the nonhuman world, particularly animate members of it. Aristotle was particularly interested in this exercise, and made extensive study of the natural world. His resulting system of zoological classification continues to reverberate in contemporary thought due to its intuitive ring to Western minds. It has remained particularly sticky to lay notions about phylogeny and evolution, leading many to believe it is scientifically accurate to perceive lifekind in an innate hierarchy, as Aristotle proposed (Lovejoy, 1936). This is not accurate.

Aristotle's hierarchical system became known as the “Great Chain of Being,” an idea that has “continued to influence theologians, philosophers, and natural scientists (Brandt and Reyna, 2011).

Ideas about superiority/inferiority traceable to these have persisted in Western thought regarding the living world, including other human beings, through the colonial era and beyond (Chapin, 2017; Gibson, 2020).

Aristotle's recorded perspectives on ownership have been influential – and sticky - as well. Rudmin says that “according to Aristotle, the essence of ownership is instrumentality” and that “a property best belongs, as a subordinate part, to the person who has the knowledge and reason to give it telic direction” (p. 88). Contemporary “barbarians” living in close proximity to early GrecoRoman societies – the much ruminated upon “savages” of that era - and later, colonized peoples much further afield, were therefore, conveniently, not thought to be capable of giving property worthy telic direction (Williams, 2013). And certainly, nonhuman beings would have no claim to the capacity to own for the same and additional reasons. Rudmin notes that this telic logic is not only involved in Aristotle's justification of slavery, but it is indicative of Aristotle's larger worldview that ownership should be “elitist and hegemonic” (Rudmin, 1991, p. 88).

Over the ten thousand or so years prior to the era known as “antiquity,” profound change was occurring in the lives and perspectives of many human beings on earth. The Holocene (roughly beginning 12000 years ago) began as an era in many parts of the world in which subsistence strategies of animal husbandry and agriculture began to take stronger and wider hold (Laland, 2017). These would also prove to revise the nature of relationships between people, between people and landscapes, and between people and nonhuman beings. Agriculture and animal husbandry are resource procurement strategies where control, coercion and domination likely mean greater success (if success is defined as greatest return of resource benefits on investment of labor and materials).

Slavery is much in accord with this equation. Slave labor has historically had little relative cost in contrast with a large return on investment. Investment would mean housing, food, and if necessary,

training to complete certain tasks. Depending on circumstances, retaining the slave as captive may be a cost as well. But according to Hooper et al., (2018) and Smith et al., (2022), the ecological context (resource base and its consistence in terms of what it has to offer) is an important factor in making slaves a profitable and useful addition to subsistence strategies where demography and other factors make it feasible.

Slavery and its hierarchical nature certainly had a profound effect on the Roman world. "...slavery was deeply embedded in their economy, society, culture and mentality. They could not do without slaves" (Garnsey, 2007, p. 210). The practice had profound effects on both family, social, and certainly economic institutions (Gowdy, 2020).

The practice itself underwent evolution from more of a domestic system in which enslaved persons were owned by the "Pater Familia," the male head of household (Elliot, 2018) - in an era in which his wife and children were also owned by him - into one in which they were more of a tradable commodity (Avila, 1983, p. 23). According to Avila, and consonant with the work of others on the economics of slavery, as the Roman elite began to own larger and larger tracts of land, the majority of slaves were no longer associated with household servitude, thus more readily commodified and dehumanized (Avila, 1983).

This is in useful harmony with the Roman property law framework. Schlatter (1973) says that, "According to Roman legal theory, all private property had a single owner whose rights were absolute and exclusive against all the world; he could use, dispose of, or even annihilate his property, as he pleased; he enjoyed absolute sovereignty over the property which he owned (p. 63)." Naturally, this extended to slaves, and this level of autonomy with regards to slaves would make them more valuable, with no socially-imposed requirement of standards of care or treatment.

Here is where the Roman legal system – granting ultimate control and latitude over possessions (ultimate decisive agency over entities – see Chapter 4) to these elite patriarchs – undergirds the expansion of empire via efficient, low-overhead agricultural production (Avila, 1983). Roman society is widely understood to have exerted a great deal of influence on the formation of legal systems in the West; and this system develops within a social context in which slave owning was both accepted and economically important. Its productive agricultural system supported not only a burgeoning empire, but also occasioned a great deal of environmental degradation, eventually undermining the stability of the empire itself (Gowdy, 2020; LaFreniere, 2023). It is this legal system and its underlying values that has continued to profoundly shape our contemporary paradigm of ownership.

The Ecology of Empire

In later sections I will discuss niche construction and cultural niche construction theory, and make the case that these frameworks clarify and contextualize the phenomenon of ownership. Here I will discuss the connection between the ecological context and effects of the Roman empire, and the ecological attributes and legacies of the dominion worldview of ownership.

The Roman empire and its ownership worldviews are demonstrative of the ecological dynamics of empire. Imperial human societies have been studied for their characteristics of operation, structure, effect, lifespans, scale and legacies, and are the subject of a broad and well-aged literature. More attention to the reality that “the central organization and redistribution of environmental products is a common denominator of imperialism...” (Rosenzweig and Marston, 2018, p. 89) has meant that ecological dimensions of the empire-environment interaction has lately received more scholarly and research focus.

This includes the understanding that cultural frameworks surrounding these activities buoy them. According to (Morrison, 2018, p. 199), “the structures, beliefs, and practices associated with

institutions that drive accumulation, that outsource resource extraction and production, and that use people, plants, minerals, and other materials as tools in the pursuit of power and wealth” work in concert to perpetuate and maintain wealth and power; central, intertwined goals certainly characteristic of the Roman empire, and that carry through to the worldviews and practices of our contemporary world.

Empires are essentially central authoritative bodies – behaving much like a superorganism in unity of action and coherence of effect – that acts to undergird the spatial organization, resource and conflict management functions (and benefits, if you land high in the hierarchy) of ownership systems and associated worldviews. This is accomplished via these ‘structures, beliefs and practices’ - i.e., laws, norms, and moral systems. In the case of imperial and other stratified societies, these are put to work in the service of hierarchically organized social inequality. The more singular the control – i.e., the more hierarchical the structure that supports and perpetuates it – the more ‘efficiently’ – or readily – it can operate. Within this dynamic, I suggest, can be found ecological explanation for the emergence of the “Roman model” of ownership, and for its persistence during the Roman imperialist era and into the present: it undergirds exploitation of resources, conscription of landscapes and peoples to do so, and creates physical and cognitive (ideas, beliefs, worldviews and their products such as legal and religious systems) infrastructure frameworks to guard and defend it, as well as ensure its perpetuation through time. ²⁰

Morrison says that “‘Empire’ is of course an abstraction, and ‘empires’ are not, as such, actors in and of themselves, but rather manifest in terms of the actions of armies, bureaucrats, local leaders, and

²⁰ Here I begin inserting colored symbols in selected paragraphs:  (a spiders web, to denote instances of niche construction) and  (a gift, to denote instances of cultural niche construction, and emphasizing its transmitted nature). These concepts will be explained and disussed in Chapter 5, but marking them in this narrative is meant to enable readers to readily locate varied and notable instances of them. (Note that not all instances are labeled, so readers may identify others.)

many others” (Morrison, 2018, p. 199). As an abstraction of action or a metaphor of collective purpose, the ecological drivers and their effects remain the same: the institutionalization of unequal owning.

Smith et al (2023, p. 3) say that:

institutionalized inequality ... involve[es] codified differences in power and wealth that are *ascribed* to individuals via inheritance (e.g., hereditary slavery, aristocracy) or some other institutional procedure (e.g., priesthood) [9]. Most anthropologists and archaeologists believe that institutionalized inequality was absent for most of the 300 or so millennia that *Homo sapiens* has existed...

Empires are a relatively recent development in human history (stretching back at least 3000 years from the present) but are currently the predominant form of societal organization, depending on how “empire” is defined (Nexon and Wright, 2007).

According to emerging findings in behavioral ecology, “economic defensibility of high-quality resource patches by dominants, who can transmit their holdings to descendants as well as offer access to subordinates in exchange for labor and other services” (Smith et al., 2023, p. 4.) can help explain the emergence of social inequality when paired with what is known about Pleistocene climate fluctuations, followed by Holocene climate stability.²¹

However, very recent research and modelling by Hooper et al., (2018) and Smith et al., (2022) suggests that *territorial strategies* are prerequisite to emergence of social inequalities. The dynamics at play relate to hierarchical alliances – such as empires or other stratified societies – capacity for efficiency “in organizing for collective action in territorial competition” (Hooper et al., 2018, p. 123) which gives them advantages that may ultimately enable their ability to expand. The benefit of this is access to an

²¹ The concept of economic defensibility originates from the study of territoriality, and was first developed with regards to human lifeways by Dyson-Hudson and Smith in the late 70s'. A description from their seminal work, “Human Territoriality: an ecological reassessment:” “According to this model, territorial behavior is expected when the costs of exclusive use and defense of an area are outweighed by the benefits gained from this pattern of resource utilization. Economic defendability is determined by the interaction of foraging behavior and territorial defense with the particular distributions in space and time of critical resources” (1978, p. 23).

expanding resource base, supporting growth of wealth, strength, and defensibility of the society. This finding argues for ownership phenomena as being deeply embedded in the formation and persistence of societies in which exclusion, enclosure and exploitation – fundamental behaviors necessary to instill and sustain wealth and agency inequalities amongst society members - are central to how determinations of ‘mine, yours, theirs, ours’ are made.

But there is another ecologically significant aspect of empire that is highly relevant to my arguments: legacy. Rosenzweig and Marston (2018, p. 94) say “empires should be understood as large-scale anthropogenic projects that produce lasting environmental legacies.” As we will discuss below, this is also an essential component of the operation, advantages and persistence of ownership phenomena.

On p. 94, Rosenzweig and Marston (2018) say that:

inherited landscapes, the intentional or incidental results of prior human modification, can be conceptualized as “legacy effects,” ...the lasting implications of human land-use practices with which subsequent actors in the same locations contend (Bürge et al., 2017; Cuddington, 2011; Marston, 2015, 2017b). ... Landscapes simultaneously encode the environmental and cultural imprint of prior human activity, and the legacies of those actions form the physical and ideological space in which later individuals make decisions and build societies, constraining some actions but enabling others. Legacies result from all human activity, but from the perspective of empire and environment, legacies are especially salient....empires produce unprecedented scales of impact, with regard to both the spatial extent and depth or duration of environmental change and social modification.

As Morrison argues, imperialism is a particularly potent and large-scale example of ecological engineering, a concept we will discuss in Chapter 5, but that essentially describes “organisms... directly or indirectly causing physical state changes in biotic or abiotic materials. Physical ecosystem engineering by organisms is the physical modification, maintenance, or creation of habitats (Jones et al., 1997, p. 1947).”

As I show below, ownership phenomena are deeply involved in the methods and manner, purpose and goals of environmental modification by organisms. In the case of empires, this is

particularly clear. And in the case of the Roman empire, from which the ownership model originates, it is woven into a long and lasting legacy.

Morrison (2018) writes about the empire-ecology dynamic in terms of three d's, "imperial (and colonial) formations may work through relationships of difference, distance, and displacement, relationships that may effect significant changes on environments across a broad region, even across continents" (p. 196).

She explains distance as the extraction, utilization and/or conscription of resources across distance, oftentimes in ways invisible to members of the imperialist society. Displacement refers to the exclusion, via methods of enclosure or practices of exploitation and extirpation, of other lifeways and living things from the consumed spatial area. Difference refers to social norms and cognitive frameworks that create a sense of "other" – exclusion – in regards to peoples or beings that are in "the way" of the operations of empire. Either as existing upon lands desirable to the needs (the exigencies) of the consumptive empire, or as useful commodities or resources themselves, such as plants and animals and minerals (Morrison, 2018).

Dominion ownership, I have suggested (see introduction), is characterized by five e's: enclosure, exclusion, exploitation, extraction and increasingly, extinction. Rome's imperial model of ownership, passed down to our central institutions today, is demonstrably rich with these attributes or effects. The two alliterations reflect consonant ideas: disconnection, separation, enacted sense of superiority and exceptionalism. The ecology of empire, and the ecology of the dominion worldview of ownership are a study in consilience.

Empires have meaningful "spatially distended eco-political –imprints" (Rosenzweig and Marston, 2018, p. 93) that can reveal their machinations and causes of the cycles of success and failure often associated with them. Ownership structures can lock up wealth, and social structures do so in the

imperialist West (and empires elsewhere). This is unlikely to occur in small scale societies where sharing and reciprocity are still governing norms, but the crucial element is the capacity to stake out and hold on to resources (Hooper, 2018 and Smith et al., 2023). This can be transformative, as it enables accumulation of resources – wealth – which can result, and often does according to these models – in social inequality. And as the scale of this grows, it also results in widespread, catastrophic ecological change.

Early Christianity

The Roman model of ownership codifies and perpetuates a domination (dominion) relationship between elite patrician males with the rest of the living non-male, non-wealthy, nonhuman and non-western world, including women, children, slaves, land, animals, and “savage” peoples, and it even entails “special rights of husbands and fathers...including the right of “life and death” over their children” (Greer and Lewis, 1991, p. 139) and, of course, slaves. This worldview places these living resources at the command and mercy of the patrician.

For these reasons I argue that it is plausible to place Roman ownership frameworks at the founding center of the Western ecological worldviews spoken of by historians Lynn White (1967) and LaFreniere (2023). Worldviews *are* central to White and LaFreniere’s arguments, but worldviews of *ownership* are not. Instead, much of their emphasis resides in religious history and worldviews, which I would argue emerge *from* the exigencies of ecological exploitation engaged in within an imperial context. 📖

The hierarchical, imperialist nature of Roman society and its’ legal framework is also the context in which Christianity began. Contemporary scholars have explored the imperial context of early Christian movements and practices that arose after the era of the execution of Jesus of Nazareth, the Biblical Jesus, in Jerusalem around 30 CE.

In these early days of Christian formation, reactions to the Roman imperialist context very much included communal living, communal ownership practices, egalitarianism, and constructs around the material world and the body, which could be seen as response to the control, coercion, manipulation and brutality of the Roman world.

Here one can also find connections reemerging with Greek philosophies. According to Rudmin, first century AD early Christian philosophies and practices “merged the traditional Pythagorean and Platonic distastes for private property²² with the New Testament distrust of wealth; they considered private property to be a hindrance to transcendence...” (1988, p. 131). Also in contrast to both Roman imperialism and conventional practices of Judaism that existed during this time, early Christianity embraced the poor, widows and eschewed wealth, and celebrated the notion of the triumph of the weak (Holland, 2019).

Proximity had already influenced the Christian movement, according to Avila “...even as early as the second century A.D. it often tended to imitate the structure, and sometimes the ideological values, of the Roman state” (1983, p. 129). These dynamics presaged changes that befall Christian worldviews around 330 CE, as the church underwent the tumultuous transformation of being conjoined with - or subsumed into - an expanding imperialist force. Thus, despite longstanding moral objections to private ownership and its associated practices, thinkers like St. Augustine were inherently influenced by the milieu in which Christianity existed.

Augustine of Hippo (354 – 430 CE) left an influential written legacy. He was born and died in (what is now) Algeria, “Roman Africa, where the Roman law theory and practice of private property had

²² Though this is unlikely to be due to familiarity with these thinkers, more likely an innate defiance towards the power structures of the Roman empire (and the values of it) that alter relationships (of all kinds, including ownership relationships but also family and bodily relationships) and that are harmful.

led, quite naturally, to the possession by a very few persons of very great wealth, at the price of the dispossession and impoverishment of very many other persons” (Avila, 1983, p. 122).

Rudmin writes that Augustine’s work is congruent with Greek and Roman philosophical standpoints on wealth and property, which (ironically) tended to perceive common/communal ownership as “natural” as well as morally superior (1991). Schlatter (1973) points out that this idea of “natural” can mean innate or ideal, and that thinkers often interrogate the “natural” as juxtapositional to the social systems they live within.

However, Augustine’s writings on the matter also demonstrate the hierarchical thinking of a notion we encounter at key points in the history of Western worldviews of ownership. He echoes Aristotelian instrumentalist ideas that owning was *narrowly* intended by God, saying that “Gold and silver therefore belong to those who know how to use gold and silver” (Avila, 1983, p. 123).

Augustine is also an important conduit for another significant thread, again reaching back to Aristotle, of conceptual hierarchy. “The creative will of God, as Augustine envisions it, brings forth a vast and beautiful hierarchy of being, with each being allotted its own rank of perfection... Augustine believes that all things, all visible creatures in particular, are created as a blessing for humanity” (Santmire, 1985, p. 61).

““God... Made man in his own image,” Augustine observes, “for he created for him a soul endowed with reason and intelligence so that he might excel all the creatures of the Earth air and sea which were not so gifted” (Santmire, 1985, p. 69). Greco-Roman, Platonic and Aristotelian and early church worldviews and cultural constructs resurface repeatedly at the center of the evolution of the worldviews and ownership systems of the region and in time, all of Western culture. As disparate Christian sects were subsumed into a violently expansionist Holy Roman Empire, and later into the Roman Catholic Church, Roman ideas and practices of private property gradually infused the systems,

hearts and minds of intellectual leaders, powerful papal patrons, existing clan and feudal structures and by downward pressure, a broader populace²³.

In this era, deeply dualistic Gnostic²⁴ thought, “a fundamental conviction of Gnosticism...is that the earth and everything contained in it is evil” (Santmire, 1985, p. 32) and spiritual motifs of transcendence, along with the philosophical and theological ruminations on natural law and the Chain of Being - or adjacent ideas that center humanity as God’s greatest creation whose role is to variously rule, use or “judge” (Santmire, 1985, p. 70) the rest of the living world given to humanity by God - show a through-line from Greco-Roman thought into the middle ages.

At this point, three important realms of ideas are in ongoing circulation that, I argue, have the greatest effect on continuing evolution of worldviews of ownership. First, *the elevated position of mankind with regards to the rest of creation*. Second, the continuing *relevance of “natural law” to leading thinkers*²⁵. Third, longstanding *ideas of who – human or non - is entitled to own* at all. Each come out of the Greco-Roman world and continue to be referenced and developed through the enlightenment era and much beyond.

Also notable is that in this time period (325 CE), the council of Nicene is held (Gonzales, 1984). This is when the choices of individual books for inclusion in the Christian Bible are made, which also influence the potential breadth or confines of Christian thought.

²³ As well as hierarchical and exceptionalist ideas and practices, which are instrumental to maintaining worldviews that support exploitation and exclusion.

²⁴ Interesting synopsis of gnosticism from Britannica academic (Williams, n.d., 2nd para.): “Many of the so-called gnostic groups are characterized by a mythology that distinguishes between an inferior creator of the world (a demiurge) and a more transcendent god or order of being..... it is often asserted that in the gnostic myths there is a far sharper dualism, involving a much more negative attitude toward the inferior creator god, the material cosmos, and the human body.”

²⁵ Due to its influence on beliefs and legal structures regarding what is moral and right in terms of property – communal, private, and the whys and wherefores of each – as well as its enshrinement of (hum)man-on-top hierarchy idea via individual rights and their relationship to property notions, especially after the enlightenment era.

While St. Augustine is discussed by Santmire as an example of an early church nature-as-good theologian, the Aristotelian notion of hierarchy – here conceived as a progression of quality, capacity and essentially, value to humanity as the favorite creation of God – is strong within his theology. St. Augustine preached against the owning of private property, and in the monastery in which he was a priest, all was held strictly in common (Garnsey, 2007, pp. 74 – 77). Over time, these ideas remained extant in the church and influential, but began to be massaged to support, as well, the owning of property by the church authorities – the bishop. This laid footings for celebrated medieval scholar Thomas Aquinas (1225-1274) and his followers’ later efforts to begin constructing theoretical justification for the church as property holder, with later consequence for the ideas and philosophies surrounding private property.

By the turn of the millennium, Christianity was a new religion, now firmly hierarchical in practice and worldview, with notions around property and ownership stitched into its fabric (Avila, 1983). Thomas Aquinas is well known to contemporary theologians for his work on the “relationship between faith and reason,” for which he has been thought of, according to Gonzalez as “one of the greatest theologians of all time” (Gonzalez, 1984, p. 318). His role in the formation and perpetuation of property ideas that evolve towards an ever-greater integration of *private* property frameworks, with the resulting inequality and its benefits to the powerful in the mediaeval church, is much less known. It may be of greater consequence, however. Aquinas was deeply versed in the works of Aristotle, whom he began the study of already at fourteen (Gonzales, 1984; Holland, 2019). His work has strong ties to GrecoRoman worldviews (Santmire, 1985). In his writings about property he drew from Aristotle, whose works were newly recovered after a period of censorship for study at this time (Gonzales, 1984; Holland, 2019). These included Aristotles’ contentions that “love of property is universal and natural” and “private property is necessary for social harmony and individual development” (Rudmin, 1988, p. 133). These

ideas, and others, were fodder for and folded firmly into Aquinas' influential, novel stance that "private property [is] a logical and moral necessity" (Rudmin, 1988, p. 131).

Aquinas's familiarity with Aristotle includes his Chain of Being, "Categories" and essences concepts. Reflective of that, Schlatter (1973) says "St Thomas thought that an elaborate hierarchy of classes, analogous to the arrangement of living organisms, was the most perfect and natural form of social organization (p. 51). Aquinas's role as teacher is also significant, as this is where he passes along Aristotelian philosophy to his also-influential student Giles of Rome.

As the Roman Catholic church settled into permanent hegemony of mind and social configuration in continental Europe, worldviews, encompassing social and economic norms, evolved even further towards private ownership systems, which the owner or title holder of the land had the very Romanesque, 'absolute sole dominion'. This built upon and further influenced existing hierarchical social structures and ownership systems. Hartley (2018, pp. 55-56) says:

In the common law, this absolutist notion of ownership stems from the Middle Ages, when the most usual and simplest form of ownership in the English legal system had been that of fee simple absolute, whereby the king or queen granted an owner dominion over a piece of land (Blackstone 1765-1769: 2.4). Such ownership effectively amounted to a delegated sovereignty, so the essence of fee simple absolute is that it was understood as the ability to prevent anybody interfering with the resource so owned in any way.

As the dominant form of ownership, fee simple absolute reflected and reinforced the dominant idea of that time (and the view of most lay people ever since) that ownership was a relation between an owner and an object, with the owner's rights characterized by the fact that no-one except the owner had any rights to that land whatsoever...

Aegidius Romanus (Giles of Rome) was an Augustinian friar who studied under Thomas Aquinas. He was born in Rome around 1245, and died in Avignon, France in 1316. His conversance with Aristotelian thought and writings enabled him to build on Aquinas's work to extend the authority of the church and papacy, and thus its access to wealth (and thus, power). Aegidius argues in 1301 that "ownership depends upon the blessing of the Church. Infidels, and men to whom the sacraments are

denied, have no right to any property whatsoever” (Schlatter, 1973, p. 62). This is very convenient for the papacy, as it justifies the seizure or levying of dues upon existing feudal lords, which was essential for the enrichment and empowerment of the Catholic church. This argument will be useful during the colonial era as well, lending foundational logic to Papal decrees of the 15th century.

According to Schlatter, Aegidius merged existing feudalistic ideas of dominion with “St. Augustine’s theological theory of the origin of human rights.” Schlatter says Aegidius develops this into his idea that:

God is the lord and owner of the world. He grants the right to use his property to the righteous on condition that they render homage and fealty to him. And just as in the feudal theory, property and political authority were both denoted by ‘dominion’ – the land-law was identical with the law of the land – so in Augustine’s theory property and political authority were aspects of the same thing – that domination of man by man necessitated by Adam’s sin (1973, p. 64).

Schlatter explains that this enabled Aegidius to claim:

...that God had granted dominion not to the king but to the Pope, who was the supreme feudal overlord in this world. So long as the feudal system lasted, the argument between the papacy and the secular authorities revolved around this question, whether kings derived their temporal authority directly from God or mediately by way of the Pope. But whichever side men took they were not attacking the fundamental principle of private property. Regardless of whether king or Pope was the supreme temporal authority, they had only a superior dominion in the property of the vassals, and not the ownership of it. The king claimed the right to confiscate the property of his subjects only when they refused to render him the homage stipulated in the feudal contract. The Pope claimed that the property of the Church was not granted by the king and consequently owed him no service; but over the property of laymen he claimed the right of expropriation only when they refused to render God homage (1973, pp. 64-65).

Drawn from existing ideas from feudalism about the vertical power structure nature of ownership – where God owns, and landowners are conceptually his vassals – and ideas about the hierarchic nature of the value of beings articulated in the work of Plato and developed particularly by Aristotle, joined with selected passages found in the Christian scriptures and the earlier tradition of ‘natural law,’ a *worldview* of dominion is coalescing/cementing to undergird the church, which enables,

justifies and drives the resource-stockpiling goals/demands of an expanding, imperialistic (and soon colonialist) society.

Dominion here codifies power, hierarchy, authority vested in a supreme being, and the derived authority and power of its designated representative (here the Pope) of that being. And it is pronouncing the owner for everything (God), through this hierarchical ladder – chain – of power and divinity. *And property is only allowed to those who conform properly to this system* and accept their place in it.

Schlatter (1973, p. 64) cites McIlwain, who says that:

‘The essence of the theory of dominion,’ is a hierarchy of rights and powers all existing in or exercisable over the same objects or persons, and the fundamental relationship of one power to another in this hierarchy is the superiority of the higher to the lower.’ (McIlwain, p. 181, “growth of political thought” 1932)

The notion of “stewardship” is then used to further scaffold confidence amongst select and powerful thought leaders that, “all property is God’s, to serve the good of all humankind, but is entrusted to temporal owners by the rights of the state and under obligations of moral use and distribution” (Rudmin, 1991, p. 89). 

Evidence that this deeply hierarchical Roman idea, dominion, accords with the feudal dominion and remains recognizably within *our contemporary worldview of owning* can be found stated in an offhand way in a passage from Schlatter (1973). His comment underscores the continuity between Roman ownership practices, ideas and understandings, and what we recognize as ownership to this day. He says that, “... [it] becomes clear when we think of ownership or dominion in the feudal rather than the Roman *or modern* sense (p. 62, emphasis added).”

While what Schlatter is actually discussing is the distinction between the king or lord (the feudal dominion) versus God or the pope (the Roman/Roman Catholic Church dominion) being the ultimate arbiter of property rights, what Schlatter inadvertently confirms is both the nature of ownership as dominion *and* that the Roman “sense” of ownership/dominion is synonymous with the *modern* sense of

ownership mentioned above as a contemporary notion of the “ownership model.” Furthermore, and significantly, his implication is also that this definition is universal (even self-evidently so) exactly in the way that the ancient Greeks viewed “natural law” as universally applicable.

Singer (2008) says:

St. Augustine and St Thomas Aquinas developed Christian notions of an orderly universe with inherent notions of right and wrong that would give guidance to human beings in how to live. All these traditions see an inherent order in the universe, founded in nature or God, with knowable content to what constitutes a good human life. (p. 8)

Certainly, however, what constitutes a good life, or what constitute lives that have value, is wholly dependent here upon religious affiliation. Accordingly, ‘savages, pagans and infidels’ cannot, and do not, own.

The Doctrine of Discovery

Between approximately 1450 and 1500, a series of Papal decrees form the basis of a singularly consequential and deadly enactment of dominion, springing from the depths of the Roman model of ownership and the interpretive work of mediaeval church scholars: the ‘Doctrine of Discovery.’ While recently repudiated (March 30 of 2023²⁶) this framework, fully interlaced with and dependent upon the dominion worldview of ownership, remains entrenched (though often invisibly to most) within international, Canadian and American legal systems, the history and outreach work of major world religions, the fabrics of societies around the globe, and the lasting, regularly replenished psychological and physiological effects on its victims and their descendants (Williams, 2005; Dunbar-Ortiz, 2014; Miller, 2019; Chappell, 2023). And to our purposes, on the structure and systems of contemporary ownership phenomena, and their intersection with lifekind, both human and not. 🕌📖

²⁶ White, C. (2023, April 14). Vatican formally repudiates “Doctrine of Discovery” used to justify colonization. *The National Catholic Reporter*.

Terra nullius is where we find the platform upon which ownership frameworks are deployed in the service of conscription:

This Latin phrase means a land that is vacant or empty. Under this element of the Doctrine, if lands were not occupied by any person or nation, or even if they were occupied but they were not being used in a manner that Euro-American legal systems approved, then the lands were considered empty, vacant, and available for Discovery claims. Euro-Americans often considered lands that were actually owned, occupied, and being used by Indigenous Nations to be terra nullius. (Miller, 2019, p. 41)

Yet the executive religion-based framing of ownership as the entitlement of particular persons conforming to a particular set of use characteristics – those which revolve around the patterns we have discussed above – is not the only way in which moral systems are deployed in the cementing of the dominion worldview of ownership into law. Philosophical elevations of self-interest, conceived to be morally founded within Natural Law (Forde, 2001) help throw open the gates of what is allowable within the context of private property. From Singer:

Liberalism changed all that. Most clearly presented by Hobbes and Locke, liberalism put the individual at the center. They developed the idea that individuals had the inherent natural right to act in a self-interested manner. (2008, p. 8)

Lasting Conceptual Legacies

The past indeed lives on in our contemporary lives, and not by accident. Legal scholar Adam Mossoff reiterates the enduring significance of the words of ancient Greeks, early Christian monks and clerics, mediaeval scholars to recent and contemporary legal frameworks that shape our world: “ancient philosophic and legal conceptions of property are important... The texts of [later influential property theorists] Grotius, Pufendorf and Locke repeatedly quote from, discuss, and cite to the relevant texts from antiquity” (Mossoff, 2003, p. 392).

As the Doctrine of Discovery makes its brutal way through the colonized world, European thinkers continue to hone the dominion paradigm of ownership, drawing from this long lineage.

According to Mossoff, the important French theorist Hugo Grotius (1583-1645) founds the property theories he expounds in his 1604 publication *Praedae* on domination, control and the right to abuse. Mossoff says Grotius's concepts, originating with the Roman Stoics, "[lay] the foundation of virtually all property theory for the next several centuries" (Mossoff, 2003, p. 380). Mossoff quotes Grotius, who demonstrates links with the work of Giles of Rome, Aquinas and Aristotle, including the Natural Law tradition Aquinas contributed so significantly to (Boyle, 1989):

In the beginning, the human race [possessed] a general right over things of a lower nature... In consequence, each man could at once take whatever he wished for his own needs, and could consume whatever was capable of being consumed. The enjoyment of this universal right then serves the purpose of private ownership; for whatever each had thus taken for his own needs another could not take from him except by an unjust act. (From Grotius, 1604, cited in Mossoff, 2003, p. 380)²⁷

Another concept, discussed also in the influential writings of John Locke is the idea of "*suum*," meaning "one's own" that originates in Roman law. Mossoff says that,

According to Grotius (and the property theorists who followed in his intellectual footsteps), *suum* is the just entitlement that an individual has to one's life, limbs and liberty. It is *suum* that justifies the original use-right in the state of nature because one's right to life justifies a right to use things to maintain that life. (Mossoff 2003,p. 383)

The intuitive nature of the "*suum*" concept is reflected in research regarding physiological connections to possession, could be connected to core findings in the social science research out of the psychological ownership field, and does contribute to the philosophical underpinnings of the ownership model. The *suum* concept reemerges in twists and turns of ownership frameworks and legal theories closer to the modern era.

²⁷ Interestingly, (and another reason I like the term "dominion" to denote a worldview of ownership) Mossoff makes note of the fact that Grotius uses the term dominion, translated as "ownership" in English but according to Latin scholars it more fully denotes, "property, entitlement, and rightful possession" (Mossoff, 2003, p. 382).

However, again, Grotius does not intend for the ideas in these pronouncements to apply to persons who are not of European heritage or customs.

Exclusion and Exclusivity Sustaining the thread stemming from Roman law, exclusion and exclusivity have become frequent and important themes when describing ownership of property. Contemporary legal scholar Adam Mossoff says, “Property, some scholars maintain, is not merely a contingent assortment of rights and obligations. This concept has a necessarily essential characteristic: the right to exclude” (Mossoff, 2003 p. 375).²⁸ He says that contemporary legal scholar Thomas Merrill “has recently declared that the right to exclude is the sine qua non of the concept of property, and [contemporary legal scholar] J.E. Penner argues that “the right to property should be conceived as the right of exclusive use” (Mossoff, 2003, p. 375).

These ideas are congruent with oft-quoted 18th century works of William Blackstone, an extremely influential legal authority and politician in England. His writings are also associated with the intellectual foundations of private, individual property ownership. Greer (2018) cites Blackstone’s “hyperbolic view of property” and quotes from his *Commentaries on the Laws of England* (1765) where he describes property as “that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe (Blackstone 1765–1769: 2.1)” (Greer, p. 391). It is an *oft*-repeated quote, in multiple branches of literature.

Exclusion as a definitive characteristic is also found in the writings of American founding father James Madison. In his *Papers* he defines property with Blackstone’s definition, saying “This term in its

²⁸ Note: again, using “property” instead of “ownership,” where “ownership” would be a cleaner way to articulate this (if these words had clean and clear meaning and consistent usage).

particular application means “that dominion which one man claims and exercises over the external things of the world, in exclusion of every other individual” (Madison, 1792, p 14:266).

Another example, from Thomas Rutherford, writing in 1832:

“Full property in a thing is a perpetual right to use it to any purpose, and to dispose of it at pleasure. Property, in a strict notion of it, is such a right to a thing as excludes all persons, except the proprietor, from all manner of claim upon it. No person can therefore, consistently with such a right, take the thing from him at any time, or hinder him in the free use of it, or prevent him from disposing of it as he pleases. Mossoff, 2003, p. 394)

As we discuss below, possession, like exclusion, is also a frequent and important theme, and some believe it is inherent to exclusion:

The significance of possession turns, in part, upon an implicit notion of exclusion. In a social context, it is exclusion that is being communicated when one seizes items or erects fences around land: it is a declaration to the world in physical action that something is one’s own and that others are therefore excluded from possessing or using it. (Mossoff 2003, p. 384)

Enclosure of land in England embodies this. Between the 12th century and the end of the 19th century, the English landscape was transformed from one characterized by “commons” used by the community between annual harvests to one in which these areas were “enclosed” and therefore restricted to private ownership. Thus excluding traditional shared use and enriching those with the position, power and influence to be granted an enclosure order by the British parliament. This period in English history had profound effects on the countryside, on wealth inequalities, on settlement and land use patterns, and provided a model for emulation elsewhere (Winchester 2021; Linklater 2013).

Exclusion is critical to the portent and effect of the ownership model, particularly to lay notions of ownership that now exist widely. Yet, Joseph Singer writes at length (2000, 2008), as do others (Christman, 1994; Freyfogle, 1996; 1999; 2007) about the reality that in fact, limitations on the rights of property have always existed: and these are exactly what many conflicts surrounding property regard.

Particularly those around the use of landscapes and beings by private owners or persons with lease-based access to the property of the public or others.

The significance of these worldviews of ownership, property and possession is that they socially, legally and morally enable new levels of exploitation and extraction, as the calculus changes from landscapes of subsistence and lifeway to vertically experienced benefits related to products and profits wrung from these same places. As technologies, techniques and industry arise, this has consequences that reverberate more widely than had before been possible.

While Blackstone's 'sole and despotic dominion' remained central to western ownership worldviews, Hartley says that "Towards the end of the nineteenth century, however, this idea of ownership as absolute dominion over land began to be criticized as outdated, and the notion that ownership should instead be understood as a 'bundle of rights' became popular amongst common law scholars" (2018, pp. 55-56).²⁹

However, the change really reflects more of a turn of tides in emphasis, rather than new ideas, as early scholars wrote often about rights as well. Mossoff says "Following Grotius, Pufendorf believes that property is predicated upon two conditions: (I) an individual act of possession (i.e., use or occupation), and (II) an agreement among individuals to recognize and respect these rights in a society. Again, implicit in this argument is that a person acquires the moral claim to exclusive use of possessions once these preconditions are satisfied – such things become property. As Pufendorf explains, "when dominion had once been established, each man was given the right to dispose of his own property, and

²⁹ This timing accords with the establishment of areas of public property, environmental laws and regulations, which present challenges (the extent being determined by social and political contexts) to the cognitive constructions and ecological consequences of dominion-based ownership. 

among the non—owners there arose the obligation to keep hands off such property (Mossoff, 2003, p. 385).³⁰

“Rights” and “exclusion” theories here essentially bolster one another and reflect the dominion worldview of ownership, yet are disregarded (at least as to possession) with regards to the willingness of Western peoples to historically recognize the ownership systems of Indigenous peoples, with lasting legacies into the present.

While the ownership model has taken preeminence in the operation of our contemporary world, as has already been pointed out, it is actually *not* the only ownership system out there, even if that remains a prevailing Western belief. A more traditional, commonplace concept of ownership was the long-standing global norm: use. And it is not foreign to the West at all – it was folded under the weight and imperial, ecologically extractive advantages provided by Roman Law. 📖 Use rights were of recognized consequence in Greek antiquity: “what was of central significance to the ancient Greeks was what one *did* with one’s property. In a fundamental sense, in Aristotle’s world prior to the blending of Greece and Rome, the concept of property was more about *using* something that it was about *excluding* others” (Mossoff, 2003, p. 391 [emphasis added]).³¹

Use, better articulated in the legal term “usufruct,” is also where we find a point of departure between the ways and ideas – and expectations – of Europeans and many of the Indigenous peoples they encountered in North America.

When lands were traded or sold ...what were exchanged were usufruct rights, acknowledgments by one group that another might use an area for planting or hunting or gathering. Such rights were limited to the period of use, and they did not include many of the privileges Europeans commonly associated with ownership. (Cronon, 2003, p. 62)

³⁰ Samuel Freiherr von Pufendorf (1632 –1694) was a German jurist, economist, political philosopher, and historian.

³¹ As we discussed earlier, Aristotle and his contemporaries argued about these ownership practices/behaviors/systems within their “natural” debate above (see Schlatter, 1973, pp. 13 – 20).

Perhaps most importantly, the concept of usufruct does not grant the latitude to destroy, coerce, control or unilaterally exclude. Instead, it is a system of cooperative use, in which the parties systematize the sharing of landscape and resources, based on social agreement. Here we see what is called the property “triadic” as explanation:

Although ordinary language³² seems to suggest that property is generally a simple relationship between an individual person and a thing, it is actually a far more complicated social institution which varies widely between cultures. Saying that A owns B is in fact meaningless until the society in which A lives agrees to allow a certain bundle of rights over B and to impose sanctions against the violation of those rights by anyone else. The classic definition is that of Huntington Cairns: “the property relation is triadic: ‘A owns B against C,’ where C represents all other individuals,” unless the people I live with recognize that I own something and so give me certain unique claims over it, I do not possess it in any meaningful sense. Moreover, different groups will permit me different bundles of rights over the same object. (Cronon, 2003, p. 58)³³

While elements of Cronon’s claims could be argued with (see Chang, 2015, and discussion below and in Chapter 6), the statement is illuminating as to an inherent relationality in ownership phenomena.

Indigenous, Traditional Systems

...we are accustomed to see land and territory in terms of Cartesian space, and to see ownership as based in transactional value. The ontological structure of Aboriginal life necessarily means that ‘ownership’ *per se* never actually occurs or exists, because such things are simply not enframed as we would enframe them. (Bryan, 2000, p. 27)³⁴

In contrast to the dominion worldview of ownership, Indigenous, Aboriginal and Native North American peoples’ ownership systems, with regards to landscapes, historically centered primarily around relationships, use rights and animacy:

What the Indians owned--or, more precisely, what their villages gave them claim to--was not the land but the things that were on the land during the various seasons of the year. It was a conception of property shared by many of the hunter-gatherer and agricultural

³² Whose language is ‘ordinary’ is not considered here.

³³ This requirement of respect or agreement by others within the ownership equation is also a useful loophole for dispossession, as we will discuss in Chapter 1, Part 2, Possession.

³⁴ Here we see a scholar eschewing the use of the term “ownership” because of the worldviews it encapsulates that run contrary to those of other peoples and lifeways. We will touch on this again later.

peoples of the world, but radically different from that of the invading Europeans. (Cronon, 2003, p. 65)

Myers, writing about the Pintupi of Australia in 1982³⁵ (p. 180) describes how, “people are...organized around *ritual* ties to the land – to *ngurra* as named places or “country” created by mythological ancestors in The Dreaming -... ownership of “named places,”...consists of rights to the ritual, sacred objects, and stories associated with the Dreaming places” (Williams & Hunn, (Eds.), 2019).

Myers says that “For the Pintupi, to own something is to have the right to be asked about it” (p. 185) and that their experience of, and understanding of ownership, centers on the nature of culturally significant rights and duties that clarify connections, associations, legacy of familial ties and ancestral stories (Williams & Hunn (Eds.), 2019).

What Western people conventionally term ownership or property contrast deeply with the ways in which first peoples conceptualized their presence and integration within the land and its living things (Bryan, 2000). For immersive cultures, a tapestry of integrated relationality was common, as was a spiritually animate, mythic landscape abundant with innate intelligence, purpose and meaning.

Overstall (2003) cites the statement made by the Gitksan to the court during the early stages of the Delgamuukw case trial (see additional discussion below, p. 65 and p. 261):

For us, the ownership of territory is a marriage of the Chief and the land. Each Chief has an ancestor who encountered and acknowledged the life of the land. From such encounters came power. The land, the plants, the animals and the people all have spirit – they all must be shown respect. (p. 25).

Overstall continues, “the merging is reciprocal: the spirit of the place gives itself to the group, and the group leaves its power and mark on the land” (p. 27).

Relationality, respect for and recognition of the autonomy of land, living things and other peoples, and highly developed social values and norms of sharing were historically recorded as

³⁵ Myers 1982 research was reissued in a recent collection (Williams & Hunn, (Eds.), 2019).

distinguishing characteristics of many Indigenous people at the time of colonial contact. North American accounts speak to this characteristic:

[A] relaxed attitude towards personal possessions was typical throughout New England. Chrétien Le Clercq described it among the Micmac of Nova Scotia by saying that they were, "so generous and liberal towards one another that they seem not to have any attachment to the little they possess, for they deprived themselves thereof very willingly and in very good spirit the very moment when they know that their friends have need for it" (Cronon, 2003, p. 61-62)

Bryan says that,

The peoples of the Okanagan area understood 'property' in terms of a specific relationship with nature and the land because they understood themselves as having a very specific place in relation to nature as well...because social relationships were always continually based on and through this spiritual connection with nature and what it represented among them, the use of and title to resources was contemplated in a similar way. Thus a concept of ownership to the Okanagan, will necessarily be based in a matrix of relationships (2000, p. 19).

Western ideas of property and their social function and expression differ significantly from the cyclically-oriented, community- and kin-centered societies of most of 17th century indigenous North America.³⁶ William Cronon writes that while the societies' property concepts and systems were philosophically at odds (especially in their emphasis on the rights of the individual versus the relationships and well-being of the community), they were still both property systems:

"The popular idea that Europeans had private property, while the Indians did not, distorts European notions of property as much as it does Indian ones. The colonists property systems, like those of the Indians, involved important distinctions between sovereignty and ownership, between possession by communities and possession by individuals. They too dealt in bundles of culturally defined rights that determine what could and could not be done with land and personal property. (Cronon, 2003, p. 69)

³⁶ The work of Donald (1997) on Northwest Coast slavery shows that even here one cannot entirely generalize. However, the historic Northwest Coast societies' slavery systems and trade systems, as best can be understood at this point, still remained quite distinct from Western property/ownership worldviews and beliefs.

In Indigenous worldviews, reciprocity, relationship and recognition of the living nature of the land are common. Archeological and literary evidence, along with historical accounts, suggest that this is likely to have been as true of the tribal peoples historically inhabiting European and other landscapes worldwide (Linklater, 2013) as it was and is true of Native North American cultures and peoples (Vine Deloria in Collins, 2007).

Schlatter gives an example of parallel dynamics among European peoples before the influx of the people, practices and ideas from Greco-Roman societies with the invasion of the Roman Empire into the continent (and islands): “Primitive [sic] Germanic law, on the other hand, recognized no such theory of ownership. Property belonged to the clan or to the family, and the individual had merely certain limited rights of using it, together with other individuals.” This, again, is usufruct; common throughout the world until quite recently. Schlatter completes the paragraph (and again reiterates Roman influence on Western ownership worldviews) by saying “No member of the tribe owned land in the Roman sense” (1973, p. 63).

In *Owning the Land: The Transforming History of Land Ownership*, (2013), Andro Linklater speaks to perspectives regarding property, ownership and possession that were conventional until quite recently:

As late as 1800, much of the world’s grassland – the North American prairies, the South American pampas, the Australian outback, the African savanna – was still communally owned by Indigenous peoples... The majority of the world’s population...understood land ownership to take various forms of peasant farming. In much of Europe, in India, and in China, the most populous and powerful nation in the world until the late 18th century, peasants worked the ground and owned its produce, but ownership of each small plot was shared, with a family or clan, with a local potentiate, or with the monarch. And in the wide swath of Islamic states from north Africa to Java, peasants worked, landlords possessed, but ultimately the earth was deemed to belong to its creator. (2013, p. 5)

As mentioned earlier, Williams (2013) says that Western worldviews deem the “Savage” to be *lacking in or ignorant of property*, while Indigenous peoples were actually generally understood by other

peoples at that time as indeed exhibiting an ownership system (Cronon, 2003; Greer, 2018; Linklater, 2013) and understanding it as such. Also mentioned earlier, Williams argues that the formation and expansion of Western civilization centered conceptually around the othering of “Savages” that stood in the way of territorial expansion (and the access to resources and labor it entailed). I argue that it also depended upon the conscription and assimilation of worldviews from relational and kin-centric models *with living landscapes* to the more ‘serviceable’ model of objectification and disassociation of land from human, nonhuman and landscape relationships. 📖

This is also what seems to have occurred in antiquity – even to Greece. But certainly as the Roman empire spread its influence throughout Europe. Imperial systems, like Rome’s, must not hesitate to engineer the Earth and its living things if they are to successfully sustain the model of accumulated wealth – material, relational and embodied – that they confer upon their privileged minority.

...it is not being human as such that creates a particular engineering effect. It is instead a series of cultural predispositions, expectations and relations to others and to the larger world that open up the space for accumulation, for excess, for the ability and inclination to turn both living and nonliving agents into ‘resources’ to be exploited (Morrisson, 2018, p. 199, emphasis and bold added).³⁷

Morrisson’s three “d’s” of imperial ecology - difference, distance and displacement - are together constitutive of the dissociative conceptual space that must be maintained and enforced in order to drive the dominative activities that enable them. To dissociate is, “to separate from association or union with another” (Merriam-Webster, n.d.). Western worldviews – and Western Imperialist worldviews that historically nourish them – feature strong dissociative aspects. This is borne out in research by Henrich (2020) and is discussed in Haidt, 2013; Kim et al., 2023; Kimmerer, 2013; Salmon, 2000 and others.

³⁷ This is a significant point that is all too often lost on contemporary discourse about humanity. Bemoaning “humans” as the problem, versus worldviews and beliefs and their attendant behaviors, which are the problem. 📖

Dissociation was also enacted upon existing peoples: “the power of empires to move subjects across vast distances means that individuals, and even entire communities, were relocated to new areas in which their habitual way of interacting with environments, and traditional ecological knowledge, were no longer relevant” (Rosenzweig and Marston, 2018, p. 94).

Strains of dissociative worldviews active in the West are evident in philosophies from the spirit/material dualism of ancient Gnosticism, to Aristotle’s categorical and us-them “Chain of Being” that separates humans from the rest of the living world, to those that are found in “natural law” and certainly the enlightenment era philosophies of Rene DeCartes and Francis Bacon. And they are carried through to contemporary worldviews of the disconnect – as independent of or superior to – between humanity, nonhuman lifekind and the Earth system upon which we all depend. All influential, all dissociative in nature, and all useful as a cognitive framework for the exclusion, exploitation, and extraction activities of the ownership model. 

The historical thread of ideologies and systems of dissociation from, and objectification of, the rest of the living world became stitched into Western civilization through religious systems, systems of commerce and economy, and systems of law (Kim et al., 2023; Freyfogle, 1996). This makes sense: for the conscription, extraction and consumption of resources of land, beings and labor to take place in the service of the growth, strength, and coercive power of a society, relationality or reciprocity in landscapes or beings is problematic and ultimately unsupportable, as it interferes the pace and extent of resource extraction and territorial enclosure and exclusion. At the very heart of these activities exist worldviews around ownership. 

It is not private owning itself – instances of decisive agency, exhibited by a single person or group with regards to entities – that is significant to the ownership model. Instead, it is the *latitude* of action/agency/effect that is allowed to the private owner that differs – and that is new (Cronon, 2011). It

is private property, held by individuals – *with a worldview of dominion* – i.e., exclusion, enclosure, exploitation, extraction, extirpation... the latitude to destroy, no *obligation* to share (or to extend consideration) - that entailed much different rights with far different consequences.

Private Property as a Divergent System

Worldviews of dominion come to their fullest expression in Western private ownership systems. As I will argue later, they provide these societies with short term competitive advantages³⁸.

Private property in land “engendered a unique set of values promoting a sense of greed and selfishness at variance with the essential belief that people everywhere had always held about owning rights to the earth, that they were subject to duties and obligations to gods and monarchs, and to families, clans, and communities” (Linklater, 2013 p. 3).

One of the hallmarks of lay concepts of “ownership” in our Western culture is “control.” In his 2018 dissertation,³⁹ Hartley follows this convention and argues it is at ownership’s very core. As examples, he cites five generally accepted rights of ownership, crediting scholars Edella Schlager and Ellen Ostrom, as “access, withdrawal, management, exclusion and alienation” and that “each of these rights can be reduced to the right to control other people’s access to a resource” (p. 60).

Conceiving of and behaving within a framework of ownership as control effectively reorients the foundationally relational nature of the phenomenon (Blomley, 2022) in significant ways. We can trace a movement away from a cooperative system towards one that centers coercion, exclusivity and

³⁸ This point relates to an interview with Sonia Sultan about how some things can be or become maladaptive in an evolutionary context. (i.e., contemporary manifestations of ownership phenomena). Woods, Art and Martin, Marty, "Episode 112: The Entangled Organism (with Sonia Sultan)" (2023). *BigBiology Podcasts*. 115. https://scholarworks.umt.edu/bigbiology_podcasts/115

³⁹ Hartley’s dissertation, while fascinating and insightful still reflects a Western dominion worldview of ownership.

domination. This is what the ancients were talking about with concern (Garnsey, 2007).⁴⁰ It alters the nature of myriad relationships: including with one's family, community, one's nearby societies, and very significantly, with landscapes and their living, nonhuman inhabitants.

Coming from the Western dominion ownership framework, Hartley (2018) says that (p. 55):

"Modern scholarship refers to this conception of ownership in different ways: as ownership in rem or 'over a thing' since its paradigm form is that of "a single human being owning . . . a single material thing" (Honore 1961: 107, 147); as 'dominion' since it allows absolute control over the thing that is owned (Klein and J. Robinson 2011: 194); as 'property-as-commodity' since such ownership makes an object tradable (Alexander 1997); as the 'exclusion view of ownership' since "owners have a right to exclude" (Katz 2008: 275, 281); as the 'ownership model' of property since the emphasis is on the relationship between the owner and the object (Singer 2008); and as 'full-blooded ownership' since it confers upon the owner the right to make any use of the thing, to exclude absolutely anyone, and to transfer the thing howsoever they choose (Underkuffler 2003: 12).

Within standard Western definitions of ownership, as well in the scholarly and non-scholarly literature of the Western world that I've become familiar with, the word (and/or notion of) "control" frequently comes into play regarding the features and phenomenon of ownership, or describing the phenomenon as to its effects and consequences (Stake, p. 1764; Christman, 2000, pp. 25-26; Rudmin, 1988, p. 192; Bandar, 2017, pp. 19-20; Ruppel, 1995, p. 7). This word fits within Western cultural assumptions about ownership, and yet, it is *not* necessarily innate to the phenomenon and its nature.

The term *control* in this context is both a Western cultural construct (what it *means* to control, and the *latitude* of that) and in our English language, control is also woven deeply into a founding worldview of our hierarchical, unequal society, where *control* is very important to how we live our lives and what we expect and accept from one another. It is characteristic of worldviews of the West, as being "in" control is a trait of individualism and is often part of the landscape of relationship between the individual and the group (Henrich, 2020). Most meaningfully however, this stance has become

⁴⁰ See quoted text from Garnsey on p. 92.

descriptive, and even aspirational, of the relationship between human beings and other living things.

This is a framework of separation and objectification.

And what is perhaps most underappreciated is that “control” does not always apply - in the terms we understand them in the West - to the ownership systems and behaviors of everyone else on the planet. Again, this matters because of how it affects our perspective on what owning is, who can own, and what can be owned and why; which affects how our societies, and our ecosystems, operate,

We can begin to see here the fabric of the underlying distinctions between ownership systems. The undergirding hierarchical, coercive, exclusive worldview – of dominion – that informs and shapes Western ownership systems conscribes the dynamic of possible relationships with the external world. And these behavioral strategies and cognitive orientations are precisely those that allow for the operation of and engagement with the demands of a resource- and landscape-consuming industrializing society.⁴¹

Cronon says that, “Western notions of property, commodity, and market underwent complex development in both Europe and America over the course of the 17th and 18th centuries” (Cronon, 2003, p. 75). Together with social and environmental circumstances, underlain by worldviews distilled over millennia, western societies grow their embrace of *commodification* of land and things – a fundamental

⁴¹ However, the dominion worldview of ownership did not and has not completely extinguished more traditional worldviews even amongst the European elite, as can be seen in the passage of Rousseau, well known for the following statement regarding ownership of land, though Schlatter notes that “Rousseau’s remarks on property exhibit the changes of mood and the apparent contradictions which are characteristic of his political theory” (p. 207). Rousseau says that “The first man who, having enclosed a piece of ground, bethought himself of saying, this is mine, and found people simple enough to believe him, was the real founder of civil society. From how many crimes, wars and murders, from how many horrors and misfortunes might anyone have saved mankind by pulling up the stakes, or filling up the ditch, and crying to his fellows, ‘Beware of listening to this imposter; you are undone if you once forget that the fruits of the earth belong to us all, and the earth itself to nobody.’” (from Rousseau “A discourse on the Origin of Inequality” (1755, p. 271, Everyman’s Library edition). However, in three years, Rousseau says also that “the right of property is the most sacred of all the rights of citizenship” (Schlatter, 1973, p. 207).

change in human perspectives and practices of property/ownership/possession. This difference is very clear in the context of colonization of the Americas. “it was the treatment of land and property as commodities traded at market that distinguished English conceptions of ownership from Indian ones” (Cronon, 2003, p. 75).

The Massachusetts Bay Company’s Royal Charter is given as an example of this in Cronon’s 2003/2015 study:

It’s significance lies in the sweeping extent and abstraction of its rights and boundaries, it’s lack of concern for the claims of existing inhabitants, its emphasis on the lands profits and commodities, and its intention that the land being granted could and would remain so bounded “forever.” (Cronon, 2003 p. 72)

Locke

No recounting of the trajectory of Western ownership worldviews is complete without enlightenment philosopher John Locke. Locke powerfully and persistently buoys the dominion worldview of ownership into the present. Based solely on the ubiquity of mention and preponderance of quotes and citations I have encountered in my research, Locke remains the most thoroughly influential of all persons I have mentioned by name, particularly on the formation of American property worldviews and contemporary ownership thought in general.

According to Schlatter, one way Locke has had such profound effect on contemporary property ideas is in the sweeping nature of his claims;

He tried to prove that property is natural, that the right to property is a natural right, and that private ownership is an institution, not of man but of nature. Political institutions, founded on the artificial agreements and conventions of men, may be remade whenever the contracting parties so will; property institutions, founded on nature, are as unalterable as the structure of the universe. (1973, p. 152)

Locke’s work is thoroughly informed by the earlier thinkers we have discussed, reflecting and at times reciting threads from Aristotle to Blackstone, and his writings are well adorned in the rhetorical

splendor of late second millennium Christendom. From his insidiously popular *Second Treatise of Government* (1689/2000) we hear the refrain of many of the voices and ideas we have already discussed, extending all the way back to the Christian book of Genesis:

God, who hath given the world to men in common, hath also given them reason to make use of it to the best advantage of life, and convenience. The earth, and all that is therein, is given to men for the support and comfort of their being. And tho' all the fruits it naturally produces, and beasts it feeds, belong to mankind in common, as they are produced by the spontaneous hand of nature; and no body has originally a private dominion, exclusive of the rest of mankind, in any of them, as they are thus in their natural state: yet being given for the use of men, there must of necessity be a means to appropriate them some way or other, before they can be of any use, or at all beneficial to any particular man. (Locke, 1690/2000, sect. 26)

Also indelibly etched into philosophical threads, historical events and contemporary property ideas are Locke's theories on labor and property. Schlatter says that "Before 1690, no one understood that a man had a natural right to property created by his labor; after 1690, the idea came to be an axiom of social science." Schlatter says that this was the year that this idea "was presented to the world as the eternal truth of things" (1973, p. 152).

Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this no body has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it, that excludes the common right of other men: for this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to... (Locke, 1690/2000, sect. 27)

Mossoff says that "Locke is clear that "labor" begets the concept of property by extending one's exclusive moral claim to one's life and liberty over material objects in the world at large. In this way, "labor" for Locke is a necessary and sufficient means to create property...the exclusive moral possession of one's life, limbs and liberty that one extends over things in the world when one engages in labor is, according to Locke, the fountainhead of property" (Mossoff, 2003, p. 389).

Of course, Locke did not extend this logic to Native people's entitlement to their own lands. In a footnote, Singer cites a passage by Robert Williams that points out that Locke believed that "Indian's occupancy of their aboriginal lands did not involve an adequate amount of 'labor' to perfect a 'property' interest in the soil." Singer says that Locke's stance contributed to the rationale used in dispossession of America's Indigenous people "The tribes arguably did not "possess the land because they did not enclose it, improve it, occupy it, or otherwise treat it as something they owned and which therefore was reduced to private property" (Singer, 2002, p. 567).

According to Rudmin (1996), Locke's "labor theory of property is further challenged by the cross cultural observation that hereditary slavery is a positive correlate of private ownership. Some people do not naturally own their own bodies nor their bodies' labor, and that is the case especially where private ownership is the norm" (p. 147).

Congruent to this association, Bryan (2000) says that "there is another aspect to Locke's argument concerning the merging of labour and nature to produce an entitlement that is derived from the natural right of self-preservation, and this involves subjecting a thing to one's dominion" (p. 11).

Bryan goes on to perceptively summarize the connections between Locke's reasoning and Western worldviews with regards to the external world:

Nature is the common property of all, and as such exists undifferentiated and without boundary, which it would need if it were to be called one's private property to the exclusion of another. Though modern property law often expresses the bargain version of what property is, we do still see concepts of *ferae naturae* in legal discourse. *Ferae naturae* are those 'wild' elements of nature that have not been laboriously brought under the control of individuals, often called the 'subjecting' of the thing or land to one's 'dominion,' or *domitae naturae*. This argument was not foreign to Locke, and indeed furnished one of the major foundations for understanding the way that natural land was to be 'tamed.' This is not peripheral to an understanding of what property is, but marked the distinct world-view of what it meant to be a human being at the time: to be one who exists apart from nature. Stewardship represented a role not of working with nature to fulfill 'her' mandates, but rather to subject it to the will of the human. Hence, Francis Bacon speaks of holding nature at bay, torturing it to tease it of its secrets. Likewise, we see that land is barren if it is not 'tamed' and 'subjected' because it is thus not considered

productive land. Locke argued that one's labour increased the value of a thing because it converted that which was wild and unusable to its usable form.

The concept of property thus evolves to where one is entitled to something by virtue of one's labour in subjecting something to one's domain. The kinds of changes that happen in the eighteenth and nineteenth century, properly understood, alter the nature of property rights through their application to industrial enterprise, and hence can be best understood through the analysis of the development of contract law and of the law of remedies for trespass. Such a transformation in English property law speaks volumes of how we understand our own relationship to the natural world. Specifically, what something is is not determined by who owns it but rather by what it is worth. (p. 12-13)



Locke left an indelible effect on contemporary Western worldviews on property as an innate right, and his ideas of land *use* also remain extremely influential (still driving ideas of what constitutes “highest” or “best” use (Bandar, 2019)), and they remain evident in the conceptual evolution and continuing pathology of American property systems. The notion of a *divine* decree of absolute human dominion over the Earth and all animals, while a notion he carried through from many earlier thinkers, is still one of Locke’s great legacies (Linklater, 2013) due to the influence it has had on recent political and economic thought.

Private property – as a particular concept with wide latitude of rights invested in designated persons in the legal frameworks originating in the West – is what is deeply different, then, over time. The concept is bound up, too, in a long history of Western worldviews that are characterized now as being convinced of a sense of separation of humankind from everything else (Henrich, 2020; Haidt, 2013). This, too, is reflective of the fundamental character of private property: it is possessed, controlled, bounded and separate.

What is the effect of acting within a framework of separation towards entities in the external world? Separation can create lethal consequences in the life of a cell, according to biologist Michael Levin and philosopher Daniel Dennett of Tufts University (2020, para. 29):

preventing ...physiological communication within the body – by shutting down gap junctions or simply inserting pieces of plastic between tissues – initiates *cancer*, a localized reversion to an ancient, unicellular state in which the boundary of the self is just the surface of a single cell and the rest of the body is just ‘environment’ from its perspective, to be *exploited selfishly*. And we now know that artificially forcing cells back into bioelectrical *connection* with their neighbors can normalize such cancer cells, pushing them back into the *collective goal* of tissue upkeep and maintenance. [[emphasis added]]

Dominion

The feeling of dominion is a Judeo-Christian way of thinking... It's hard to see the water you swim in, the air you breathe. The culture you've grown up with. If you start assuming that humans are in charge, everything follows. If we're in charge, we have the power to destroy... (Brookshire, 2022, p. 275)

I am making this argument because the dominion worldview of ownership is generally invisible to most of us. While persons from cultural worldviews that contrast with the Western dominion worldview are quite aware there are significant differences between their worldview and that of the West, clarifying the nature, causality and locus of the worldview are insufficiently explored as to the foundational role of ownership worldviews in this dynamic. Most people do not perceive that there even *is* a worldview of ownership, which is actually the dominion worldview in action.

Dominion, the West and Ownership

Western worldviews of dominion, within which the dominion model of ownership operates, are hierarchical, human and culture-supremacist, and exploitative towards nature and life in general. Violence towards the objectified external world – the environment, lifekind – is acceptable within the context of private property⁴². The worldview of exploitative latitude and entitlement, founded in dominion ownership worldviews, animates daily political and moral discussion today.

⁴² Notwithstanding a latticework of restraints identified by Singer (2000, 2008) within our legal system, but that act wholly within the dominion worldview of ownership, thus do not impede its operation.

I will argue further below that the *Western dominion worldview* of ownership has become globally consequential because of its influence upon resource engagement and securement strategies, and that this influence is the explanation for its emergence and persistence. 🌟📖

Perhaps the most remarkable feature about the dominion worldview of ownership (and ownership as experienced within this social framework) is that it is blinding to its bearers, to most who encounter it, and it is self-perpetuating. The worldview constricts the perspective of its bearer such that ownership phenomenon itself can only exhibit particular qualities to qualify as ownership at all. This crowns ownership as definitively being an operative framework of exclusion, extraction, exploitation, extirpation, and (tangible or intangible) enclosure: nothing else qualifies.

An example that highlights the dichotomies of the cultural meanings of ownership can be found in the 1997 dicta of *Delgamuukw v. British Columbia*. While this is a Canadian case, their legal systems and ideas arise from similar lineage as do those of the United States:

[L]ands held pursuant to title cannot be used in a manner that is irreconcilable with *the nature of the claimant's attachment to those lands*. This limit of the content of aboriginal title is a manifestation of the principle that underlies the various dimensions of that special interest in land – it is a sui generis interest that is *distinct from “normal” proprietary interests, most notably fee simple.*” Thus, if “*occupation* [were] established with reference to the use of the land as a hunting ground, then the group that successfully claims aboriginal title to that land *cannot use it in such a fashion as to destroy its value for such a use (e.g., by strip mining it)*” (Goldberg, 2011, p. 568). [emphasis added]

Certainly, however, the reverse logic would not be asserted. Thus, in other words, aboriginal ownership does not allow for destruction/abuse; that is the purview of Western imperialist/colonialist ownership systems. Fee simple title⁴³ inherently allows for the near-complete freedom to abuse. As the two worldviews – and worlds – collide, Western ownership systems are seen in *Delgamuukw*

⁴³ According to the Legal Information Institute (2023), “fee simple is the greatest possible property interest in land, granting its owner all traditional property rights.”

inadvertently identifying the difference between what *it* does with ownership versus what most Indigenous people have traditionally done with ownership.

This enables, then, the Western ownership system to constrict or delimit the ownership of non-western peoples based on its own definitions of what owning is, thereby eroding the ownership powers, durability, inheritability and use pattern flexibility of the non-Western persons in this (and many other) examples.⁴⁴

A Mind Parasite Further, in asserting the dominion worldview of ownership towards those who may not share it, the respondent (here we are talking about those with a different (non-Western, especially Indigenous or traditional) ownership system or worldview likely defending their connection to land and/or entity that the aggressor is claiming or controlling) is constructively forced to use *the same framework* in defense of themselves or their group, in order to hold out against the force of the aggressors claims or demands.

Once this occurs, it reinforces the perspective and perpetuates it further. The worldview grows into the framework of primary reference, and stealthily, over time, it infects and subsumes into it those whom it dispossesses as well. Thus, particularly in the 20th/21st century, those who are the targets of this cognitive hoodwink – i.e., Indigenous/First Peoples – are obliged to protest the dynamics and assumptions of dominion from within the language and frameworks of the dominion worldview of ownership, which then perpetuates it, almost like a parasite that captures its prey's mind and behavior.

Bryan comments on this phenomenon in his article "Property as Ontology" (2000):

We enframe Aboriginal reality in a particular way in order to structure it according to the dictates of our own society. In this way, we create room for the Aboriginal and her culture inside the house of *our* language. If she takes on our way of describing her culture, we

⁴⁴ Such as *Mt vs. US*. See Chapter 6 for discussion of this 1981 US Supreme Court case.

preclude her from understanding her culture as she once would have because she no longer has the ability to see it in any other terms....

...Because our frame of reference takes itself to be the only way in which to conceive of something, it excludes other interpretations; because our conception of truth is one of universals and not simply varying portrayals, there is always to be an underlying referent...

...This is what 'property as ontology' means: institutional relationships that define the way land and goods are understood and used must always be, in the first instance, a question of the ontological structure of daily life. (p. 28-9)

This is also cognitive niche construction:

Niche construction theory strongly supports the notion – the hypothesis- that the environment you are born into and grow up in at once limits and facilitates the further development of ideas, behaviors and material culture –not only in deep time but also in the present (Reide in Lane and Lior (Eds.), 2022, p. 348)

Dominion Delimits Part of the utility of the dominion worldview of ownership is that by its very nature it narrows *who* can own. Importantly, whether an entity can “own” something is dependent on whether that entity is in compliance with the dominion definition of ownership. In other words, ability and access to “owning” is dependent upon acquiescence to the rules and infrastructure of ownership of the dominion worldview cultural construct. I.e., you have to “own” it within particular parameters of dominion ownership that allow one to hold *title* to it; be in *possession* of it; have *purchased* it; *control* it or *occupy* it in specific ways; have *made* it with materials you *own* (in the dominion sense); you implicitly agree to its “alienability” via sale or other transaction; it takes on a socially proscribed “value” that may then be taxed or otherwise controlled by “authorities” outside of yourself or your cultural context. The owned entity can be part of your body if you are of the human species; part of a geographic area *allowed* to you within a dominion-based legal system *or* that is protected by a dominion based legal and/or defensive entity; and your relationship with the entity may fall within the rules and legal frameworks of others. And you agree, then, as well, that others whom your observations and experience

may confirm their telic capacity to own (slaves, nonhuman beings), cannot, in fact, own at all. Even themselves. 📖

The growth of human populations and the concomitantly fixed nature of national boundaries mean that attributes of this system that we have discussed are actually beneficial for the goals of stability and predictability, and in particular, the procurement of sufficient resources to feed, house, clothe, care for and enable the joys of affluence for all of these humans. (Notwithstanding the fact that most of the world has not been treated to these benefits due to some of the inherent hierarchy and inequality attributes of global economic systems, which have their own expansive analytical literature. And further, that many of these benefits have an increasingly short term nature.) 📖

Nonhuman Beings and the Dominion Worldview As described above, the dominion worldview of ownership is effective at defining the capacity to own out of existence for certain populations, from non-Western peoples with desirable land and resources to nonhuman beings, whose ‘standing’ as agents with inherent capacities and existential rights, if acknowledged and honored, would otherwise serve as impediments to access to and use of land and resources, including they themselves.

As will be discussed further below, there is a frequently recurring assertion that nonhuman beings are incapable of anything beyond possession, due to a presumed lack of social frameworks (laws, etc) to institutionalize and operationalize ownership phenomena, along with, as I have touched on above, a belief in a lack in capacity for telic direction.

Interestingly, this did not seem to be the conceptual thread until the middle of the 20th century, roughly, when the literature began to reflect the above notions more distinctly. Prior to that, authors like Beaglehole (1931) and Klein (1899) discussed nonhuman ownership within similar frameworks to how they discussed human ownership amongst “primitive” peoples (see p. 16 for a compelling, relevant quote by Beaglehole (1931)). Eventually, as notions of “primitive” were challenged and finally extirpated

from academic work, a shift occurred. This meant implicit conceptual inclusion, as well, of West-divergent institutions as on par (in regards to how they were portrayed in scholarship and popularly, though this did not alter the dominion ownership paradigm itself) with those of the West.

Around the same time, terms like “ownership” and “property” began to be used primarily as *metaphors* for observations of nonhuman behavior rather than descriptions. This may have grown out of the implementation of constructs of “objectivity” that were instituted into ethology research method training at the university level in Western academics (Bateson and Laland, 2013 p. 716 (Box 1)). This has recently been noted and discussed in another way, where terminology of cognitive agency is utilized in scholarly and other literature related to psychological science, but as in the above, is intended only as metaphor (Figdor, 2022). Figdor’s book *Pieces of Mind* (2022) brilliantly unpacks this ostensibly unnoticed but ubiquitous phenomenon of the lexical deployment of human exceptionalism that resonates with our discussion.

It is only recently that scientists have again been willing to engage in research that clearly articulates the parallels between human and nonhuman owning (Hare et al., 2016; Strauss and Shizuka, 2022; Smith et al., 2022; 2023), though it is still nascent due to the dominion ownership model that successfully constrains perspectives on what owning *is*, making it very difficult for researchers to fully interrogate and articulate the phenomenon as being consistent between species, just with varying characteristics that relate to each creatures’ ecological niche and embodied capacities, rather than to the aptitude for or ability to enact ownership itself.

Overall, this is demonstrative of a negative effect on science, perpetuating both human exceptionalism and the dominion worldview of ownership that underlies exploitation of the nonhuman world, and preventing illuminating research.

Part 2 - Ownership Concepts in Focus

In this section, I will explore additional influential conceptual structures that scaffold and strengthen the dominion ownership model.

One of the deepest and most indelible reservoirs of the dominion ownership paradigm is “sociolegal”⁴⁵ thought and conceptual frameworks; these represent the contemporary legacy of the history we have just discussed. This is where cultural notions fossilize with the time and scaffolding afforded by abstract, but effectively tangible paradigmatic constructs. I will begin with a synopsis, drawing from an enormous literature demonstrative of the contemporary centrality of ownership to the organization and operation of contemporary societies. I then explore words and ideas that represent significant threads of these discussions, particularly as they elucidate the Western dominion ownership worldview in discussions of concepts such as possession, communal/shared and private property. These are also categories of “property” that people in “WEIRD” societies like ours – Western, industrial, educated, wealthy, and from a democratic political system (see above and see Henrich, 2010; 2020) and Haidt, 2013) – most commonly associate with ownership.

While the previous section particularly followed the historical threads that wove *dominion* into an ownership paradigm, this section will also highlight *exceptionalism* within it. This will clarify the sources of some of the conceptual underpinnings still used to justify exclusion of entities of all kinds from the status of “owner.”

The section will also provide background information for later arguments, including those in Chapter 5, where we deeply explore the common denominator elements of ownership itself as agency,

⁴⁵ “Pertaining to society and the law” (Sociolegal, 2023).

information, relationship and effect. To help build that case I will put those words in bold through much of the rest of this section.

Possession

“Possession is the beginning of ownership” (Stake, 2004, p. 1764).

In the sociolegal literature, possession is broadly considered foundational to ownership and property; a starting point; or a bedrock; for both (Chang, 2015; Rose, 1985). In her oft-referenced 1985 article “Possession as the Origin of Property,” citing an 1805 case, American legal scholar Carolyn Rose says possession “means a clear act” of ““certain control” that gives rise to possession and hence a claim to ownership” (p. 76).

Similarly, Krier (2009), a legal scholar interested in the evolution of property and its characteristic of proximity between possessor and possession, “Possession is, ...usually unambiguous, and thus provides a clear indication of the status of any claimant” (p. 155). Both point out that **information** is critical to the instantiation of this epiphenomenon. Rose (1985) cites its essential communicative nature from a 1972 ruling: “Possession means acts that ‘apprise the community [,]... arrest attention, and put others claiming title upon inquiry.’” (p. 80).

Krier elaborates, saying (2009, p. 158):

Planting, tilling, and harvesting had the effect of marking plots of land with unambiguous signs of possession, thus providing the asymmetry crucial to deference. A consequence is that rights based on possession could come to be “permanent,” rather than “transient,” persisting even when owners were not in continuous actual possession, provided there were signs of ongoing ownership claims...

Addressing the continuing relevance of possession to ownership within Western legal systems, Krier adds (2009), “Notwithstanding, what evolved early on continues to endure. Possession, as any property lawyer knows, remains the cornerstone of most contemporary property systems-nine points of the law, the root of title, and the origin of property” (p. 159).

The most widely agreed characteristic of ‘possession,’ both in the literature and in usage, is the incidence of physical proximity and resultant **agency** with regards to external spatial, or other, entity(ies) (Rose, 1985; Hare, 2016): Stake says that “possession concerns the physical connection between the thing and its possessor” (2004, p. 1765).

Australian Indigenous critical race theory scholar Aileen Moreton-Robinsons gives a more holistic definition (2015, p. 113)

“Possession can mean control over one’s being, one’s ideas, one’s mind, one’s feelings, and one’s body; or within intersubjectivity it can mean the act or fact of possessing something that is beyond the subject, and in other contexts it can refer to being possessed by another. Within the law, possession can refer to holding or occupying territory with or without actual ownership, or a thing possessed, such as property or wealth, and it can also refer to territorial domination of a state.

Another often noted feature of “possession” is its “**relational**” nature (Loewental, 1976, p. 343; and Merrill in Chang (Ed.), 2015, p. 11: “possession refers to a particular **relationship** between a person and a thing.” Favre (2000) says, “property law creates a **relational** overlay between objects in the physical world and the humans who own or possess them (p. 479).

But **relationship** has a long history of being observed in nonhuman beings as well. Many researchers (and others) generally agree that “possession” is understood to be exhibited and conspecifically recognized widely in lifekind (Stake, 2004; Ellis, 1985; Loewental, 1976; Gibson, 2020; Hare et al., 2016; Gintis, 2013). Influential thinkers of the past have staked out an exclusionary position, however: Kreir (2009) notes that “Hume thought that animals (humans aside) “are incapable of... property” but biologists say otherwise” (p. 151). Quoting Sugden, Krier says that there is “biological evidence suggesting that humans, like other animals, have some “innate sense of possession and territory” (p. 155).

Discussion about possession continues to be lively in the literature – demonstrating that it is both intriguing and somewhat unsettled: there is not full agreement as to the precise nature,

significance, or degree of influence of possession to, in or among human or nonhuman beings. This is found in the legal literature (Chang, (Ed.), 2015) is a particularly good example); and the cultural evolution literature, particularly through mathematical and game-theoretic models (examples include Bowles, 2004; Henrich, 2021; Hartley, 2019; Hare et al., 2016; Gintis, 2007; Sherratt and Mesterson-Gibbons, 2017).

Demonstrative of its centrality, possession is at the center of many oft-cited game theoretical models attempting to show how property and/or ownership evolved, such as Maynard-Smith (1974) (see introduction for discussion of the ‘evolution of ownership’ problem). These models often look at the capacity of idealized individual animals (such as hawks and doves⁴⁶) to defend a territorial holding or a resource of some kind in the face of challenge by other animals:

...deference to possession, is a product of biological evolution, and the core explanation of why and how it developed is usually credited to the biologist John Maynard Smith, who summarized and extended his views in Evolution and the Theory of Games.” (Kreir, 2009, p. 152)

Game theoretic models are used in this research to run conceptual simulations to test the utility and evolutionary stability and advantages of a particular behavior/behavioral options (Henrich, 2021). Game theory work has been influential in property, ownership and adjacent (i.e., behavioral economics) fields, yet has been shown to have material limitations, as well, including underlying assumptions, low accuracy of models, and “wrong” abstractions (Sherratt and Mesterson-Gibbons, 2015). What is significant about this work for our analysis, is that it is an oft-used method for interrogating ownership and its phenomena, such as possession, in a variety of fields from biology to economics, and it often involves a mix of species, human and non. This despite frequent definitional inconsistencies between studies, and other shortcomings we will discuss in Chapter 6 (p. 226)

⁴⁶ Game theoretic studies are diverse. See Henrich Nobel Symposium talk (2021).

Possessed (2019) by Bruce Hood frames the topic as having a two-way character of possessor and possessed-by, and says that “possession comes from the Latin, *possidere*, which literally means ‘to sit or put one’s weight or foot over’” (p. 29 – 30). Unfortunately, while the book is interesting, it is also a very recent instance of perpetuation of the human-exceptionalist trope associated intimately with both codified and casual notions regarding possession that repeatedly emerge: first, that possession itself is distinct from ownership (which Hood, like many others, never specifically defines), followed by the claim that “possession is common in the animal kingdom, whereas ownership is only found in human societies” (p. 29).

This is a Key Narrative that echoes through contemporary popular and academic discourse. It refers to a chronically claimed notion that a legal system is necessary for anything but actual physical possession to be sustained. Again, representative of stochastic mixing of terminology, is an example from the literature: “property is possession that has been sanctioned by social consent as formalized in law (Rudmin, 1991, p. 91).

But as just mentioned, this is the view of *one* group of researchers, while many others – as mentioned above - see things differently.

The dominant view in Western thought, from Hobbes, Locke, Rousseau and Marx to the present, is that property is a human social construction that emerged with the rise of modern civilization (Schlatter, 1973) However, evidence from studies of animal behavior, gathered mostly in the past quarter-century, has shown this view to be incorrect. (Gintis, 2013, pp. 119-20).

This is important: this is a point at which many contemporary scholars and legal practitioners *draw a line* between human and nonhuman in terms of the enactment of ownership. And importantly, *nearly the identical argument* has been used in the past to distinguish between ‘civilized’ and ‘savage’ [sic] humans, granting the capacity for *possession* to all, but property/ownership only to a narrow few.

(See quote from Beaglehole on p. 16). Thus discounting the existence or relevance of all other ownership manifestations (systems, frameworks, purposes, strategies) with this justification, as discussed above.

Today, researchers do not articulate the notion that non-Western societies lack or have inferior property systems very often or directly, but it persists, concealed within the amorphousness of property/ownership definitions as I have referenced. Now, however, the same logic of argument is still openly used in regards to nonhuman beings. While Western researchers are willing to grant that nonhuman beings exhibit *possession* behaviors they disagree about whether this qualifies as property or ownership, proposing conditions ('property needs law to exist!') that ostensibly exclude nonhuman beings (see Hood, 2019; Strassman and Quellar, 2014; Kamath and Wesner, 2020).

Joanna Gibson (2020) writes: "this same imposition of ahistoricity has been perpetrated against so-called primitive or traditional cultures, both through the denial of property systems as well as the ossification of cultures and identities" (p. 8).

Here is where we begin to see how definitions – our conceptual maps of concepts - matter. If ownership or property are defined certain ways by those⁴⁷ in a position to act summarily upon and benefit from these definitions, the definitions themselves will exclude groups of organisms from having legitimate claims to entities they perceived or assumed were theirs. And as a result, those entities (or their possessions/property) may readily be appropriated by those who *do* qualify, in their worldviews, as owners. 

"Respect For" Another subtle, exclusivist premise found particularly in the possession-related literature but oft-repeated in a variety of ownership-related research, is the idea that a way to define ownership is as "respect for possession" (See footnote 33 in regards to the property "triadic," page 51).

⁴⁷Meaning individuals, groups, nations, and most importantly, the institutions that are central to the enactment and perpetuation of things like law, moral systems and social norms.

The striking irony is that this definition demonstrates my contention that worldviews, encapsulated in our definitions, are at the operational center of how ownership is being *reserved* for certain entities. Defining ownership fundamentally as respect for possession can also mean that if we just *ignore* other's – such as first peoples, nonhumans – claims to possession (especially as a society, and using our institutions of coercive power, such as the law) they then are *not owners* and are *not exhibiting ownership*. Therefore, again, constructing a cognitive framework around what owning means creates opportunities to dismiss its existence where it is inconvenient for those intent upon gaining possession of that which the 'other' has. An example of how the idea is articulated comes from Gintis, 2007, p. 4: "We say ownership (incumbency) is respected if it is rarely contested and, when contested, generally results in ownership remaining with the incumbent." I would suggest saying 'cooperative with' rather than 'respect for' in these contexts.

Regardless, possession is a concept used by many researches to encompass foundational, and even cross-species aspects of the ownership phenomenon. But again, with a solid and pervasive history of being the most basic level of an implicit hierarchy of ownership-type concepts. From Kushnick et al., 2014, p. 310:

Late 19th-Century explanations for diversity in land tenure systems were framed in terms of unilineal evolution (de Laveleye, 1874; Engels, 1884; Maine, 1876; Morgan, 1877). For instance, in de Laveleye (1874), societies progressed from a nomadic phase without land ownership, to agrarian pastoral phase within which land was held by groups with usufruct rights given to individuals. From there, they progressed into the agricultural phase within which land rights were held by patrilineal kin groups and from there to a phase within which individual cultivators held ownership. In no uncertain terms, the trajectory of change in his account, illustrated in Fig. 1a, was a rectilinear (i.e., one-way) progression: "It is only after a series of progressive evolutions and at a comparatively recent period that individual ownerships, as applied to land, is constituted" (p. 3). This sequential, progressive view of social evolution has long fallen from favour.

The problematic practice of placing ownership phenomena into a conceptual hierarchy or within a framework of evolving in a ladder-like fashion is found frequently in a variety of disciplinary literature,

even where the authors would not otherwise conceive of the processes of evolution this way (see further discussion in Chapter 6). Hierarchies of value and superiority are innate to the conceptual frameworks of the dominion worldview of ownership.

Property

We begin with the knowledge that there must be as many theories of property as there have been systems of property rights. Consequently, we abandon the search for the true theory of property and study the theories of past ages. Only thus can we learn how to construct a theory suitable to our own circumstances (Schlatter 1973, p. 10).

“Property” is an enormous topic of enduring concern, weighed in on by many in an array of law, ownership and economics-adjacent fields and beyond. As mentioned above, property and ownership are regularly conflated in the literature, with each term being used in place of the other in unpredictable and undisciplined ways. Further, there is widespread, and widely acknowledged, contestation/confusion with regards to what constitutes property; why or why not; when, where, how and why this started; who can be said to have it or can’t; and just about every other aspect of it that you can imagine.

Fortunately, most of that uncertainty is not material to this writing. As has already been pointed out, human beings have invented strategies to manage iterations of ownership via law, custom, norms and traditions throughout human history. That is the utility of a property (ownership) system: it enables cognitive organization of **relationships** with external entities so they can be managed efficiently through and beyond the lifespan in order that any conflict (and the harm/mortality it can cause) can be minimized, and oneself and one’s group can be organized with regard to resources and the survival enhancing features of the spatial environment. Each of these have clear evolutionary benefits: “there are obvious reasons to believe that a system for allocating rights in things could, at least in part, be hardwired into animal brains” (Stake, 2004, p. 1763).

Unsurprisingly then, because of how significant relationships with external entities in our lives are, we live in societies steeped in the salty brine of frameworks linked to the concept of “property” and its cultural, social, political, economic, philosophical (and much more) understandings. Therefore, I will offer a series of representative perspectives on “what is property.” Doing so will provide background for arguments in coming chapters.

First, from sociologists Carruthers and Ariovich (2004, p. 23): “Property is ubiquitous. The idea of private property suffuses classic liberal thought. Property rights lie at the intersection of law, economy, the state, and culture.” And from Stake (2004, p. 1763) a legal scholar with an interest in evolution: “in the law, ‘property’ means rights in things...embedded in the idea of property is the presumption that ...there are criteria that determine how competing claims to assets will be resolved.”

From legal scholar and thinker Joseph Singer’s “The Paradoxes of Property” (2000, p. 7), where he grapples with some of the innate challenges of the concept:

There is no simple definition of property that can be posited without making controversial value judgements about how to choose between conflicting interests. When we examine social conflicts, as lawyers do, we see over and over again that property rights conflict, both with each other and with other important legally protected interests. Dealing with the conflicts brings questions of political and moral judgement *inside* the property system itself. The question is not whether to regulate owners; the question is what kind of property system to create in the first place.

In the book “Owned, An Ethological Jurisprudence of Property: from the Cave to the Commons” author Joanna Gibson (2020, pp. 2-3) takes on the question of property, but unfortunately uses it (rather than ownership) as the founding central construct of her analysis.

What is property? The etymology of the word itself is intriguing in the context of the present discussion, with its attachment to the “proper” and indeed notions of manners and courtesy that are thus implied. Notably, the term is contested even within legal discourse, with considerable disagreement over what it encompasses in terms of rights and ownership. ...property suffers from the ambiguity arising from its application to things: “Property in its true and original sense means solely a right, title, interest or ownership; and consequently, to call material things like land, houses, money, cattle, etc.,

property is as great an absurdity as to call them right, title, interest or ownership” (Hallowel, 1942, p. 120).

American political scientist Lee Ellis, publishing in the 1980’s, who wrote at the intersection of biology and society says: “property can be viewed as a special type of possession...toward which no counter-claims are generally recognized by fellow social group members (1985, p. 117). Floyd Rudmin, whose work helped found the field of Psychological Ownership says (1991) pp. 85-86:

Property is a phenomenon of social perception based on common cognitions...Everywhere we go, everything we do, entails at least a momentary or unconscious calculation of possessory relationships and rights...Our social world and its property structures are constellated, sanctioned and internalized by our shared perceptions of them...so too does Law maintain the ownership of property when human perception is absent or in irreconcilable dispute. Law sets the expert, formal criteria of what constitutes ownership.”

As discussed earlier a frequently repeated conceptualization of property that underscores its characteristic of **relationality** is the “triadic” model, here in an iteration Rudmin cites from Cairns (1935) (Rudmin, 1991, p. 94) “the property relation is triadic: “A owns B against C,” where C represents all other individuals. If it is expressed in the form “A owns B” it does not convey, except by implication, the conception of a relation between individuals, which is the essence of legal theory” (Cairns, 1935, p. 59). (Other versions include Scherratt and Mesterson Gibbons citing Reeves, 2015; Cronon, 2011; Rose, 1985; Carruthers, 2004; Freyfogle, 1993).

An excellent summary that is useful particularly for how it draws the varied perspectives together is found in the encyclopedia Britannica Academic property entry:

An object of legal rights, which embraces possessions or wealth collectively, frequently with strong connotations of individual ownership. In law the term refers to the complex of jural relationships between and among persons with respect to things. The things may be tangible, such as land or goods, or intangible, such as stocks and bonds, a patent, or a copyright.

Every known legal system has rules that deal with the relations among persons with respect to (at least) tangible things. The extraordinary diversity of the property systems of non-Western societies, however, suggests that any concept of property other than the

descriptive one is dependent on the culture in which it is found. Because property law deals with the allocation, use, and transfer of wealth and objects of wealth, it must reflect the economy, family structure, and politics of the society in which it is found. (Property, 2023)

Each of these suggests aspects of the ‘property debate’ that has been ongoing for many years – even multiple millennia. However, I suggest elements of the confusion in this debate originate within the culturally biased paradigm of ownership and its family of related phenomena.

Property is of concern to this study, but I argue below that it is best understood as a derivative phenomena of ownership. Once this is conceptually integrated, property is easier to understand as emerging out of ownership phenomenon, which enables us to see all of the concepts in relation to one another, functioning as parts of a whole.

Communal/Shared/Common/Collective Property/Ownership “...communal ownership was probably the default land system prior to agriculture” (Ember et al., 2020, p. 755).

Ownership systems characterized by shared and/or individually undifferentiated claim in regards to, or involvement with entities (of various types, from landscapes to beings to tools to personal items) are called, variously, common/shared/communal. These systems are generally viewed as occurring early and being widespread amongst human societies. Ember et al, say that where claims to property were made, “...communal property systems would have been the default system for any society having substantial degrees of hunting, gathering or herdable animals” (Ember et al., 2020, p. 745).

This is believed to be true particularly before agriculture and sedentary lifeways became dominant (Hartley, 2019, pp. 5-7; Gibson, 2019, pp. 14-15; Gowdy, 2020; Henrich, 2020).

This makes sense, as human beings are social, and groups of conspecifics – humans or nonhumans – benefit in a variety of ways from cooperation in regards to resources, landscapes and social norms that organize entities of existential significance: space, objects, beings. This cooperative

sociality based in kin networks is understood to be an enduring characteristic of humankind.

“Throughout most of human history, people grew up enmeshed in dense family networks that knitted together distant cousins and in-laws” where “people’s survival, identity, security, marriages and success depended on the help and prosperity of kin-based networks” (Henrich, 2020, p. 27).

Communal/collective systems are also of enduring interest to those who study cooperation and altruism. They are rich examples of a population making use of the advantages a group can provide to gain and/or protect access to resources on a predictable basis, and can be enacted over space and time and in association with other groups (Kavanagh et al., 2020; Ember et al., 2020; Smith, 1988; Acheson, 2015).

Common ownership, in many iterations, continues to be utilized as an ownership system today in many societies. It is often interwoven into cultural or religious (or both) expressions and worldviews (Rudmin, 1988; Hood, 2019; Kinsley, 1995; Winchester, 2021; Linklater, 2013; Harrison, 2007) as well. Over the past two millennia, communal/collective systems have been durably extant in areas where Western influence is minimal or non-existent (Linklater, 2013). And as we discuss above, they were widespread in Western societies until that form of ownership was gradually supplanted by private ownership structures, beliefs and political/economic systems and strategies.

These kinds of ownership system are also understood by scholars and others within the framework of **relationships**, and being congruent with **relational** – kin-based – worldviews and cultural systems/configurations. Yet they are not uniform or monolithic (Beaglehole, 1931; Greer, 2018).

“Intensive kin-based institutions bind communities together by intertwining individuals in webs of shared identity, communal ownership, collective shame, and corporate responsibility. (Henrich, 2020, p. 219).

Mutual obligation, interconnected lives, lands and kin are characteristic of the ownership systems of smaller-scale societies “Property law in tribal society defines not so much rights of persons over things, as obligations owed between persons in respect of things.” (Greer, 2018, quoting Gluckman in note 65 on p. 62).

Thought often as particularly relevant to land, these systems also apply to objects, beings, shelter, food, tools (Hodder et al., 2018; Donald, 1997; Hagen in Nichols, 1971; Shennan, 2009,2011; and Hood, 2019). Furthermore, common ownership systems can exist within or alongside private ownership systems as well (Freyfogle, 1996; Beaglehole, 1934; Haynie, 2021; Donald, 1997; Pospisil, 1965).

Again, benefits gained from common owning of resources or areas and the cooperative action that underlies it do not accrue only to human beings:

since most terrestrial mammalian carnivores are solitary, increased sociality is thought to have evolved as a derived trait where group life increases individual fitness, including through collective defense and, particularly in species that hunt large game, through the acquisition of more resources. (Hartley, 2019, p. 4)

With regard to landscapes and land use, “common” ownership systems are actually quite nuanced despite a lack of distinction in terminology.

In the New World as in the Old, the commons was not so much a location (though it usually had a territorial dimension) as a set of rules and customs governing access to and management of resources. In the context of European colonization we might speak of an “indigenous commons” to distinguish these places and practices from the forms of commoning introduced by settlers. With enclosed farms, but also a “colonial commons,” with different varieties of inner commons and outer commons. (Greer, 2018, p. 253)

Fundamentally, and stemming from long arc of property discussion that took place through the threads that weave together the Western tradition and worldview, “communal” ownership systems have been understood as situations where “land was never owned by an individual” (Greer, 2018, p. 56) in a society, and where possessions are shared/held in common by members of the society.

Clearly cut instances of an ownership system that is entirely shared/communal may not even really exist, save in idealized or deliberately contrived instance, according to Greer: “the new anthropology of property tends to embrace complexity and to challenge simple oppositions of individual versus collective property, usufruct versus ownership, modern versus premodern, nature versus culture, even subject versus object” (Greer, 2018, p. 62-63).

Another interesting way to view this is from whose perspective is involved in common owning - “a limited-access commons is common on the inside but private on the outside” (Kreir, 2009, p. 144). This way of looking at it contributes to seeing how perspectives themselves can be significant to understanding or even perceiving ownership phenomena – in various structures and configurations – in action across species.

Enduring Influence Societies that exhibited communal/common property systems – whether they be small scale horticulturalists, pastoralists, hunter/foragers – were also of enduring interest as ownership systems or sets of cultural practices to some of the earliest writings we have in the West regarding ownership phenomena, such as from influential Greco-Roman philosophers of antiquity.

Rudmin (1996) says that, “Pythagoras [6th century BCE] advocated communal property on the theological grounds that private ownership separates people from one another,” and is “socially divisive and misdirects human interests away from proper goals” (p. 116). He quotes Plato (from a 1962 translation of his “Laws”) saying that “The first-best society, then, that with the best constitution and code of law, is one where the old saying is most universally true of the whole society. I mean the saying that “friends’ property is indeed common property”” (p. 116).

Also notable is the regularity of the appearance of discussion about communal owning in writings of these Greco-Roman thinkers – it is a central theme in ownership/property related discourse –

and the regular presentation of it as a *juxtapositional* concept with emerging private systems of ownership and property in Greco-Roman life.

Shared ownership systems remain the focus of research and writing by anthropologists, archaeologists, and historians. Long interest by economists, political scientists, and legal theorists reflect the influence of these systems on formations of political and economic theory in the 19th and 20th century, in regards to communism and socialism (Linklater, 2013; Schlatter, 1973; Rudmin, 1994).

An interesting and longstanding thread of inquiry may unconsciously divulge anxiety about the inherent qualities of ownership systems, and the preferable moral standing of communal systems, as touched on in part 1. Rudmin (1994) recounts the patrimony of the concern:

there is a long tradition of trying to explain property by reference to its “natural” origins (Rudmin, 1988), beginning with Aristotle’s discussion of the political economy of hunters and nomads (Mathie, 1979) and continued by the Roman Stoics, early Christians, and Renaissance Scholastics (Schlatter, 1951). European conceptions of the property practices of North American native peoples have played an inordinately large role in the development modern theories of property, in both capitalist and communist traditions. Early Jesuit accounts of North America portrayed aboriginal peoples as living innocently in a communal “Garden of Eden” (Kennedy, 1950; Schlesinger & Stabler, 1987). From these portrayals, Locke (1690/1952) argued that North American natives were archetypally “natural” people and that individual appropriation from a communal domain of abundant resources was archetypally “natural” ownership. In the communist tradition, reports of communal property among North American natives influenced Marx’s and Engels’ concept of primitive communism (Khoranashvili, 1980, 1982) and have continued to be important to communist theory (Averkeiva, 1961; Speck & Easley, 1939). (Rudmin, 1994, p. 115)

Of particular, paradoxical interest is the recurrent dynamic of dismissal of these common owning systems as both barbaric/savage while believing them also akin to a garden of Eden kind of perfection in human relations. Both understandings were also in play within the psychology and strategy of colonial dispossession  (Williams, 2012; Greer, 2012; Linklater, 2013; Hagen in Nichols and Adams (Eds.), 1971).

This duality seems to emerge from the perceived and real egalitarianism of these systems, and what that means for social formation. According to Linklater (2013), “ownership of the earth shapes the way society is organized” (pp. 40-41). He and others have discussed a belief shared and acted upon by many throughout history – from Rome’s Tiberius to recent and contemporary communist social movements – that “an egalitarian society can be created by redistributing land as communal property” (Linklater, 2013, p. 41). Linklater continues this thread, saying: “Making such a society work, however, has always proved exceptionally difficult... entailing a surprising intensity of organization and policing of personal foibles” (Linklater, 2013, p. 41).

Like possession, common/collective ownership practices have significant representation in the texts and extra-textual analysis of moral systems. These include the practices of, and discussions around the ideals of the early Christian church, monastic and aesthetic traditions (often one in the same), and Buddhism takes deep interest in the role of possessions and possessiveness in the capacity to achieve transcendence (Kinsley, 1995).

Contemporary research within the field of “Psychological Ownership” (see introduction) has found that collective ownership has collective cognitive benefit:

... collective notions of ownership are commonplace and ...the presence of “shared mental models among the members of a work team has a positive effect on team processes and effectiveness” (p. 284; cf. Klimoski & Mohammed, 1994; Levine & Moreland, 1991; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000)... a shared mental model (i.e., a collective cognition) pertaining to ownership simply involves the collective belief, by all members of a group, that a target of ownership is collectively “theirs” (Pierce and Peck, 2018, p. 7).

Collective/common/shared ownership systems and practices have been a longstanding feature of human experience and history, and have provided social- and resource-organizing platforms. The ideas and practices of shared ownership have influenced strategies and perspectives on ownership, property and property systems as both contrast and ideal for multiple millennia, and they are messy and

imperfect as are most endeavors and lifeways, human or not. And, the structure and advantages of common ownership are observed within other species as well.

Examples might include eusocial insects and mammals, in which a common nest is maintained and utilized by its society members (termites, ants and bees are well known examples). Observation of conspecific behavior patterns, along with responses to inter- or intraspecific threats along with food sharing practices and use and defense of individual/group spaces are important observable indicators of likenesses and distinctions between human and nonhuman practices, systems and strategies. Social animals such as ourselves utilize these - where they offer sufficient advantages (Bradshaw, 2018; Stake, 2004; Sherratt & Mesterson-Gibbons, 2015; Kreir, 2009; Strassman & Queller, 2014; Kamath & Wesner, 2020; Lee, 1985).

While common ownership systems are often associated with egalitarianism (though it is not entirely clear cut, see Smith et al., 2022, and Hooper et al., 2018), it is certainly true and well-supported that “private” types of ownership systems are strongly associated with inequalities amongst members of the society engaging in them. (Rudmin, 1995; Beaglehole, 1931; Ardrey, 1966; Gowdy, 2021; Greer, 2012 and 2018; Linklater, 2013).

Private Property Private property – particularly in land – rests at the epicenter of Western interest in ownership topics, based on the extent of the literature on the topic or literature that relates to it. In terms of the trajectory of human existence, its predominance as an ownership system is recent; however, personal engagement and identification with objects and beings and even ideas is evident throughout the recorded and inferred human past; instances of early private ownership include sacred objects, clothing and adornment, and expressive or spiritual creations such as dances, dreams, ceremonies, songs and cures (Beaglehole, 1931; Khan & Turri, 2022; Donald, 1997; Kelly, 2015; Martin, 2001).

In the historical section above, I traced the development of contemporary notions of private property; here I will review understandings of the concept of private property in brief, as it will help ground later discussion.

Notions and practices of private property, as discussed above, is generally believed to have emerged out of Roman law over two millennia ago. In contemporary and recent literature, the ownership of private property exists within a societal framework – i.e., a legal system or a political system [of some level of codificational formality⁴⁸] in which there is recognition within and amongst the society/larger group concerned that there is a heightened level of agency in one person or small group of persons in comparison to others with regards to something or someone (which I encapsulate together in the term “entities” in Chapter 4). Societal recognition and reinforcement often means policing, enforcement and a codified rule system to structure the rights and responsibilities of this form of owning (Gintis, 2005).

However, as mentioned above, this is also the crucial point at which nonhuman beings are excluded from “having property,” as Western peoples’ worldviews of property have historically discounted the possibility of either a commensurate *system of organizing* external entities outside of (initially) our society and (into the present, yet) our species, or a need for such. Similarly, Westerners have *eschewed the capacity for*, or perhaps failed to understand the complexity involved (see DeWaal, 2016) in recognizing these systems, behaviors or norms outside of human kind that would demonstrate a property system. Above, we have discussed how this is challenged by many, but here Sherratt and

⁴⁸ A different, perhaps useful way I suggest we could articulate differences in ownership behaviors and systems: formality or codificational status, particularly within a conspecific social group. In other words, their ‘extent of codificational formality.’ This excises the hierarchy language, and is more accurate with regard to the nature of the differences between how each of the following frameworks of ownership operate in the real world.

Mesterson-Gibbons (2015) reminds us of the ubiquity of the concept and its congruent cross-species relevance (while also mixing their terminology, p. 1198):

The notion of private property is an everyday human experience. Nations are built on the premise of ownership, economies depend on it, and laws enshrine it. Evidence for respect for ownership is also widespread in the animal kingdom, suggesting that it is an outcome of natural selection whose stability is not dependent on the threat of third-party enforcement.⁴⁹

Definitions of “private property” are varied and often inconsistent, and there is ongoing discussion about this. The depth of inquiry into private property in the literature regularly reveals important inconsistencies – some quite deep. Ultimately, most of them relate to how the concept(s) operate within legal systems, which is mostly lateral to my arguments.

As to exactly what private property, in Western legal systems, encompasses, it can include nearly anything. Currently it excludes other human beings (a relatively recent development). In some places and conditions intangibles remain contested, and special conditions, exclusions or rules can apply to certain resources (i.e., minerals, water), non-domesticated life forms or undeveloped/unmarked landscapes.

However, again, it is most instructive to turn to private properties’ believed origins to fully perceive its nature, as they are still reflected in our present paradigmatic understandings. Christman says:

In the classical Roman law, where ownership was expressed as dominium in the classical Law Codes, an owner was said to have virtually unlimited rights to preside over property without state interference, and legal rules were loathe to allow the disaggregation of the bundle of rights associated with property. (Christman, 1994, p. 17).

Important, and we will return to this later, are Western mindsets around it:

“Very few, if any, non-Western societies generalize about property in the way that Western legal systems do. What distinguishes the Western property system from the

⁴⁹ Also note their use of private property and ownership as being the same thing, and the use of “respect for ownership” in this passage.

systems of most, if not all, other societies is that its *category of private property is a default category*. Western legal systems regard individual ownership as the norm, derogations from which must be explained. The legal concept of property in the West is characterized by a tendency to agglomerate in a single legal person, preferably the one who is currently in possession of the thing in question, the exclusive right to possess, privilege to use, and power to convey the thing. (Property, 2023)^{50, 51}

Also illuminating is some of the ways in which private property has been identified as distinctive in terms of its social outcomes and effects. Arlo Linklater's *Owning the Earth* explores private ownership of land as revolutionary and socially transformative (2013, p. 11) "the revolutionary idea ...now seems simple: that one person could own part of the earth exclusively." This is such a commonplace notion now that we generally aren't even aware of it (as I have abundantly pointed out earlier)

To those on the inside, the form of ownership will always seem normal because of the insidious way it shapes the owners outlook. ... Living in a private property society encourages a primacy of self quite different to the clan values prized in Ghana, the family priorities promoted in Japan, and the communal discipline advocated in China. (Linklater, 2013, p. 12)

Hagen confirms the foreign nature of the concept historically, amongst Indigenous North Americans: "Private property rights in such items as cooking and eating utensils, weapons, and jewelry were respected among the Indians. Private property in land, as we understand the concept, was not known (Hagen in Nichols & Adams (Eds), 1971, p. 201).

The idea that private property is an economic stabilizer is well established. The following passage is from an article that extols the economic utility of private property regimes for Africa:

There is mounting evidence of the importance of property rights in economic growth and societal development... Respect for property is considered a key determinant of economic development because it increases the private returns on entrepreneurship... More

⁵⁰ Interestingly, Individual ownership and private ownership, or individual property and private property, are not necessarily the same: there isn't consistency of usage in the literature, much as with "property" or "ownership," with regards to these terms: conflation, lack of definitional clarity, and mixing of terminology abound. Scholars like Kreir can be heard complaining about it; here he addresses another scholar's statement, who he says "implies that private property is conterminous with individual ownership when it obviously is not" (Kreir, 2004, p. 144).

⁵¹ Could this mean that people from other societies might perceive this 'hidden dynamic' more readily?

generally, respect for property fosters the emergence and supports the functioning of a market economy, and consequently spurs economic growth. (Fabbri & Dari Mattiacci, 2021, p. 413)

Acheson cites a body of research that posits that private property ownership is the most efficient kind (Acheson, 2015 p. 37) “because it lowers transaction costs, promotes conservation, and eliminates overcapitalization” though he also takes issue with the idea, saying research also shows that common and private property regimes are equivalent in terms of efficiency. Nevertheless, ideas about private ownership’s economic superiority are entrenched in the conventional paradigm of ownership. This is consequential for its continuing effect on policy, particularly in countries feeling increasing influence from the West. Ember et al., 2020 say (p. 746):

Policymakers in many developing countries have long advocated for privatizing communal land tenure systems. The presumption was that Western style private ownership is necessary for economic growth and modernization (Berry 2002; Feder and Noronha 1987). But this push is usually done without understanding the role that particular land tenure systems play in people’s ability to successfully deal with vagaries in their environments (Ribot and Peluso 2003).

According to Carruthers and Ariovich (2004), “Economists studying the connection between property rights and efficiency recommend private property as best for economic growth (Soto, 2000) and have argued that property rights matter for resource exploitation, investment, growth, firm performance, credit, and innovation” (p. 33). 

The above have direct correspondence to some of the effects of private ownership systems that relate to its problematic ecological effects. But it also has problematic social effects: as alluded to above, implementation of private property systems into societies where the concept and the practices did not exist (and were culturally inappropriate) was done deliberately, as it was heralded as a “civilizing” force (Hagen in Nichols and Adams (Eds), 1971, pp. 201-204). But most importantly, it was wildly profitable for those forcibly implementing it. 

But, is it Natural? As discussed above, much of the interest of Western researchers, from antiquity to the present, centers on examining varieties of property systems within a particular culture, particularly a “natural” one (again, primarily – and clumsily at best - meaning a society that is not settled, i.e., hunter-gatherer/nomadic/sometimes pastoralist) engages in (Rudmin, 1988). Of ongoing interest has been the juxtaposition of communal – group – property ownership versus individual – private – property ownership systems, also previously mentioned.

This topic is worth returning to, briefly, because of how significant the idea of “natural” is in the nature and patrimony of the dominion worldview of ownership, from the formation of institutions of law to moral, religious and political systems. Much of the collocation has moralistic overtones, with private property seen as inherently depraved until much more recently, when, as we discussed above, it was integrated into the workings of organized Christianity (the Roman Catholic Church) and became sanctified as a divinely conferred right.

This illuminates the contrasting cognitive cultural constructs of private vs. communal ownership, and where they belong in the categorical and moral reasoning structures of Western minds. The question is often posed as some variation of ⁵² ‘are private ownership systems “natural?”’. This is connected to our earlier discussion of “natural law” and the “naturalness” of property that emerges in antiquity (between the 3rd and 1st centuries BCE) and resurfaces throughout the writings of many of the authors that I discussed previously. Garnsey (2007) explains why interest in the concept was so useful:

A system of law which has its basis in the natural order and whose legitimacy is therefore established on the firmest possible foundations, because it is something eternal and outside time. Furthermore, natural law is universal in its outreach, transcending all

⁵²The interest in contrasting individual/private property with other systems of ownership parallels the rise of individualism in the Western cultural mindset and norms (Greer & Lewis, 2002; Perry et al., 2004). As private property systems and their overlay of laws coalesces in the GrecoRoman and early Christian world, it makes sense that this “debate” about the cultural origins of ownership practices would burble persistently just below the surface.

accidents of social, ethnic and political identities; it is valid for the whole human race. (p. 212)

Schlatter, writing initially in the 1950s' and deeply interested in this debate, says that:

Men have always wondered if private ownership is natural. 'Natural' is sometimes taken to mean 'primitive,' and philosophers have sought, both in the legends of the Golden Age and in the accounts of anthropologists, to discover what forms of property are natural in the sense that primitive man recognized them. But 'natural' can also mean 'fully developed or perfect,' and philosophers have constructed imaginary Utopias in an attempt to discover what forms of property are natural in the sense that they would be adopted in perfect societies. (Schlatter, 1973, pp. 10-11)

A passage from Garnsey's "Thinking about Property" is illuminating as to the depth of concern regarding the effect on people and society that these contrasts and changes were thought to occasion quite early in western thought: (Garnsey, 2007, p. 122):

The poets of the classical period of Latin literature thought the seeds of decay were internal and traceable to moral decline. Moreover in their narratives the introduction of agriculture in conjunction with private property frequently surfaces as a feature of a post-Golden Age, disintegrating society. According to Virgil in *Georgics* Book One, in the primeval world "it was not even right to mark the land or portion it with boundaries; all need was met in common, and earth yielded everything of herself, more freely, when none begged her for her gifts. "It was Saturn's successor Jupiter who introduced agriculture and private ownership, and together with them, toil and want. A generation later Ovid wrote in *Metamorphosis* Book One that in the age of Saturn "men used to cultivate good faith and virtue spontaneously without laws... Earth herself, untroubled and untouched by the hoe, unwounded by any plowshare, used to give all things of her own accord..." But with the succession of Jupiter, "shame and truth and good faith fled away: and in their place came deceit and guilt and plots and violence and the wicked lust for possession... And the wary surveyor marked out with long boundary lines the Earth which hitherto had been a common possession like the sunshine and the breezes..." In both poets the introduction of private property belongs to an inferior age, in which skills and technology were on the advance but morality and happiness in retreat. In their

accounts private property was tainted, because it was linked to an economic system that was labor-intensive, yet inadequately productive, and to social disorder and war.^{53, 54}

Greco-Roman roots reverberate through the history of the private property idea. Rudmin (1996, p. 118) shows here how early frameworks of justification emerge:

This vision of humankind as originally propertyless was akin to the Garden of Eden myth of the early Christian Church and became a fixture of Western thought (Schlatter, 1951; Tawney, 1926). Thus, Pythagorean mysticism became Greek ideal, then Roman myth, then Christian dogma, to the end that political economists began to propose explanations for the transition from natural propertylessness to conventional regimes of private ownership. For example, the early Christian property theorists developed the concept of stewardship: the resources of the material world were common property given by God to all humankind; seemingly wealthy lords, clerics, and civil authorities were stewards of God's largesse (Avila, 1983; Tawney, 1926). Only after Aquinas revived Aristotelian thought did the Scholastics begin arguing that private ownership was natural to humankind and had developed prior to civil law (Rudmin, 1988; Schlatter, 1973)."

Again, these lines of argument soon provide footing to the Papal Bulls that form the Doctrine of Discovery in the 15th century.

Territory and Territoriality

Another important and common framework associated with ownership that is predominantly conceived of within a political, geographic or biological realm, is territory or territoriality.

Territory/territoriality (which I will refer to as territory/ality when discussing them together) are looked at much more broadly than the categories we have reviewed thus far, and their study is inclusive of both human and nonhuman beings, though this statement comes with important, often exclusionary and exceptionalist caveats we will discuss below.

⁵³ This is so interesting, too, because of how contemporary research has clearly made the link between the emergence of agricultural lifeways and sedentism with the emergence of inequality and hierarchical societies, in which much exploitation and suffering exist. Also, the notion of hunter-gatherer and traditional lifeways as pure and noble still lingers.

⁵⁴ Thus, not only is the ownership paradigm involved in all I am discussing, but it is also stitched into the "noble savage" stereotype, which has had its own interesting set of (related) complications through the modern era (see Williams, 2013).

Territory is generally understood as a framework for the analysis of claims on place and space, and claims on both over time. The study of territory, be it through political science, geography or biology/natural history, is often deeply related to both cooperative and competitive activities, including conflict and defense. Borders and their delineation, and the resultant securing of resources (defined broadly, from mates to diamond mines, and from one's nest to one's nation) are a central focus, inclusive of the behaviors and motives involved.

It seemed logical to expect ownership to be discussed within the study of territory. However, connections, differences or similarities are not often remarked upon in the literature I am familiar with. Also, while territory/ality are established fields of inquiry in both the humanities and the biological sciences, there is often a clear line maintained between them.

Work that integrates human and nonhuman inquiry is more often found in older publications, like that of Torsten Malmberg (1980) and Robert Ardrey (1966). These view the methodology as mutually informative. Elden (2013) says "what is interesting about their work is that they trade on work in animal ethology...in order to understand human behavior" (p. 4).

Human ecology, a field adjacent to disciplines like anthropology and cultural geography, took interest in human territoriality (Dyson-Hudson and Smith's "Human Territoriality" (1978) is a classic, oft cited example). However, here again, perhaps due to the sociobiology debates of the 70s' and 80s'⁵⁵, a more exclusive delineation emerged in the 80's and following, and the field itself changed focus. More contemporary work like that of Kamath and Wesner, 2020; Gibson, 2020; and Blomley, 2022 begins to diverge from this trend.

While the study of human territory/ality thus suffers from its frequent isolation from the insights and lessons of the rest of lifekind, it is still a rich field with a varied repertoire of approaches to topics of

⁵⁵ See discussion in Laland and Brown, 2011.

human spatial organization and behavior. See especially Eldin, 2013; Blomley, 2016; 2022; Malmburg, 1980; Delany, 2005; and Sack, 1986.

But how is territory/iality defined by its leading minds? Elden says the field suffers from a great deal of definitional imprecision, akin to that which I have identified with ownership (2013). His book is focused on tracing the “emergence of the concept of territory in Western political thought” (p. 10). He argues that the “relation between place and power” is the fundamental question of the field.

According to Sack, who writes a quintessential (1986) text on the subject, “Territoriality in humans is best understood as a spatial strategy to affect, influence, or control resources and people, by controlling area; and, as a strategy, territoriality can turn on and off. In geographical terms it is a form of spatial behavior” (Sack, pp. 1-2).

Sack is one who is intent on drawing exceptionalist lines between the human and non. Yet, his encompassing description of territoriality in humans is fully amenable to the substitution of the word “animal” where he uses “human” above and here;

territoriality in humans is best thought of not as biologically motivated, but rather socially and geographically rooted. Its use depends on who is influencing and controlling whom, and on the geographical context of place, space, and time. Territoriality is intimately related to how people use the land, how they organize themselves in space, and how they give meaning to place. (1986, p. 2)

As mentioned, the field of human territory/ality is cross-disciplinary, between social and historical geography and political science, including conflict studies, international relations, and sociology, and more recently also human ecology, socioecology, marketing and consumer science, psychology and management; fields that examine how human beings organize themselves in space or in time.

But what are we talking about – territory or territoriality? Or both? Elden (2013) says that defining *territory* has been ignored in the field, and makes some illuminating points about that clarify his understanding of both:

It is generally assumed that territory is self-evident in meaning, and that its particular manifestations – territorial disputes, the territory of specific countries, etc. – can be studied without theoretical reflection on *territory* itself... Where it is defined, territory is either assumed to be a relation that can be understood as an outcome of territoriality, or as a bounded space.... (p. 4)

He continues⁵⁶ (p. 10):

To concentrate on the political-economic risks reducing territory to land; to emphasize the political-strategic blurs it with a sense of terrain. Recognizing both, and seeing the development made possible by emergent techniques, allows us to understand “territory” as a distinctive mode of social/spatial organization, one that is historically and geographically limited and dependent

Torsten Malmberg (1980) writes an amazingly comprehensive book on human territoriality. It leaves no stone unturned, and engages deeply with the bio-social blend of the phenomenon, as was its intent.⁵⁷ Even with that comfort level with the subject, Malmberg spends several pages in discussions of our accidental theme: definitions as the bane of everyone’s work. Malmberg says that (p. 7):

It was claimed by Uexkull (1957:54) in 1934 that territory “is an entirely subjective product, for even the closest knowledge of the environment does not give the slightest clue as to its existence” Ardrey (1972:196) presented a similar view: “a territory, for example, cannot exist in nature; it exists in the mind of the animal”. Even though these statements are in principle correct, they do not of course exclude the observation of natural or cultural territorial phenomena, e.g. in the form of physical boundaries and markings. Perhaps we have here, however, one of the reasons for the difficulty in defining and describing territories....

⁵⁶ Unfortunately, he finishes the final sentence with “rather than a biological drive or social need” with which I disagree.

⁵⁷ The comprehensive nature of the topics in his monograph deserves mention. From basic concepts of space, definition, and fields and areas of study, to thorough examinations of nonhuman territories, then over two hundred pages elucidating and examining every possible encounter human beings have with the spaces around them, to a prescient overview of the past, present and future of behavioral territoriality.

... C.R. Carpenter (1961:229) gave the following pessimistic expression of the definition situation: “behavioral systems change over periods of time. Those which constitute territoriality in animals are so complex, and involve so many adaptive and even nonadjustive mechanisms, that they defy adequate description by condensed definitions. Fully systematic and analytical descriptions are required”. ... J.H. Kauffman (1971) [said] “no simple definition or explanation of territory yet advanced can cover all the related kinds of behavior known, and perhaps it is naïve to look for one.

After his extensive, somewhat despairing comments about the definitional morass associated with territory and territoriality (pp. 7 – 9), he provides two definitions, one of which relies upon ownership:

After... Altman (1975:107)...Territorial behavior is a self/other boundary – regulation mechanism that involves personalization of or marking of a place or object and communication that it is “owned” by a person or group. Personalization and ownership are designated to regulate social interaction and help satisfy various social and physical motives. Defense responses may sometimes occur when territorial boundaries are violated. (p. 10)

Malmberg’s own definition then follows:

Human behavioral territoriality is primarily a phenomenon of ethological ecology with an instinctive nucleus, manifested as more or less exclusive spaces, to which individuals or groups of human beings are bound emotionally and which for the possible avoidance of others, are distinguished by means of limits, marks or other kinds of structuring with adherent display, movements or aggressiveness. (pp. 10-11)

Power? Or Relationships? Yet, as touched on earlier, many in the field are heavily focused on the dynamics between the individuals and groups concerned; in much of the literature, power structures are a central concern. In accord with Elden’s central question, though perhaps also demonstrative of some of his complaints (2013), Delany (2005) describes power from the vantage point of territory:

Whatever else one might say about it, territory necessarily involves the working of some form of social power. Power itself, though, is quite a complex social phenomenon (Lukes 1986)...the point is that when we look through territory what we will always see are constellations of social relational power.territorializations are the expressions of power, and of how power is manifested in the material world. This fundamental relationship to social power is one of the features that distinguishes territory from other

forms of social space. ... the inextricable yet complex and shifting connections between territory and power are axiomatic. (pp. 16-17)

Power as a Problem of Paradigm I would suggest that instead of “power,” a better way to look at the social dynamics in play are through the lens of relationships and levels of agency. After all, much of territorial interaction lacks contest or conflict, thus can be called cooperative. Yet there is quite a bit of discussion of “power structures” and related phenomena within the territory/ality literature, especially concerning human beings (nearly all my sources on human territory could be cited here). While we won’t take a deep dive into this now, as it is mainly useful as support for my arguments, Western worldviews of hierarchy and dominion are evident in how this body of literature reflects a pernicious perception of “power” structures, where what we are actually discussing, in neutral terms, is “relations” between beings, and the varying levels of decisive agency individuals and groups have within these relations; equal or not, human or non.

Bryan gives a relational example from First Nations people of the Canadian Northwest, who conceive territory as a relational, complex and multilayered experience: “‘Territory is not understood in a Cartesian fashion, but rather as a landscape filled with subtle signs regarding the existence of game, the time of the year, the passage of other tribes in the area, and the way one understands when one is entitled to be there – both by nature and by others’” (Bryan, 2000, p. 22).

Utilizing the countable noun “**relations**” offers more nuance, is encompassing, and it enables the inclusion of varieties of experience and reduction in inherent bias. It also enables us to remain neutral upon the point of whether power is being expressed or responded to in any particular situation, such as between nonhuman life forms. Power structures and dynamics are highly prone to worldview-filtered detection and interpretation – cultural and experiential frameworks are richly instructive of what is and is not power, hierarchy, cooperation or coordination. Thus, I would argue there is cultural

bias in seeing the world – the world of territory (or property, ownership or possession) – through a framework of power structures “notions of property embedded within the concept... serve to naturalize both authority and discipline (Kamath & Wesner, 2020, p. 237).”

But this stance is one that swims up current. A very recent publication *The Evolution of Power* by UC Davis scientist and professor Geert Vermeij (2023), posits power itself as the central driving causal and explanatory factor in the evolution of, and attributes that have led to the present state of all life on earth:

The history of life on Earth can be meaningfully and informatively interpreted as a history of power”... [Vermeij] argues that organisms’ “power” —defined as “energy per unit time” and encompassing mobility, size, speed, and strength—drives natural selection, with more powerful organisms more effective at passing on their genes than the less powerful. ...Though Vermeij’s thesis is more of a rebranding of “survival of the fittest” than a novel take on evolution, his framework offers intriguing new insights, as when he contends that ecosystems operate like self-regulating economies in their exchanges of power and energy as part of a competition for resources.⁵⁸

This is thought-provoking, but again, originates from a framework of dominion rather than looking at these dynamics simply as “energy” or “strength” or “unequal dynamics” and their operations and effects as an interactive web of **relationality** continuously in interplay due to differences in organismal capacities.⁵⁹

Blomley looks at territory together with property, critiquing some of the conceptual structures unthinkingly enacted in each. He advocates for a **relationality** emphasis in the concepts, but continues to employ power as a focal lens of understanding these relationships “the territory of property is an indispensable means to manifold forms of power, structuring relations of violence, belonging, identity, practice and belief” (Blomley, 2015, p. 605).

⁵⁸ Editors, (2023, September). *The Evolution of Power: A new understanding of the history of life. Publishers Weekly* <https://www.publishersweekly.com/9780691250410>

⁵⁹ It also elides the organism-environment interactions and non-genetic ways in which evolution occurs, at least ostensibly, in the natural selection via genes framework.

Relationship and **agency** allow us to see the character of interactions between organisms with greater nuance and much less inherent bias, enabling us to perhaps shake off the cognitive yoke of dominion for a moment.

Territory and Territoriality Beyond Humanity Territor/iality can be considered the original realm – both traditionally and since the early formalization of Western science practices - in which spatial phenomena was interrogated – through a biological and natural history/observational lens. An early instance of this is *Territory in Bird Life* by Howard Eliot (1920).

In the 2019 edition of a leading animal behavior textbook, territory is defined as “an area where the owner has sole or prioritized access to resources such as food or shelter” (Rubenstein and Alcock, 2019, p. 221). A teacher’s edition of a 2012 high school biology text book defines territoriality as:

the control of a specific area – or territory – by one or more individuals of an animal species. The benefit of territorial behavior is the ability to control the resources within the animal’s territory, such as food or access to potential mates. The costs associated with territorial behavior include the energy and time that could have been used for feeding or meeting. That time is instead spent protecting territory from invasion by other animals. (Nowicki, 2012, p. 776)⁶⁰

Also relevant are the concepts of “home range” – the area in which the creature exists, but outside of the “territory” that is defended and marked; and the existence of ephemeral and long-term territoriality. The former usually associated with mate selection or episodes in which an area is guarded (i.e., a bear guarding an area around a carcass she is eating over time); the latter usually associated with fixed areas of claim, such as a burrow, nest or a larger area (Baker, 1983). Hölldobler says (1980) that territorial strategies are especially elaborate in animal species that live in well-organized societies” (p. 731).

⁶⁰ Note use of term “control.”

Grether clarifies this distinction “between territory and home range...the territory is the portion of the home range, if any, which is defended against intrusion or resource utilization by some class” – groups, individuals, conspecifics or interspecific” (2019, p. 168).

Important to also make clear, again, is the communicative (**information** transmission) nature of this behavioral strategy: “territorial behavior is characterized by both the marking of territorial boundaries and the defense of the territory against intruders” (Schowalter, *Insect Ecology*, 2016, p. 137).

Malmberg says that territory itself is communicative, and embodies the cognitive mapping of spatial environment that an organism engages in, and that structures and can direct its behavior, including critical decisions related to survival: “territory represents both **information** and action and is thus both symbol and physical phenomenon...without a doubt territory is thus a semiotic phenomenon” (p. 231).

Part 3 – Ownership and Morality, Religion and the Sacred

While the sacred is a significant factor in the study of property, ownership and possessions, there is not a sub-discipline or a recognized scholarship niche dedicated to it. Areas where the topics frequently intersect include discussion of the recognition of – or the lack or, or refusal to recognize - the status of “sacred” in land or other entities by a group of people. Native North American people’s claims to sacred lands, principles of land use, sacred entities (including objects and knowledge) are a known example. The sacred land/place aspect of the Israel-Palestine conflict is also well known. Throughout the world, countless similar conceptions of entities that are the subject of veneration, cultural continuity, and social identity exist and face challenges related to contrasting moral frameworks of sacred vs. property, or sacred vs. commodity. This initiates consideration of – and disputes about - what exactly *is*

sacred, and how dominion ownership conceptualizations may alter or pollute the sacred nature of something.

Commodification is an idea informed by and occasioned by the dynamics made possible by the dominion ownership paradigm. Here owning grants the owner the breadth of latitude to alienate and make 'saleable' an entity, via removal of social or ritual obligations and interconnectivity, and can thus transform them from existing within an animate, relational and connected framework to being a commodity that can be alienated via a transaction that lacks relationship, ritual, context or history (Curasi, 2004; Belk, 2010; Schindler et al., 2022, pp. 355-365).

Much in moral and religious systems concerns the sacred/profane dichotomy, and avoiding both contamination and commodification are significant concerns (Meigs, 1991). Religions account for increased sharing and cooperative behavior as well: "By rerouting the allocation of resources into collective and other ritual acts with signaling functions, religions inhibit the kinds of selfishness that would otherwise plague social life" (Purzycki et al., 2022, p. 1).

Commodification characterizes important aspects of how Western people and others see and interact with the world around us. Traditionally, it seems to have been rare amongst people that lived in small scale societies, though there are known exceptions, including some documented through ethnographic work (i.e., *The Kaupauku Papauans of West New Guinea*, Pospisil, 1965).

Commodification is both a worldview, as far as seeing aspects and entities in the world around you as commodities for use in transactions rather than as kin/relatives/etc., as well as a strategic framework for securing and exchanging resources via economic activity.

The commodification of land is intimately bound up with the notion of private property itself (Greer, 2018; Linklater, 2013). Making it alienable (sellable) and a bounded abstraction representable on a map is posited by Freyfogle as being amongst the core flaws in our legal system, as it perpetuates the

conceptual objectification of the Earth. Freyfogle cites Aldo Leopold, saying that “he blamed “our Abrahamic concept of land” for our conservation woes. “We abuse land,” he wrote, “because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect” (1996, p. 648).

In the commodity framework, being a slave, livestock, a thing or a bounded area is being no longer fully **agential** with regards to self, and associated principally or solely with an economic and utilitarian value. Further, it entails being “alienable” regardless of the will of the entity in question. “Commodity” as a term denotes and perpetuates this objectifying framework for entities – it is used as in regards to all kinds of resources, things and beings, and designates them as the objects of the activities and effects of labor and exchange of currency, within human economic systems. 📖

All manner of nonliving objects can be owned by persons, subject to the agreement of the cultural framework a person is immersed in, and their level of participation and advantages or disadvantages within it. While practical objects such as tools and apparel are and have been commonly in the possession of people, sacred cultural objects (and their designated keepers) and family objects (which are often quasi-sacred objects as well) are particularly significant things that people have an ownership relationship with, and are consciously conceived of as innately existing outside of the commodity framework. These are examined in anthropology, archaeology, sociological and ethnographic research literature as “inalienable wealth” with important roles in individual/family/group/national identity and memory legacy. Inalienable wealth is often associated with religious, ethical, moral and kinship-system contexts. These objects are characterized as mobile/movable, and their economic value is not of significance (or oftentimes, there is not an economic

value or none is allowed to be ascribed to them). These “things” are found across cultures and societies, but may have greater or lesser significance in one or another (Curasi, 2004).⁶¹

Within philosophy, there is a body of work around the “land ethic”—such as J Baird Caldicott, Aldo Leopold, Wendell Barry. Some of its content draws from religious, anthropological/ethnographic and Indigenous studies literature, along with philosophy and adjacent fields, to examine and propose worldviews about and interactions with land, landscapes and the inhabitants therein (of various species and taxonomic classes). All of these fields also have their own literature that focuses more specifically on the land ethic found in their research. Often, these address contrasts between Western cultural ownership worldviews and behaviors and those of non-Western cultures, particularly as to commodification and the sense of the sacred, as well as spiritual animacy.

Moral and religious systems shape and respond to worldviews and behaviors regarding possession and possessiveness, the practices in regards to them that are socially encouraged or discouraged, and the forming and sustaining of the outward daily or ritual activities that stem from this dynamic. 📖 These include directives and codes regarding having, sharing, hoarding; often transference (inheritance protocols), and at times, the treatment of (certain) possessions “...for even granted that something can be owned, legal rules and social norms still influence how it is owned” (Carruthers and Ariovich, 2004, p. 26). These vary from ritualistic/sacramental treatment to interpersonal, interfamilial and cooperative aspects of treatment and disposition of possessions (Curasi et al., 2004). Naturally, some religious and moral traditions have more of an emphasis than others, and the nature of that emphasis can vary substantially; the development of Christianity that we traced above demonstrates the very significant role this can play in social formation, influence and impacts.

⁶¹ Aikenwald also talks about “inalienable possessions” which is another use of a similar term, but in this usage refers to the body (see Aikenwald, 2014, p. 4).

Encouragement of sharing (sometimes conceived of within the framework of ‘charity’ towards the poor) is a particular emphasis of religious traditions and social norms and ethics, and is often discussed as one of the primary reasons religions exist within our societies: to scaffold social altruism and group-survival-helping behaviors (Purzycki et al., 2022; Lane & Lior (Eds.), 2022; Henrich, 2020, Hartley, 2019; Atran & Henrich, 2010). Religious traditions that originate within smaller societies often have less work to do on that score, as sharing, gifting and hospitality practices generally feature prominently within these societies and customs and norms in this regard are often very strong (Lee, 1984; Gowdy, 2021; Hultkrantz, 1987; Fagan, 1992).

Acquisitiveness is studied as a behavior underlying the accumulation of things to oneself, believed by many religious traditions to be inherently corrupt (for interesting reasons such as it being indicative of “animal” or material nature, or being selfish or potentially instigating conflict). Yet at the same time, many societies also have ritual practice around the accumulation and distribution of things, such as potlatches and cargo cults. This blends acquisition behaviors with gifting and sharing customs and norms.

Sharing is important to the real-world operation of ownership systems in social and cross-group interactions. It exists in various forms and degrees in social groups, and is sustained in them – to whatever degree - because of its utility in managing the social and survival risks inherent in differential access to resources. Small societies are more likely to have strong systems of sharing; anthropologists and ethnographers have long documented the frequency of sharing practices among hunter-gatherer societies. Shennan says they are known to “insist on sharing” and that in doing so they mitigate risk. (2011, p. 920). 

The ethnography on the Dobe! Kung by Lee (1984) discusses their deeply woven sharing practices, especially with regards to food. Many publications detail sharing practices (food, labor,

domiciles, landscapes) that exist or have existed historically among Native North American peoples as well. Horticultural and agricultural societies trend away from sharing practices, with large-scale, vertically organized societies exhibiting the least sharing, along with the greatest concentrations of wealth among the smallest numbers of people (Shennan, 2011). Here again, Shennan and others point to sharing itself as a strategy that manages risk (Hartley, 2019), and that the calculus in different social scales can be quite different.

The innate sense of fairness, which undergirds sensitivity to inequality and creates a behavioral platform that sustains sharing practices and benefits, has been found to exist in animals other than just humans, but seems particularly “pronounced in species that cooperate, especially those who do so outside of mating or kinship” (J. Smith et al, 2023, p. 10). Smith et al. go on to say that the sense “has long been believed to be a necessary precursor for the emergence of cooperation in particular and equality in general within human social groups” (p. 9).

Sharing practices – especially food-sharing - among nonhumans is fairly well studied, at least in certain species, and this work is often used to help understand human sharing norms and behaviors (Hartley, 2019). Sharing behaviors and fairness research in human and nonhuman beings provide some of the evidentiary basis for innate existence of the sense of possession. This research also provides an empirical basis for the innate existence of ownership concepts and norms (J. Smith et al., 2022, 2023; Ellis, 1985; Hood, 2019; and Noles, 2008. Hartley (2019) discusses sharing in the context of resource transfer, and this includes among both human and nonhuman beings.

Sharing and Exchange

Classically, in thinking about systems of exchange, economic systems would come to mind, such as capitalism, socialism and communism. However, smaller-scale societies are particularly informative in this regard. The exchange systems of people that live in traditional subsistence and horticultural

societies often demonstrate exchange for the purpose of **relationship**, foremost, and economic gain secondarily or at times, not at all. An example is the *hxaro* system of the !Kung people, which is understood to be fundamentally concerned with **relationships**.

The major means of maintaining and fostering amicable relations between groups is through gift-giving (see L. Marshall, 1976). The !Kung system of gift exchange called *hxaro* is a far-reaching and ingenious mechanism for circulating goods, lubricating social relations, and maintaining ecological balance. (Lee, 1984, p. 98)

Lee goes on to distinguish this system from the familiar transactional exchange familiar to our societies (p. 98):

the key to understanding *hxaro* is that unlike our system of economic value, which is primarily about the exchange of goods and services for money, the !Kung system is primarily about *social relations* and the goods themselves are of secondary importance.(emphasis in the original)

Furthermore, access to food, while not part of the *hxaro* system (food sharing was robust within other social contexts of the !Kung, however, according to Lee (1984)) can be part of these systems of sharing, which can then ensure that all are fed. There is suggestion in the literature (Hooper et al., 2018) that in times of scarcity these may not be reliable, but in general, they have a strong survival purpose in reducing risks as well as maintaining the relationships that safeguard access to food. These practices center reciprocity as a cultural value, which is very often a robust characteristic of the worldviews and practices of traditional and Indigenous people with regards the living world they are immersed within. It is also a term that can encompass gift-giving practices and traditions within societies, particularly where they are a significant form of cultural expression and social cohesion. “Gift exchange helps to build and sustain social relations, and so it is deeply embedded in social structure” (Carruthers & Ariovich, 2004, p. 30). Exchange systems that we study as large scale contemporary economic systems, can be seen as evidential of cultural niche construction undergirding the accommodation of larger and larger groups of human beings managing resources and conflict. 

Conclusion

Ownership frameworks, like everything else, are within a continual response loop with worldviews, the environment and environmental conditions, as well as cultural, societal political and population-level conditions. It is interesting to contemplate, however, how the *flexibility of ownership frameworks have changed* in response to the imposition on wider and wider swaths of human communities of uniform legal systems, writing systems and trade/commerce systems. This, alongside growing global adoption of the practices of boundaries and enclosures associated with the spread of private property systems, has made responsiveness to these external changing conditions increasingly constrained. Fixity in owning has also been used deliberately in the service of assimilation:

As secretary of War Crawford once pointed out, “The history of the world proves that distinct and separate possessions make those that hold them averse to change.” The possession of land in fee simple would dispose the Indians, in the expression of the Secretary, “to keep things steady. They would be the ballast of the ship.” Hagen in Nichols and Adams (Eds.), 1971, p. 205

As mentioned above, while this is believed by many to have a stabilizing effect on a human economic system, it can also make those systems very tone deaf to external factors – environmental, climactic, social – that might benefit substantially from, or even require, change and flexibility.

Thus, while the changes in the expressions of ownership phenomena we have traced above may have initially buoyed the “success” of Western cultures and worldviews and their spread throughout the world, their deep and growing defects can now be understood as the platform upon which innumerable social and environmental problems play out.

But the nuances and underlying concepts that form this platform have been hard to discern, as the platform itself acts to obscure the rich, foundational and interspecies nature of the phenomenon – ownership – that is at the center of it. 

THREE: OWNERSHIP AS FOUNDATIONAL

"We propose that ownership should be considered a fundamental, unifying biological phenomenon" Hare et al., 2016, p. 1178.

I join biologists Hare, Reeve and Blossey in urging a reprioritization of scholarship on this broad topic, with *ownership* as the focus of investigation. Exploring the ways in which ownership operates at the core of organismal life will further clarify the foundational nature of this organismal phenomenon, and allow a clear view beyond the dominion ownership worldview.

The Functions of Ownership

I created Table 1, below, to convey three categories of examples of ways in which ownership phenomena influence or undergird key aspects of organismal life. The list is generalized to lifekind, so each item does not apply to *all* living creatures or *all* human groups (this will be obvious in some cases). To whom, and how or how much each item is relevant will be shaped by the needs of the organism itself, the local conditions (climates and landscapes), local resources, and the local iterations of different species' subsistence/cultural lifeway/survival/persistence strategies. This list is deliberately *not* divided by labels (frameworks) human beings use to parse the phenomenon of ownership (such as property, wealth, possession, territory, etc.). Instead, this is an intentionally language-neutral list of ways in which ownership phenomena are enacted by various organisms in the world.

The lists are intended to be mostly self-explanatory, and I intentionally present them in a table format to make headings and items easier to compare and contrast with one another. The discussion that follows the table will be brief, and will then turn to connecting these functions with a broader discussion of organismal owning.

Table 1: Functions of Ownership

A Ownership phenomena influence or are capable of influencing (in the present and/or the future):	B Ownership phenomena enable, encode and/or clarify (and often transmit generationally):	C Ownership phenomena require or are enhanced and made more durable by:
• Cooperative or uncooperative behavior • Habitation patterns on landscapes – including location, spacing, spatial extent (size), temporal durability. • Reductions, extirpations or increases of populations of other species (prey, parasites, mutualists, opportunists, domesticates, etc.). • Conflict (interspecific and conspecific). • Stability/durability/cohesion of social group. • Distinctions between groups of conspecifics (including kin, tribe, community, subcultures, cultures, nations...). • Conspecific gender relations and reproductive behaviors/practices. • Provisioning behaviors and strategies, their success and durability, and their spatial and temporal scales. • Evenness/equality of resource access and use. • Concentration and storage of resources. • Group/community resource access/use system (i.e., economic system). engagement, practices and belief systems (including the transmission of understandings around the system, and the behavioral response (acceptance or challenge) to the system). • Mate access and mating success (i.e., dowry, bride price, bower bird archway). • Survival of offspring (immediate and longer term). • Individual or population-level lifespan: ➤ Disease susceptibility, nourishment status, vulnerability to terminal or fitness-influencing violence.	• Priority, timing and patterns of resource access (fixed (landscape)) or movable (objects, beings) and use (amongst and between groups/individuals at the species or sometimes interspecies level), ➤ which may involve techniques, technologies, knowledge and beliefs about resource access and use: ▪ this can encompass nourishment, shelter, materials and can arise from embodied, material or relational wealth. • Behavior/practices/beliefs with regards to land and things and beings (entities). • Behavior/practices/beliefs about others who are understood as having ownership/property systems. • Behavior/practices/beliefs regarding storage, transfer, hoarding and stealing. • Behavior/practices/beliefs regarding sharing or not sharing. • Intra and conspecific:	(and potentially by augmented skills or innate capacity for complexity): • Cognitive (and behaviorally enacted) recognition of associations (challenged or not challenged): ➤ between entities and owners; ➤ between self and entities; ➤ between a claim and its claimant. • Capacity for exchange of information to make, support, detect, challenge or deny ownership claims/behaviors. • Capacity for exchange of information to sustain/perpetuate ownership claims/behaviors. • Capacity for cognitive sustenance of acknowledged and/or internalized information surrounding ownership claims/behaviors over a relevant time period with regards to self/others/groups of significance. • Ability to effectively demonstrate physical

Table 1 Continued.

A (continued) Ownership phenomena influence or are capable of influencing (in the present and/or the future):	B (continued) Ownership phenomena enable, encode and/or clarify (and often transmit generationally):	C (continued) Ownership phenomena require or are enhanced and made more durable by:
• Individual or group survival (i.e., based on access to resources). • Group attributes of competitiveness or cooperativeness> also aggression or submission. • Methods and practices of resource utilization. • Methods and practices of intergroup competition and out-group competition. • Incidence or frequency of raiding, theft, resource capture (landscapes, entities, beings). • Worldviews and belief systems.	➤ influence structures (and/or dynamics, agency over/lack thereof, relations between...); ➤ obligations; ➤ kin relations; ➤ mating/marriage/provisioning practices. • Provisioning of self, mates, offspring, kin, community (or others as relevant). • Legacy preservation, enshrinement and perpetuation (of self or group level, and small to large scale). • Economic and or exchange practices, beliefs and systems.	attributes/signals of ownership: ➤ display; ➤ signals and marks/communication; ➤ creation/implementation and maintenance of physically engineered demonstrations of ownership. • Worldviews and belief systems that support, sustain, and entrench, as well as transmit ownership phenomena to conspecifics and/or progeny.

Discussion

Set A regards ways that ownership phenomena – including the ways in which both human and nonhuman beings experience and understand them – can influence organismal life. Clearly, this ranges widely, from access and securement of resources, to reproductive opportunities and success of progeny survival, to the manner and frequency of conflicts that may occur. And this can include varying temporal and spatial scales, in most of these instances.

Examples in set A relate often to being or not being [an] owner[s]. The status, whether it is a status for an organism or within a conspecific group setting (my neighbor owns her house, a male robin owns a spatially defined area (i.e., territory)) or a status of a group of conspecifics or intraspecifics (such as a human church body that together own a land area, a wolf pack that claims and defends a territorial space from other wolves; or a hive of bees that sense and remove pest species from their hive) the status can significantly impact behavior, including choices made and actions taken. Moreover, the nature of the ownership behavior – how it is enacted, how it is understood by the owner(s) and others (including friendly or unfriendly/ related or unrelated non-owners and the owned⁶²), and the cognitive frameworks around it – can have profoundly different outcomes in each instance. These may be immediate, or they may be over longer time scales. The items in the list are instances in which an ownership status itself can have profound effects –positive and/or negative - on the organism and other organisms.

Another way this can matter is in terms of exclusion, as ownership status can mean, in some instances, that others are excluded from what is owned. Perhaps, for example, a squirrel family that own their nest and who do not welcome neighborhood squirrel conspecifics unless they are invited. Another interesting way this is enacted is with regards to “pest” species, a status that itself implicitly

⁶² An interesting adjacent topic takes into account the ownability of the entity: the level of agency the entity has (or may have) with regards to the agent and how it may have profound effects on how the ownership relationship plays out. In other words, a slave is owned, where typically, mates and offspring are not owned. However, they do reflect an ownership dynamic at times during their lives (in some contexts they are owned throughout it). Thus, while they may not always be owned, some of what is occurring exists within the realm of ownership phenomena. But it may have other attributes that distinguish it, such as being offspring or a mate, or the like but, significantly, in landscapes, other lifeforms, etc, the owning dynamic and the entity dynamic relate to what “owning” means to conspecifics or heterospecifics that have some kind of stake of their own in what you are doing and how you are doing it. What matters is the level of agency, and how that plays out, which is context dependent.

denies access to something by particular entities with particular properties. For instance, the hive of bees that sense and remove pest species from the hive *as the hive is theirs and they do not want to share it with pests* precisely in the way that we don't want to share our homes with cockroaches.⁶³

A less obvious but relevant ecological effect of exclusion can include preventing a species from utilizing resources or areas, which can mean the resources aren't dispersed (like seeds) or the areas don't receive certain inputs (like manure). ⁶⁴

Set B regards ways in which ownership phenomena *establish* the status of “owner” – whether via an elaborate written legal system; a small-scale system of social norms or rules; by explicit or implicit **information** exchange with one's group members or competitors (conspecific and interspecific) in regards to place (i.e., territory) or thing (i.e., inert or living resources) AND whether this status is fixed within an individual, a family group, a kin group, a plurality of organisms grouped in a delimited spatial setting or one that might be otherwise united in an abstract way that is meaningfully understood by conspecifics (i.e., a human corporation; a flock of parrots – see Sterelney in *Entangled Life*, 2014, p. 274).

To use our above examples, my neighbor owns her house *within the structures of the society we both live in*, a male robin owns a territory and other robins *understand this due to the information he shares* regarding this status.

⁶³ (See *Pests* (2022) by Bethany Brookshire, who attributes the human concept of pests to human concepts of ownership, pp. xvii – xviii). Certainly, we aren't the only species who perceives certain interlopers as pests.

⁶⁴ Food caching is also environmental modification, particularly the larger the cache. Not only does it enable the bequeathing of the food to offspring/chosen recipients or provisioning of offspring during development and fledging, but if unrecovered or partially recovered, cached foods (seeds/nuts) may germinate. In the case of many squirrels and birds like the Clarks Nutcracker, these caches of seeds are extremely important to the dispersal and germination of their food sources, which can result in a strong mutualist relationship, such as exists between the Clarks Nutcracker and the Whitebark Pine (Tomback, 1982). When human lifeways began to include settlements (even temporary ones, such as seasonal camps) they also became food cachers (Laland, 2017a), which then would have these same effects.

Further exemplifying the above ideas, imagine how a group of humans, or a territory-holding red squirrel with caches of food, if understood to be “owners” by those who may otherwise want to obtain/use the same resources, will have the best chance of being able to meaningfully impact or determine priority, timing and patterns of access to the caches. This could also be true of the spatially defined area of land as well. This decisive **agency** with regard to the entities in question can also be sustained over time, via the inheritance of “rights” to use or access places and things as is also observed in beings that aren’t humans (J. Smith et al., 2022; 2023; Strauss and Shizuka, 2022; Chase 2020).

Defining and defending a landscape or territorial area and passing (or being able to pass on) the rights to it provides advantage to the recipients, stability (in several potential ways like materials, foods, shelter, safety) to recipients and other beneficiaries, including offspring. By influencing resource access and use, those with the decisive **agency** within ownership phenomena will potentially influence the nourishment status and stress status of beneficiaries. These contribute to health, mortality and reproductive outcomes and are understood to act as selective filters, over time, and thereby can contribute to shaping the genomes of lineages of species, and eventually, species (ibid). 

Thus, in having decisive **agency** regarding priority, timing and patterns of resource access, the organism can impact the lifeforms (the resources) in question, potentially affecting population levels of, mortality or fecundity of, or patterns of habitat use or habitat presence of other organisms of a wide variety of species.

Applicability of the above is particularly strong in social species due to population numbers and group dynamics (i.e., dynamics between the individuals in a population such as in primates or canid species, or to phenotypically-based specialization, such as in ants, termites, etc.).

Provisioning of self, mates, offspring, kin, community (or others as relevant), one of the points in set B, is an example that is similar to the above, except for its recipient emphasis. Important here is that

the owner(s) of the provisions can advantage/privilege the chosen recipient(s), leading to fitness improvements in the recipient and eventually, more offspring (Shennan, 2011; J. Smith et al., 2022; 2023; Strauss & Shizuka, 2022).

Also relevant to the points in set B, ownership status interfaces directly and often with the ownership status of others. Who else owns, what do they own, what can be contested or taken that I/we want to be ours because we lack it or want/need more of it. Therefore, grading or assessing the strength or durability of another's ownership claim or apparent status will not only be informed by one's own or one's groups experiences with and norms/rules/strategies/systems regarding ownership, but will result in potential changes to one's own/one's groups ownership status.

Set A and B functions exist and vary in elaborateness or formality often with relation to the cognitive substrate (the innate or learned or learning capacities or proclivities of the organism concerned). Set C particularly regards how information conservation, retention and retrieval (memory), or the capacity, desire, or technologies to track information, make useful meaning of it, and be able to retrieve it when needed to use at another time, can provide increasingly strong levels of scaffolding for ownership phenomena. These undergird more secure and durable ownership frameworks, which can have many advantages (while also creating potential problems) that we have already and will further address. Note that this refers to both memory that is within an organism itself (or potentially spread amongst a group of organisms, as is posited with some insect species (R. Wilson, 2005; 2014)), as well as the use of symbolic communication or its equivalent.

Wealth, Inheritance and Inequality

Ownership phenomena are intimately bound up with wealth. Ownership is often understood with regard to what organisms *have*, and what that means for others, including mates, offspring or

conspecifics, or potentially other species associated with the primary organism that may receive some level of deliberate benefit from it. This is *wealth* and it can be beneficial in the present, or it can be beneficial over near to distant time frames. The latter is often referred to as ‘intergenerational wealth transfer’ (J. Smith et al., 2022). Wealth is very important to understand as one of the foundational ways in which ownership is stitched into organismal life.

When an organism lacks wealth in a context that others (generally of the same species) possess it, can mean significant disadvantages for these organisms and their progeny:

Inequality is a general feature of human and non-human animal societies. Most societies exhibit disparities in individual access to resources, physical condition and social relationships. These disparities can be conceptualized as dimensions of wealth inequality, which translate into differences in outcomes such as health, longevity and reproductive success, and ultimately influence variation in fitness. (Strauss & Shizuka, 2022, p. 1)

In the case of human beings, inequality becomes pronounced largely when agricultural societies form (Gowdy, 2021) but foraging societies, like those of the Northwest Coast of North America, are known to exhibit it as well (Hooper et al., 2018; Donald, 1997. Hooper says that the “common denominator” is the capacity of these social structures to claim and defend “durable, defensible resources and resource-producing sites” – in other words “economically defensible resources are key generators” (Hooper et al., 2018, p. 106) of hierarchy and the inequalities of wealth, status and agency that are associated with it.

J. Smith et al., (2023) say that “Factors facilitating or impeding wealth inheritance can play a prominent role in shaping inequality for both humans...and non-humans” (p. 2) and that:

Considerable research across multiple disciplines has contributed insights into the variables and mechanisms influencing variation in inequality. Within the evolutionary ecology paradigm, perhaps the most frequently invoked drivers are ecological parameters such as resource density, predictability, and patchiness or clumping that facilitates control by a subset of individuals within a society... archaeological case studies... also implicate Malthusian population dynamics involving competition for diminishing resources... another key variable is the available alternatives to being subordinated - defined as wielding relatively low power within a social group. (Smith et al., 2023, p. 2)

Wealth is understood and interrogated most often within the three dimensions that J. Smith et al. (2023) summarize as these “attributes or possessions that contribute to well-being or fitness, including material (e.g. food, territory), relational (e.g. social networks) and embodied (e.g. knowledge, skill) forms” (p. 2). The terminology is the same within the anthropological literature.

Wealth is increasingly being studied across species. Strauss and Shizuka, 2022, (p. 2) say that:

Animal societies are also structured by multiple dimensions of wealth. These same three aspects—material, relational and embodied wealth—are key elements of animal societies and map clearly onto established concepts in ecology and evolution, such as constructed/defended niches, social niches and phenotypic traits. Material wealth currencies include defensible resources such as food items, nest sites and territories, as well as ‘constructed’ resources such as food caches, shelters and nest decorations ... Relational wealth describes an individual’s social niche, encompassing social relationships and interactions such as grooming, huddling or dominance...Embodied wealth is made up of phenotypic currencies such as body size, fat reserves, sperm quality, ornament size, display quality or information.

A schematic from Strauss and Shizuki (2022), reproduced below (Figure 1), provides a visual representation that clarifies ecological dynamics of wealth inequality amongst mammals. Shennan (2011), speaking of human beings, puts it this way: “embodied wealth refers to investment in nutrition affecting offspring body weight, for example, or training in practical skills; relational wealth refers to networks of useful social contacts that may be passed on from parents to their children; material wealth obviously refers to property, such as land and animals” (p. 919).

The *heritability* of wealth – of each of the kinds above – is also increasingly understood to be an important aspect of the influence of wealth on fitness outcomes (Shennan, 2011). In later sections we will discuss ecological inheritance; a significant aspect of niche construction theory that understands inheritance (the wealth that we are discussing) as a significant contributor to evolutionary outcomes for and beyond the organism in question.

Figure 1, The Ecology of Inequality (Strauss & Shizuki, 2022, p. 3)

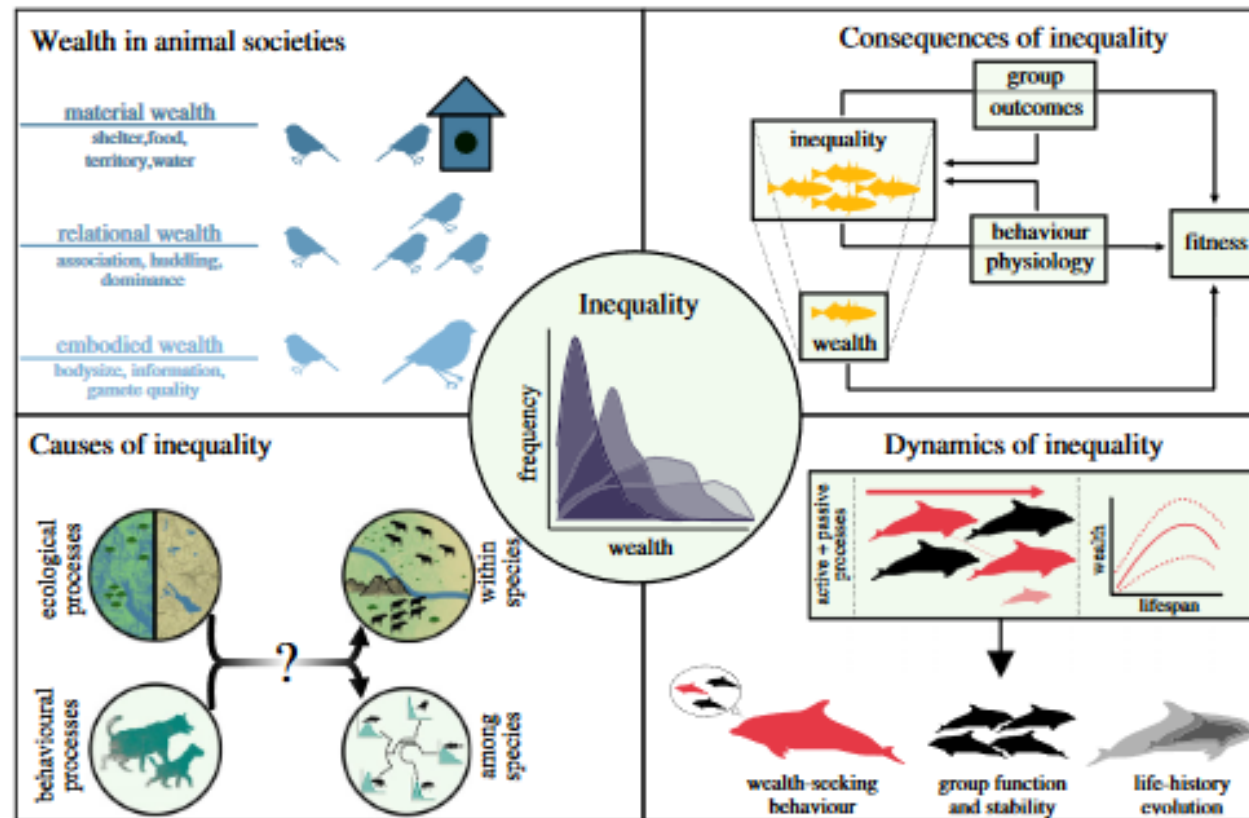


Figure 1. A schematic of the ecology of inequality. Centre circle: inequality describes the distribution of wealth among individuals, which can be measured using metrics borrowed from economics (box 1). Top left: wealth is taxonomically broad and occurs in many currencies, grouped into three aspects. Top right: inequality emerges from individual wealth through bottom-up causation and has a top-down influence on individual outcomes, both directly and via its effects on group outcomes. These effects are independent of the effects of wealth, but can feed back to influence wealth and inequality. Bottom left: multiple ecological (e.g. food/water distribution) and behavioural (e.g. wealth inheritance) processes are hypothesized to influence the amount of inequality in societies, but it is less clear at what scale this influence occurs or to what degree these processes operate across species. Bottom right: inequality is dynamic. Active and passive processes produce changes in wealth within an individual's lifetime and across generations, leading to typical wealth trajectories over the lifespan. The amount, timing and direction of wealth trajectories are expected to exert selection on individuals to optimize their experienced costs and benefits of sociality. (Online version in colour.)

What is important to point out here is that wealth inequalities are understood to be significant arbiters of outcomes across taxa: the capacity to secure and maintain access to resources, a common outcome and often a central goal of ownership phenomena – enables doing so.

J. Smith et al., (2022) provide two images showing a variety of examples from across taxa. Figure 2 shows the widespread nature of intergenerational wealth transfer. Figure 3 shows the effects of inequities on different species (see pages 118 and 121).

These illustrations also provide excellent examples of kinds of entities nonhuman beings own, such as anemones owned by clownfish,⁶⁵ nests owned by hover wasps, areas of delimited space owned by leks of red grouse, the territories owned by hyenas and stored food owned and housed within a red squirrel midden. More examples are found in Figure 2, as well.

Wealth and inheritance practices in human societies have long been studied in anthropology and other disciplines. Shennan (2011) says that different inheritance practices around the world in different kinds of societies show a fairly consistent pattern in which transmissible wealth provides substantial benefit to offspring and their outcomes, and that “a key factor here is the characteristics of the resources themselves: ...the extent to which they are excludable and divisible and thus amenable to some sort of private ownership” (p. 919). This echoes above statements, in which ‘economically defensible resources’ – where the benefit of maintaining **decisive agency** over the resource outweighs the costs involved – “are key generators” of hierarchy and wealth legacy. 

⁶⁵ This example is one where owning may or may not apply, depending on which paradigm you are using (see Chapter 6). The article this illustration comes from regards wealth, and this instance serves to demonstrate that the anemone can be passed to offspring. Anemones have less agency than clownfish, due to their fixed nature, so whether an ownership dynamic exists is more subject to framework, as the relationship is clearly mutualist – which is also common in ownership-relevant relationships, as is more readily discerned within my new paradigm.

Shennan (2011) says that “It is now well established that in societies where there is heritable private property in land and/or animals, the availability or otherwise of inherited resources makes a major difference to individual reproductive success” (p. 921).

In human societies, gender and other attributes of persons (including birth order) is often significant to the operation of wealth transmission, and is known to influence post-marital residence and expectations for newly integrated spouses, along with gender survival ratios, and even marriage practices (i.e., monogamy, polygamy, polyandry). These practices differ widely but relate the effectiveness of intergenerational wealth transmission, particularly with regards to reproductive outcomes, which are standard criteria for evaluating its evolutionary advantages. Shennan (2011) says that “strategies focused on the maintenance and increase of wealth can even be more successful in reproductive terms than strategies directed at maximizing reproductive success in the short term” (p. 918).

Inheritance practices in Western societies are also influenced by Roman law, which we discussed earlier, including its profound influence on shaping mediaeval and Renaissance Europe and European colonies, and the societies calved from the original colonizing cultures (Henrich, 2020).

Despite the interesting new research cited above, wealth is an area in which ownership phenomena is most commonly conceived by Western minds within the context of human cultural expression, rather than as something relevant to organisms more generally. Again, an artifact of the dominion paradigm of ownership.

Figure 2: Intergenerational Transfer of Wealth (J. Smith et al., 2022, p. 2)

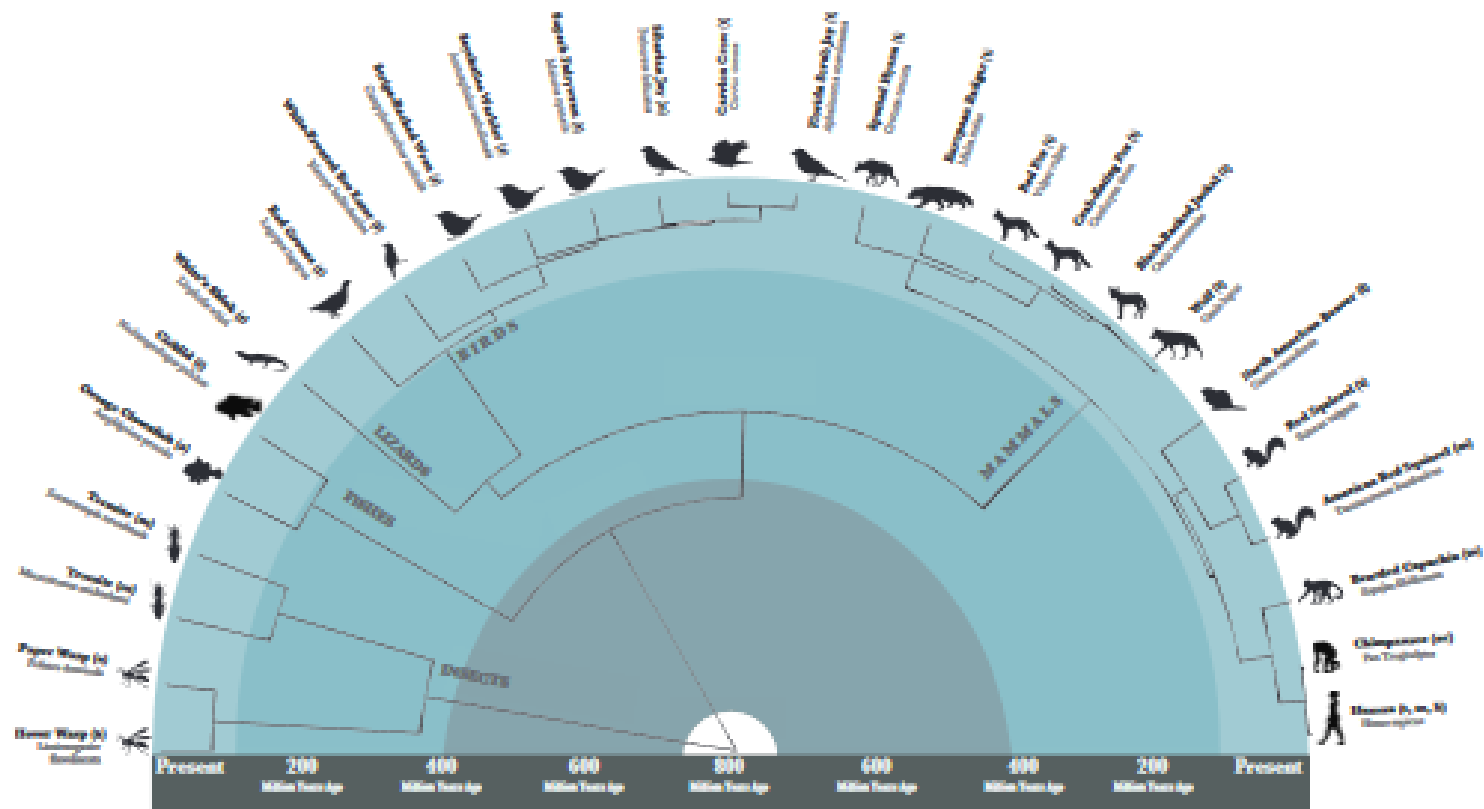
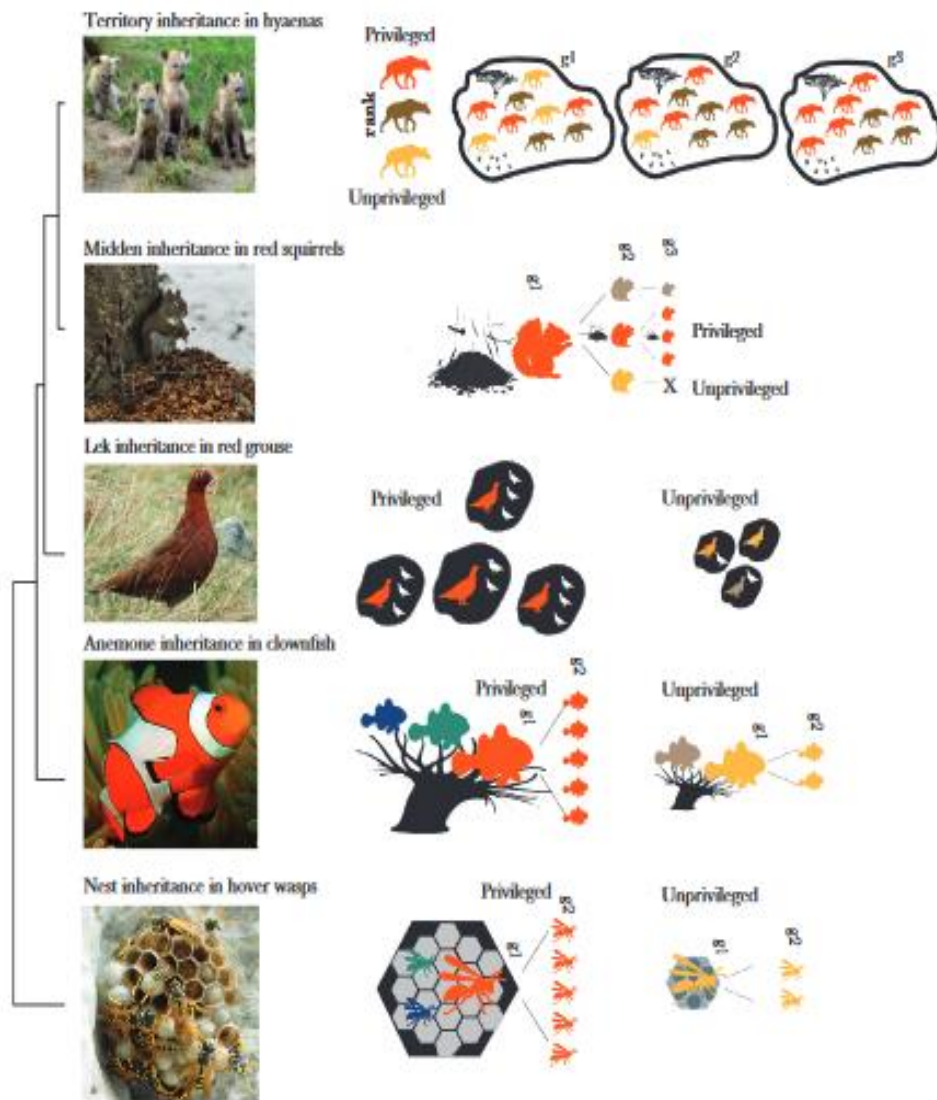


Figure 1

The intergenerational transfer of material wealth is widespread across the Tree of Life, with taxonomic examples ranging from social insects and fish to mammalian carnivores and primates, including humans. Examples of commodities transferred from one generation to the next include a (n) nest, (m) mound, (a) anemone, (l) territory, (l) lodge, (m) midden, (to) tools, (nc) natal community, and (l) livestock (see Supporting Information for full references and additional details).

Figure 3: Examples of Transferable Wealth (J. Smith et al., 2022, p. 3)

**Figure 2**

Salient examples of commodities privileged to some but not others via the intergenerational transfer of material wealth include access to land, shelter, and stockpiles of food. This differential access produces compounding effects over multiple generations (from g_1 to g_{1+n}) that privilege some family lineages over others. For example, some (b) North American red squirrels (g_1) transfer stores of acorns (middens) to one individual (g_2) but not to others, imposing differential fitness outcomes on young squirrels that perpetuate across future generations (g_3). In a fish species (d), inheritance of high quality (larger) anemones privileges some clown anemonefish over others, influencing the fates of the next generation of fishes. Examples also involve birds, such as in the red grouse (c); sons gain privileged positions on leks, and thus mating opportunities, when their father is nearby and after he dies such that land ownership is passed on from one generation to the next via the paternal line (Photo by Craig Jones). In a social carnivore, the spotted hyena (a), offspring inherit their social rank from their mothers within the maternal line (matriline) and priority of access to ephemeral food within shared territories. As a result, full family lines within this species increase in their representation over time whereas other lineages decrease in numbers or even go extinct over time. Similar patterns exist in some social insects (e) for which some privileged wasps inherit nests while others do not, benefiting some lineages over others to further perpetuate the cycle of privilege. All other photos reproduced with permission through creative commons license.

Ownership in Lifekind

To underscore my argument that ownership is a fundamental phenomenon of the living organisms of the Earth system, I will turn attention now to notable ways in which ownership phenomena exhibit attributes or have effects relevant to evolution, ecosystem function, and organismal success. Many of these give compelling indications as to why I would argue ownership phenomena are likely⁶⁶ to have been present and persistent through time, and why they are significant strategies of so many species. These attributes and effects are intended to lend support to my contention that ownership phenomena are embedded in the Earth system. Some of this may feel a bit repetitive as at times I will reiterate points already raised, but hopefully in ways that add context or offer further insight, or connect existing threads.

Selection

Ownership phenomena (I will often use the abbreviation OP from here on) can affect natural and/or sexual selection. OP can influence selection pressures at the individual and population levels. For the owning organism(s): the status can provide advantages (wealth enhancing health, fecundity, mortality), and can disadvantage competitors and conspecifics. For organisms that own, or that are owned, an insulating effect can be created regarding certain selection pressures/natural selection filters than would otherwise be experienced at a population-relevant level (and that might be magnified by other co-extant influences with similar insulating effects).⁶⁷ The decisive **agency** regarding entities

⁶⁶ While I stand behind this statement, it is certainly not proven that ownership phenomena have been present throughout time. Based on this and other evidence I present, however, I argue that it is very logical to conclude that it is part of the basic organismal toolkit.

⁶⁷ I.e., cooperating on, or building a burrow are having the same effect, but when you look at the underlying motivations and drivers, the stake of owning is involved in driving both cooperation regarding building, or burrow building itself.

inherent in OP is advantageous, in terms of reproductive/regenerative effect (Shennan, 2011). This may also simply change the nature of some selection pressures; this can be on groups, lineages and/or individuals.

Generally, engaging in ownership offers beneficial effects to owning organisms, such as in reducing conflict (mortality reductions, reproductive stability and fecundity buttressing); in improving resource availability, reliability, predictability for the owners; in conferring reproductive and health advantages to those who have agency over more resources/entities; and in terms of wealth (embodied, relational or material) transmission and therefore maintenance, which all have advantages that can relate to both quantity or quality of offspring, as well as durability of lineages (Shennan, 2011; J. Smith et al., 2022; 2023).

Where OP is not beneficial to natural and sexual selection, it is still impactful, and often more so. When an organism does not or cannot make and sustain an owning claim, and where the claims of other organisms place it at a disadvantage from resources not being available, reliable or predictable, this can reduce, health, safety, fecundity and increase mortality. All of which may have the effect of reducing the genetic contribution of this organism(s) to its lineage or to the species at large (ibid).

Engaging in contests to obtain the resources owned by others can similarly put one at risk (Sherratt & Mesterton-Gibbons, 2017; Baker 1983) with negative consequences for reproduction or possibly epigenetic effects from conflict engagement itself (Yehuda & Lehrner, 2018; Youssef et al., 2018).

And as we have discussed, it can have effects (depending on the nature of the ownership phenomena we are talking about), on other organisms' evolutionary trajectories (i.e., as influenced by a dominion or relational ownership system). This would relate, for instance, to the effect the dominion ownership model is having on extinction rates.

Furthermore, there can also be benefits, in terms of evolutionary outcomes of survival and reproduction, to be gained from top-down, violent, coercive and sneaky forms of ownership behaviors. This supports the idea (discussed further below) that there are reverberating, thus self-perpetuating benefits to the dominion ownership model, which particularly prioritizes the acquisition and hoarding of material wealth as a strategy to undergird organismal (in this case, a particular cultural group of humans) advantages.

Population

Ownership phenomena can significantly influence population levels. As explored in the “functions” tables, ownership phenomena can enhance the potential for population increases, and positively influence reproductive outcomes in several ways, but most notably via resource securement and transmission (See Powell et al., (2009) for discussion of how population levels may have contributed to the emergence of modern behavior in anatomically modern humans, which would include many of the ownership phenomena functions that I identified above. Also see Horiuchi (2008) Fogarty (2017) and Stutz (2020) for discussion of population density and cultural change).

Expanding human populations can then affect other local, or even distant living things, depending on the spatial extent of resource utilization (see Morisson (2018), Shennan (2011), Wade & Sultan (2023)). An example might be how guarded/defended food production (i.e., agricultural systems) resulted in population increases (Royal Anthropological Institute, 2021).⁶⁸

Further, population growth (such as amongst social species that engage in agriculture and/or animal husbandry, such as humans, ants, termites) can result in growth of the populations of

⁶⁸ Royal Anthropological Institute (2022, January 5) *Huxley Lecture 2021 – Prof. Stephan Shennan*. YouTube. URL <https://www.youtube.com/watch?v=NO8xqMvqZ5c>

guarded/defended biota (plants and animals), which have their own ecological effects as a result of their own resource and spatial needs.

Change

As alluded to above, OP also influence rates or incidences of change. They can be understood as a strategy to ensure stability: stability of access to entities relevant to survival and reproductive consequence (such as space and nutrient sources, as well as mates, and even the likelihood of offspring survivability). Further, it can often also mean decisive **agency** with regards to what happens to a particular entity, which can reduce the incidence of potential change as well (i.e., a shelter or nest, a farm, a grove of fruit trees: all of which can improve survival and reproduction if conserved or managed by a decisive agent or agent group).

According to Sonia Sultan⁶⁹, life itself is fundamentally *about* change. OP concern maintaining a status, holding something in stasis; thus OP has the capacity to slow down and exert agency with regard to the likelihood of some kinds of change, which can delay or prevent a variety of uncertainties, or bring about desired (or undesired) outcomes.

Climatic stability is believed to be a significant factor in organismal success (Hawkins et al, 2003); homeostatic maintenance –maintenance of an optimal physiological status - is understood to be central to organismal success, as well (Turner, 2016). OP are frequently engaged in with the goal of stabilizing the physiological experience of climate, resulting in stasis of physiological status (such as body temperature, using shelter or externally-sourced insulating materials, both of which can be subject to OP). This stasis-maintaining effect of OP can be similarly beneficial to both individual organisms and

⁶⁹ Interviewed on Big Biology, Dec 14, 2023 (Woods & Martin, 2023), “the one thing we know about life, and what makes life different than rocks is the change. We know that is real. And we know that change is happening on all kinds of timescales, all the time. And that's what's so distinctive about the processes that go on in living things” (at 54:23).

populations of organisms. The more highly engineered and tightly structured the behavior is - especially if it becomes a system that spans many individuals and many groups of individuals - the more robust the effect is likely to be (such as a termite mound, or a human settlement with a power grid that supports HVAC systems).

Further examples of the alteration of the rate of change as an effect of owning include; who has access to resources of all types (person, place, thing) and therefore, what can be done to the resources; how much sharing goes on and with whom (though some access can't be controlled as easily (pests, invasive species); and *private property* - particularly thought to constrain change and provide stability (see Chapter 2, Part 2 discussion). However, this dynamic can be seen as an ultimately a short term benefit, as flexibility is necessary to respond adaptively – in ecological, economic, psychological and evolutionary senses – to changes such as the climatic ones that we are currently undergoing. This is relevant to the 'fixed' nature of the private and other commerce-based property (ownership) regimes worldwide, which impede adaptation/flexibility, constraining change even when urgently needed. For example, privately owned homes in a floodplain, and the challenges of altering that status to benefit the human and ecological community more generally.

Continuity (a facet of change) is shaped by ownership phenomena as well: the level of investment of time and effort into an entity, and the likelihood and manner in which that may be passed along to descendants (and otherwise preferred recipients), can often be shaped by ownership status (Mohlenhoff & Coddling, 2017). It can also shape behavior like migration or relocation (or not doing so), or how vigorously defense is undertaken (Sherratt & Mesterton-Gibbons, 2017).⁷⁰

⁷⁰ This might remind some readers of Garret Hardin's 1968 "Tragedy of the Commons" theory, which is overly esteemed in the literature and was contested in 1990 by Elinor Ostrom in *Governing the commons: The evolution of institutions for collective action*. It now has a more liminal status in the literature though it continues to have undue influence more generally, as it lends support to private ownership as a policy goal. The basic assertion is that the more individualized the ownership of

Homeostasis: Ownership as Homeostasis Seeking

Another fascinating way to more deeply understand the operations and benefits of ownership phenomena is by understanding it through the lens of homeostasis. Homeostasis, according to this helpfully comprehensive yet concise encyclopedia entry is:

any self-regulating process by which biological systems tend to maintain stability while adjusting to conditions that are optimal for survival. If homeostasis is successful, life continues; if unsuccessful, disaster or death ensues. The stability attained is actually a dynamic equilibrium, in which continuous change occurs yet relatively uniform conditions prevail. (Homeostasis, 2023)

I suggest that ownership phenomena can also be understood as a behavioral strategy through which organisms seek, achieve, and especially maintain homeostasis – as stability and equilibrium - with regard to resources and other conditions in the external world. Which would make them advantageous, and reinforce their utility and advantages to biological beings, and perpetuate their transmission either through genetic or other forms of legacy conveyance, as we have discussed.

Above, I discussed how ownership phenomena can impact the incidence of change – including reducing behavioral and strategic flexibility. Inheritance, whether of an ecological or cultural nature, is also a way to maintain a status – or a status quo – that is (generally) beneficial to the recipient: and stability of, and the predictability of receipt of wealth can, and often do, both contribute to organismal homeostasis, as defined above.

something is, the greater the interest/investment/vigilance will be with regards to it. What is more defensible as a claim is that having an agential connection to something – whether it be responsibility for or decisive **agency** over, and with less regard to the number of owners involved – will increase the agents interest in the entity. This could apply in a wide variety of ways to storing (keeping/conserving over time), transferring (including in exchange or barter), hoarding (a variation on storing with further underlying motivational and purpose-related drivers) and stealing (obtaining without the consent of another who has already established agency over something). However, this is true of groups – shared ownership systems - as well. See Acheson (2015) for discussion (p. 37).

For instance, the beaver dam. This structure contributes enormously to the capacity of the beaver(s) that own(s) or bequeath(s) the lodge to maintain a life-sustaining state of stability. Further, physical changes in the environment as well as amongst the relationships of the beavers may be in constant flux, but the lodge itself is a source of constancy.

Biologist Scott Turner is a specialist in physiology, and much of his research has centered on the capacity of termite mounds to maintain a homeostatic environment for its inhabitants, particularly within an unwelcoming external environmental context. When I encountered his work I immediately was struck by the relevance of the concept of homeostasis to the way in which ownership behaviors are useful and utilized by organisms. I was particularly interested in his argument that niche construction is extended homeostasis, and that, “an adaptive “boundary” can be any interface between organism and environment that can be modified so that matter and energy flows enable the persistence of the modifier. This is the essence of niche construction” (Turner, 2016, pp. 211-212). I suggest that the boundaries – whether tangible or abstract – of ownership phenomena can often act effectively, as adaptive boundaries for organisms. Moreover, ownership can also be seen, through Turners’ analysis, as extending the organism (or groups of organisms) itself/themselves, as ownership phenomena make or help make it possible to achieve the “deeper homeostasis that is the extended organism’s fundamental organizing principle” (Turner, 2016, p. 213).

Conflict

Ownership phenomena influences incidence of conflict between and amongst organisms. I argue further below that ownership is a strategy of conflict management, and this is congruent with the premises and findings of a body of literature that models resource contests – conflicts – and how ownership status affects outcomes (see also Introduction section on the evolution of ownership, and

discussion in Chapter 2 in “Possession,” and see Gintis, 2005; 2013; Hartley, 2019; Krier, 2009; Stake, 2004; Sherratt & Mesterson-Gibbons, 2015; 2017).

OP can instigate and/or perpetuate conflict (contesting ownership or attempting to obtain ownership from another owner) or manage/reduce/prevent conflict (when OP provide operative information, or become a system or set of rules or practices that reduce or prevent contests or disputes regarding who has agency with regard to an entity of concern, such as they do in most human legal codes).

This matters to evolutionary processes because conflict can cause declines in fitness and mortality of the parties directly and indirectly involved. Conflict can significantly affect the species involved and also significantly impact on other species (“collateral damage”). Interesting effects can occur: examples could include landscapes affected by warfare, including Chernobyl, landmines, other artillery remainders; meaning effects, even of a genetic nature, on the landscapes and on populations of other beings. Another interesting example is reported by Chagnon (1983): Yanomamo mobility occurred in response to conflict with other groups. Disputes between communities would often result in the relocation of settlements, which would then precipitate new forest clearing, plaintain planting and structure building, etc. (pp. 68-77). Similar dynamics of group relocation can result from conflict amongst other species as well. OP can influence the occurrence or outcomes of these dynamics.

Conflict may be between humans, between humans and other species, between nonhumans of the same species/and of different species. The conceptual framework of pests and invasive species (a concept, as noted above, Brookshire (2022) attributes to notions of ownership) and the concept of invasion or invasiveness itself (especially) are relevant to multiple threads of my arguments.

Equally, for any human groups or nonhuman social (especially) species it is advantageous to have a conflict management system – which I argue OP often operate as – that mediates access to resources

that may otherwise be contested, and that can create greater certainty about their availability in the short and long term.

Mimicry and Countering

OP beget OP. There is evidence that ownership system profiles amongst humans can influence how ownership is practiced by other human beings (in other words, they have some social contagiousness properties (Haynie et al., 2021)⁷¹ This intrigues me: might iterations of ownership behaviors themselves also inherently encourage the elaboration of similar iterations in other creatures (con or interspecific) because of how advantageous it would be to those *practicing* the behaviors, and disadvantageous to those who are *not*? Thus, mimicking or countering behaviors might increase the likelihood that organisms would utilize and elaborate upon OP behavioral strategies. This could result in influences upon the evolutionary trajectories of the organism (also see discussion of social diffusion of innovation by James Steele in Shennan (Ed.), 2009). Further, mimicry and countering are characteristic of cultural niche construction. See discussion of copying in Laland, 2017.

Diversity and Variety in the Phenomenon of Ownership

OP reflect diversity in their configurations, deployment and effects. It is clear that there are gradients and spectrums of expression and/or gradients and spectrums of significance of OP to organisms' unique strategies (life histories); as well as gradients and spectrums of impacts of one or another species OP on conspecifics or heterospecifics.

Variations in the elaborateness of OP may reflect variation in how significant or useful specific OP practices are to the reproductive success of individuals and populations, and/or to the capacity of a

⁷¹ This is a manuscript preprint, I have not been able to locate a published version. This may impede the strength of this point if it did not end up emerging out of peer review. However, this lack of emergence could also relate to journal fee barriers or myriad other issues.

group to grow exponentially larger while also sustaining its group cohesion. This is one reason I find ants and termites so interesting, because looking at their strategies through the lens of OP means pondering their management of spatial and entity interaction and exchange. It can also lead to very interesting interspecies insight possibilities when considering their long-term behavioral trajectories in comparison with those of humanity. I see this as a fertile realm for further research.

There is logic to larger group size meaning greater likelihood of OP becoming more complex or elaborate, as it would aid in managing the increase in resource ownership organization as well as conflicts (Horiuchi, 2008). Findings within the social hierarchy and inequality literature, along with the literature examining wealth transmission, supports this as well.

Entangled Ownership

Below, I highlight areas that give indications – some quite robust – of the entangled nature of ownership phenomena with the evolution of organisms: a reciprocal causality that I suggest exemplifies niche construction and/or cultural niche construction in action (see further discussion in Chapter 5). It is beyond this study to conclusively substantiate these associations as examples of niche construction demonstrating evolutionary effect within genomes, but I assert that it is fair and appropriate to offer them to the attention of readers, as they are intriguing, they are congruent with the theories under discussion and arguments I have been making, and they have great potential for further research. Each of these topics deserve a full chapter, or even a full dissertation to themselves: perhaps some energetic graduate students will learn of them and be inspired.

Spatiality

Organisms live in and utilize spaces on Earth, and each have evolved to navigate them and be oriented to/in them in their own unique way. Thus, organisms have physical and neurological

infrastructure to do this (Hartley et al., 2014; Durieux & Leidvogel, 2020; Akesson et al., 2014; Dolins & Mitchell (Eds.), 2010). Menti et al., 2023 say (p. 1981):

Most living organisms need to navigate through the environment during their lifetime as they search for food and conspecifics while avoiding dangerous situations. At any given time, the individual must keep track of its own position and heading in order to appropriately select the direction to pursue. This process occurs while the individual may or may not have visual contact with its goal and requires the continuous shaping of its behaviour in the presence of ever changing and sometimes contradictory stimuli while filtering the 'noise' from irrelevant, redundant or predictable signals. Animals achieve this result by gathering and processing internal and external cues, both global and local, from different sources. Idiothetic cues include proprioception, acceleration sensing and the translational and rotational optic flow (related to the velocity of angular and forward/backward motion). Allothetic cues may be subdivided into global and local cues; examples of the former include the polarization pattern, the intensity and chromatic gradient resulting from the direct scattering of light in the upper atmosphere, the light from stars and other celestial bodies and Earth's magnetic field, whereas the latter include visual panorama and landmarks, wind direction and odour plumes and tactile information (Heinze, 2017). Clearly, cues are not only related to motor activities, but also to all the other situations which involve re-orienting of the animal itself, even when it is not physically moving, such as occurs in the case of humans performing tasks while engaged in a virtual reality (VR) environment

Most ownership phenomena take place in a spatial context, though there are instances of non-tangible ownership as well (such as intellectual property see Appendix A) which I contend are derivative of the foundational phenomena). With varying degrees of complexity, depending on the organism, spatial cognitive and sensory infrastructure in organisms are involved in many of the aspects of owning that we have discussed. More significant, however, is our framework: looking at spatiality through the lens of ownership as an underlying manner in which organisms organize and understand, categorize, and then act in regards to salient aspects of the external environment.

According to Hartley et al., 2014, p. 2:

cells in the hippocampal formation can represent an animal's current location or heading independently of individual sensory cues and particular actions. Their firing fields are anchored to the external environment (and thus termed 'allocentric' or world-centred), rather than to individual objects, actions or to the body. These cells appear to provide the basis for a cognitive map: a representation of the environment and the places and objects within it that is to some extent independent of bodily posture or orientation. As such it

affords long-term memory for the spatial relationships between places, the routes between them, the resources, goals and hazards they contain, in that it does not require continuous updating as the animal goes about its daily life

A recent theory of intelligence by Jeff Hawkins (2021) centers cognition on the connection between cortical function and the external world.⁷²

The Thousand Brains Theory of Intelligence proposes that rather than learning one model of an object (or concept), the brain builds many models of each object. Each model is built using different inputs, whether from slightly different parts of the sensor (such as different fingers on your hand) or from different sensors altogether (eyes vs. skin). The models vote together to reach a consensus on what they are sensing, and the consensus vote is what we perceive. It's as if your brain is actually thousands of brains working simultaneously.

A key insight of our theory is based on an understanding of grid cells, neurons which are found in an older part of the brain responsible for navigation and knowing where you are in the world. Scientists have made great progress over the past few decades in understanding that the function of grid cells is to represent the location of a body in an environment. Recent experimental evidence suggests that grid cells also are present in the neocortex. We propose that grid cells exist throughout the neocortex, in every region and in every cortical column, and that they define a location-based framework for how the neocortex works. The same grid cell-based mechanism used in the older part of the brain to learn the structure of environments is used by the neocortex to learn the structure of objects, not only what they are, but also how they behave. (Hawkins & Maver, paragraphs 1 and 2)

I see this as significant and relevant because of how it interweaves cognition with spatial perception and representation, particularly the centrality of the relationship between what goes on in the neural centers of, in this case humans, and what exists in the outside world.⁷³ One could argue (and I might if I had the space and you were my helpless captive) that ownership is most basically and foundationally spatial agency – agency with regard to the external world – in organisms.

Perhaps this wouldn't be controversial, yet it's not something we think about much. Spatiality underlies, I would argue, the vast majority of what we do as beings. We must know where we are and

⁷² <https://www.numenta.com/blog/2019/01/16/the-thousand-brains-theory-of-intelligence/>

⁷³ This may also explain some of the mystifying sensori-motor impediments of dementia.

be able to adroitly handle that reality to survive and succeed⁷⁴. This is clear when we recall how vulnerable any animal can become if it is lost or disoriented, or if it is unable to balance or move normally. It often cannot feed itself, shelter itself or protect itself adequately over the short or long term (without the intervention of others).

Other evolutionary contexts to which organismal spatiality might contribute insight include adaptive radiation, island biogeography and generally, effects on organisms of spatial isolation. Each of these could benefit from deeper investigation of how ownership phenomena related to spatial organization may influence species change and diversification.

Ownership phenomena (OP) that strongly delimit space and/or resource access influence “ecological opportunity,” defined “loosely” by Schluter (2000) as “a wealth of evolutionarily accessible resources little used by competing taxa (p. 69)” Losos and Mehler (2010) suggest that the circumstances under which ecological opportunity might be encountered include “isolated areas,” where a “new type of resource” may become available; a situation where a “key innovation” feature of a species allows for new resource utilization; or under circumstances marked by “depauperate biota (p. 393).” And according to Stroud and Losos (2016), interspecific competition and niche construction are ways that ecological opportunity mechanistically lead to adaptive radiation.⁷⁵

There are numerous ways in which OP can be involved in or drive the isolation of an area, the creation of ecological opportunity, the exposure (via extraction) of a new type of resource, the depauperation of biota, or in influencing key innovations.

⁷⁴ This will remain the case even if human beings at some point completely immerse themselves in a virtual reality, as those virtual realities are constructed to interface with existing spatial orientations existing in human brains.

⁷⁵ This paragraph and ideas are paraphrased from a paper on adaptive radiation that I wrote for a graduate Insect Ecology class in 2020.

Spatial Organization of Organisms Insect territoriality offers excellent examples for OP affecting both spatial distribution and use of space and resources by organisms, where study of many species, both social and not, has shown territoriality impacting species distribution and mortality, and having ecological or trophic effects (Baker, 1983).

Hölldobler (1980) says that “territorial strategies are especially elaborate in animal species that live in well organized societies (p. 731), and that “the geometry of the territory and the social mechanism by which the territory is established and maintained are inseparable” (p. 733).

Tarnitas et al, 2017 and Pringle and Tarnitas (2017) studied patterns of termite mound distribution and found evidence for OP (termite territoriality behaviors) contributing to these grasses’ growth and distribution patterns:

Self-organized regular vegetation patterns are widespread...such as North American Mimosa mounds, Brazilian murundus, South African heuweltjies, and, famously, Namibian fairy circles...many overdispersed vegetation patterns worldwide have been attributed to subterranean ecosystem engineers ...Here we provide a general theoretical foundation for self-organization of social insect colonies, validated using data from four continents, which demonstrates that intraspecific competition between territorial animals can generate the large-scale hexagonal regularity of these patterns. (Tarnitas et al., 2017, p. 398)

This work can be generalized to the relevance of spatial distribution of groups of organisms to the environment or to other species. Concentration of organisms can relate to the defensibility of a space, the resources within it, attributes of the landforms, etc. But for our purposes, what is meaningful is that OP – in this instance territorial delineations and boundaries - have a role in how distribution, dispersal and resource use patterns can occur and shape landscape and ecosystems, and how they can affect evolutionary outcomes in other organisms. This fits within the ecological modification framework of niche construction theory, and the manner in which the activities of one species influence the opportunities or lack of opportunities for others. 

Patterns As ownership phenomena often create abstract or real boundaries, these can result in strong, easily observed patterns on landscapes. This is applicable to the life histories of a diverse range of creatures, and in ways the same as, similar to and wildly different than human beings. Examples of pheromonal boundaries, guarded territorial boundaries in birds, mammals, insects, physical boundaries of me/you/us/them and mine/yours – even the social space that is allowed or normatized –can influence evolution in interesting and meaningful ways. However, it is the result of boundaries that is of interest here. In particular, how reciprocal causation and evolutionary effects work as a result of boundaries which often originate as a result of ownership phenomena.

In the termite example above, we see territorial defense creating and shaping habitat, contributing to the evolutionary outcomes of other species in the territorially affected area. These can feed back to the landscape and other inhabitants with regard to habitat choice or dispersal. The termites themselves are in a feedback loop of reciprocal causation as they shape their social fissioning/territorial delimitations on environmental cues as to resource availability, which they are then also shaping via their dispersal/fission behaviors.

As regards humans, the last several centuries have seen explosive growth in detectable boundaries – including the spectacular instance of lights on continents as seen from space! These have relationships with ownership phenomena, such as human habitation, economic activity, resource use and securement. Through anatomically modern human (AMH) history, boundary-based landscape patterns were likely to be less readily discernable due to lower population levels and gentler subsistence strategies and technologies. The boundaries existed, however – territories of use, patterns of use and their effects on landscapes, property norms, and possession worldviews and beliefs would all undergird them. Such as in the case of a human group with ancestral territory who have burning regimes, as is the case in Indigenous North American and Australian societies (Abrams and Nowacki, 2008). These

boundaries would have offered the benefits we have already discussed for these populations. And in the instance of fire regimes used to alter landscape fecundity and other aspects of resource availability, clearer (visible) boundaries might become apparent, even rise to the functionality of boundary or presence signaling, to other human groups or other organisms.

With the advent of settlements and horticultural, agricultural, and at times pastoralist use of landscapes by humans, these generally became, as also discussed, more fixed and temporally stable. Landscape patterns that may persist far longer often emerge from this. Even use-patterns of livestock would have – and certainly now result in – landscape patterning arising from their effects on landscapes and the species therein. Which in turn, often affects species distributions based on growth patterns of native plant species, for instance, or influencing or causing extirpation of predators.

Innateness

Evolutionary theory and empirical studies suggest that many animals, including humans, have a genetic predisposition to acquire and retain property. This is hardly surprising because survival is closely bound up with the acquisition of things: food, shelter, tools and territory. (Stake, 2004, p. 1763)

As referred in various parts of the above text, research centered on the innateness of “owning” has been undertaken in a variety of disciplines, especially with regards to humans, other primates and birds. Gintis, for instance, frames ownership phenomena as behavioral propensities and situates the “endowment effect” at the center of these and as demonstrative of the fact that they need not reside within a legal or institutional framework in order to be valid and observed (2005, 2013).

Lita Furby is credited with early research into owning behaviors/beliefs in children (Gintis, 2013). Hood (2019) argues for the innateness of the sense of possession “something that humans share with the rest of the animal kingdom” (p. 51) but that, as mentioned above, some (including Hood) believe is

distinct from ownership. More confirming research in regards to innateness has been done in both humans and nonhumans since that time (Pierce & Peck, 2018; Gintis, 2013; Noles, 2008).

As was also mentioned earlier, as a result of this research there is acceptance of the idea that engagement with owning shows attributes of innateness. As I discussed above, however, this has been a subject of contention in the literature in the past. I believe it represents a worldview-centered disagreement that originates in culturally formed perceptions about ownership, as well as the frequently unconscious notion that ownership phenomena exist on an evolutionary ladder that only humans have fully climbed. See discussion of this trope in Chapter 6, p. 239.

Prediction

Often in the literature relating to property, ownership and possession, ownership phenomena (variously as wealth transmission, ecological inheritance, the utility of formal title, the existence of rules or norms around owning, etcetera) are acknowledged for their capacity to provide some predictive utility to owners relative to assets and social position/privilege/caste. These assets take all the forms we have discussed above, and most are existentially consequential to varying degrees. What I find fascinating about this aspect of ownership is that it is congruent with a mantra about the brain (really, any brain, even 'rudimentary' versions) that it is just, fundamentally "a prediction machine." This idea has been brought to popular consciousness in part through the work of Anil Seth and originates with Karl Friston and others. "...perceptual content is the result of probabilistic inference on the hidden causes of sensory signals. Generative models encoded by brain structure and dynamics make predictions about sensory inputs, based on prior expectations" (Seth, 2019, p. 379).

Prediction helps manage risk in a variety of ways, but within organisms generally it can mean improved sensory expectations about what you will encounter and what it will mean and how that efficiently guides response.

If the brain is a prediction machine, it makes sense that brains would solve the problem of unpredictability of existentially significant resources with behaviors and systems that enhance their predictability. Particularly between and amongst other organisms, who are an important cause of the unpredictability that an organism or group of organisms will face in over lifetimes. Capacity for prediction enables greater certainty regarding provisions, habitat/territory access, social position/status, and who your neighbors are/are not. Explanations for the foundational existence of ownership phenomena would necessarily include the usefulness of risk management and prediction in daily life.

According to Eilbert (2010), prediction capacity itself can drive the evolution of increasing cognitive complexity, especially with regard to improvements in prediction of uncertainty and threats, and preparation of responses. Thus, again, the predictive value of ownership phenomena can feed back to the organism, contributing to and shaping changes within the organism and its progeny that can persist through evolutionary time.

Persistence

Persistence is related to prediction, and is also related to other themes we have been discussing in this section. I learned of the work of Timothy Lenton through an episode of the academic podcast “Big Biology” (Woods & Martin, 2021).⁷⁶ Lenton’s work regards the stability of systems as a novel way to understand the workings of evolution. His paper “Survival of the Systems” (2021) is interdisciplinary, much like this paper, but of course he is much smarter and more put together than I am.

Lenton et al (2021) quote A.G. Tansley, ostensibly a founding thinker in the fields of ecology and biogeochemistry, saying that “there is ‘a kind of natural selection of incipient systems, and those which can attain the most stable equilibrium survive the longest’” (p. 333).

⁷⁶ Woods & Martin, "Episode 063: Survival of the Systems: the Power of Persistence" (2021). BigBiology Podcasts. 64. https://scholarworks.umn.edu/bigbiology_podcasts/64

They go on to discuss both ecosystem and cultural evolution being examples of systems that standard evolutionary theory (SET) has difficulty integrating because of SET's emphasis on replication. In the paper, Lenton et al explain recent theoretical stances that posit "persistence-based selection" as a functional alternative to that emphasis, saying "some systems tend to spread through space at the expense of others, and persist longer over time than others...persistence in turn increases the chances of acquiring further persistence-enhancing traits" (p. 333).

Lenton et al., discuss dispersal mechanisms, and make the point that systems can be dispersed in similar ways to how we understand organisms (and their genes) to disperse. They say:

A social equivalent of system dispersal is when cultural groups going to colonize new lands take a whole system of skills, domesticated plants and animals, and their language with them. The European colonization of the New World was undertaken by competing national entities, but the diseases, plants, and animals introduced by any one of these entities enhanced the disruption of Native polities that facilitated the success of all the colonizers. (2021, p. 338)

This can be directly applied to the dispersal of worldviews, and to ownership systems as well: in this case, the dispersal of the dominion model of owning into the "new world," to supplant (by force, deception and attrition) existing ownership systems. As we have touched on elsewhere, the dominion model of ownership, with private property at its center, has a fixity to it that is associated with economic stabilization and other attributes of stasis. These ownership systems, together with dominion worldviews, may have short term benefits (to particular persons and associated groups of persons): thus their persistence so far. However, over the long term they undermine persistence, as they are (I would argue) precisely what lies at the heart of what is collapsing the lives and ecosystems of our planet.

Lenton et al. (2021), say something very similar:

The industrial revolution was propelled by self-perpetuating feedbacks between new technologies, capitalism, and an expanding labour force [98]. It continues to spread around the world, as banks finance and governments subsidise resource-extraction industries, which repay them with capital and contented voters. For some, the technosphere has co-opted humans to perpetuate itself [99]. But powering it with fossil

fuel burning cannot persist, as this resource is finite and the externalities are cumulatively toxic [100]. If achieving long-term sustainability requires fundamental changes, ranging from sustainable energy and increased material recycling to different governance structures [101], these can be viewed as alternative systems to the currently predominant one. The salient questions then become: under what conditions can such alternative systems spread at the expense of the incumbent one(s)? Must the currently predominant system fail (to persist) before another can replace it? Or can we find ways to promote collective human persistence without going through such a crude and potentially brutal selection mechanism? (p. 342)

Hmmmm... perhaps a new paradigm of ownership could help?

Memory

Memory and ownership phenomena: here I will delve into cognitive connections to places and things shaping the brain and conferring advantage. Stutz (2014) discusses the understanding of researchers that there is a relationship between memory and the external world: “embodied concepts develop through bodily interfaces with the surrounding environment – specifically as *stable indexical relationship systems*. Cognized objects or bodily states immediately point to – or are pointed to by – other objects or somatic states” (p. 14).

As I first delved into conflict around property, ownership and possession (my initial research interest), I ended up claiming in the first research paper of my doctoral program that places and things play central, core roles in human experience and survival, along with social interactions and belonging. I have since found interesting research into similar ideas.

Above I discussed a recent theory in computational neuroscience (“A Thousand Brains” theory, see Spatiality section, above p. 133) that delves into this interesting area. There are other theories, particularly with relation to embodiment in consciousness studies (Thompson, 2007; and Metzinger, 2009)⁷⁷ as well, but I will focus here on something with a lengthier pedigree: the long-understood and

⁷⁷ Both authors have been interviewed on *The Brain Science Podcast*, another scholarly podcast production, more than once over the decade of its publication.

traditionally relied upon connections between memory function and the external world, such as Lynn Kelly (2015, 2017) explored in her fascinating work.

This is the realm of the methods of knowledge-keeping that all of our ancestors, and Indigenous and traditional people yet today, commonly utilized to encode, store, retrieve; and teach, gift and build upon all forms of knowledge. These ranged from cultural traditions to food and medicinal knowledge, to methods, technologies and techniques, to genealogical and kinship/relational knowledge, knowledge of plants and animals, weather and climate, knowledge of ecosystems and biomes, of water and fire, air and temperature, to ritual and spiritual knowledge, to geographic knowledge of landscapes, which can encompass all of the above (Kelly 2015,2017; Cajete, 1994, 2000, 2004, 2005; Salmon, 2000; Kimmerer, 2103; Deloria, 2006; Atran & Medina, 2010). Each of these are, and have especially been in the pre-industrial past, critical to survival, and have been foundational to the persistence and success of populations of humans.

This is likely true of many nonhuman beings, with inherent variations related to the utility and advantages it provides to them in their respective ecological niches, habitats and within their mixes of interspecifics. For example, the prowess of the Clark's Nutcracker in finding her Whitebark Pine nuts, or the squirrel, or the mountain chickadee, or countless other beings that have to find and then conceal provisions for later retrieval, which they are able to do. Often locating hundreds or thousands of buried items stored across a large landscape. Nonhuman beings have remarkable powers of locating themselves in space – many are legendary for their ability to travel widely and orient themselves perfectly, returning from great distances to precise locations in ways that astonish contemporary human observers (especially because most humans are no longer capable of that without modern technological assistance). Some nonhuman beings may have navigational sensory apparatuses that we do not, but

landscape memory and landform orientation is also demonstrated in a range of taxa (Freire et al., 2023).⁷⁸ Thus it is with us.

Real and Imagined Geography Here we are dipping our toes into something known now to people in Western societies within two central contexts. One is that of memory competitions and the “memory palace.” This is in contemporary use but has a known historical lineage as well. Stories are told about the use of these techniques by the Greeks and Romans (Jarry, 2024; Kelly, 2017) in oratory and recitation. Kelly says that this method, called the “method of loci – creating songlines – is by far the most effective memorization method ever devised and it has been used by all non-literate cultures” (Kelly, 2017, p. 65).

Indigenous Australian people are known for landscape knowledge contained within songlines:

Song lines, or Dreaming Tracks, are pathways through the landscape connecting a large number of significant locations in a fixed order – rocky outcrop’s, springs, mountains, valleys, caves, water holes. When performed, a songline is sung as a long sequence of short verses, which together form a song chart of the ancestral being’s creative journey or origin story. Some song lines crossed hundreds of kilometers and several tribal territories. The ritual cycle insured that sites were visited regularly (Kelly, 2015, p. 14)

Kelly (2017, p. 18) writes about many cultures in which these memory conservation techniques were known to be used:

The use of landscape locations to form a memory space is far from uniquely Australian. Indigenous cultures all over the world have experienced their homelands this way. Anthropologist Keith Basso describes the way Native American trails served to link every event in the past to a specific location. The associated knowledge was performed and dramatized in ceremonies; the storytelling becoming a form of theater.

In today’s industrialized societies with easily accessible writing systems, memory technique has faltered in daily or life history importance. Therefore, it is not widely utilized now, as decreasing numbers

⁷⁸ See also the recent article on the Evolution News website: <https://evolutionnews.org/2023/07/ants-build-landmarks-for-navigation/>

of us need or want to rely upon memory for extensive amounts of critical information. However, it is still profoundly effective and used by memory competitors.

Nevertheless, if memory itself underwent evolutionary change in organisms as a way to navigate space, provision ourselves, know one another, to complement the utility of attention (Stutz, 2014), to retain essential information that would enable all of the above, it means that landscapes and objects – what we now are often principally involved with as far as an owner or non-owner relationship status goes – are central to memory itself.

I suggest that objects and landscapes, monuments and the like, and their role in both memory, spatial behavior and capabilities all relate to the “affordance” concept Denis Walsh discusses in his countermap of the SET (Walsh & Rupik, 2023). How the world around us presents opportunities that organisms respond to, and in this case, biotic and abiotic things and places – are co-creators of increasingly complex and successful life history strategies.

The idea of memory being held and transmitted within objects is certainly not new (Heersmink, 2020, 2023; Dittmar, 1992; Curasi, 2004; Mittal, 2006; Magnusson, 2018; Huber, 2011; Hodder, 2014; McKinney, 2020). Walsh (2014) also discusses how tool use is increasingly believed to have helped shape human cognitive, linguistic and social evolution in interesting ways, which of course then further shaped tool use. Recent research has also explored the offloading of cognitive tasks onto the external environment as strategy for conserving neural tissue (Lee et al., 2023).

In the same way that language is theorized to be a powerful example of niche construction, I would suggest that memory (in life forms on earth) has likely been shaped in similar ways through niche construction.  And that ownership phenomena (such as property, territory, possession) are regeneratively causal mechanisms underlying how this has operated through evolutionary time. As objects and spaces are loci of memory, and memory is quite central to many of the formidable human

capacities that underlie our success: but, as this is also true of *many* other animals; it seems logical to explore the notion that memory systems are a consequence of niche construction that is both ecological – interactive with the organism – and cultural, in terms of the systems that would inculcate, enhance and perpetuate increasingly useful and complex memory capacities, such as those of human beings and other teaching/learning creatures.

Organisms use memory within many of the activities of niche construction. 🏠 For example, perturbation may include remembering where it is optimal to put something and why, and methods for remembering how to find it later. Relocation may involve knowing where to go, what routes to travel, why one might relocate, and what the benefits are. We will discuss these aspects of niche construction more thoroughly in Chapter 5.

As far as the creature we know the best, humans, we can readily see how our interactions with our ecological context would benefit from a trajectory of improvement in memory capacity. It is a significant advantage in many realms, including securing food, shelter and mates.

But my point is that the significance of landforms and objects – entities in the external world – as substrates for memory encoding, storage and retrieval, speak to the utility of ownership phenomena – decisive agency with regard to entities, as I will argue in Chapter 4 – evolving within organisms in reciprocity with the Earth system and what it does or does not afford.⁷⁹

Balch (in Lane & Lior (Eds.), 2022, p. 371) says:

While the construction of large, monumental architecture is a relatively recent development in human evolution, utilization of the physical environment for imparting cultural and religious knowledge is found in a variety of foraging societies (for example

⁷⁹ Which then really relates to the idea of humans ‘devolving’ as we stop using our memories and become more dependent on our created ‘intelligent’ systems for knowledge. How is ownership phenomena involved here? It drives this in many ways (i.e., profit driven introductions and perpetuations of technologies, and also magnification of inequalities. Though there may be potential for that to move in reverse, too). Profit, being central within human cultural drivers at this point, will likely shape – and this is ownership phenomena – the future of earthly life, as it has been for quite a while.

see Basso, 1996; Ingold, 2000; Rival, 2002; Shore, 1998), and it may have significant evolutionary roots.

Ownership and Organismal Dynamics

Additional ways in which we see the effects, influence and/or benefits of ownership phenomena (OP) in the survival and success of organisms deserve further examination. Some of these have been addressed or touched on above. Here I will review further aspects of them that are intriguing but while deserving of greater attention, presently exceed the scope of my study:

Cooperation

Another powerful way in which we can see OP as affecting our species' evolutionary path, is via our social behaviors. This particularly includes cooperation. OP are often inherently cooperative in nature. In a society as large and complex as our own and replete with owned items, people do not contest one another's ownership of most entities most of the time: this is cooperative behavior. Conversely, such as in the example of Russia and Ukraine, disagreement can arise that leads to warfare.

OP could be understood, as with memory, as involved in the evolution of cooperation. As has been said by many in many contexts, humans are certainly legendary cooperators. Perhaps only rivaled by the social insects. There is an enormous body of literature that directly or indirectly researches cooperation and evolution, including human cultural evolution. Niche construction theory has played an increasing role in that literature (Sterelny et al., 2013; Connelly, 2016; Carballo, 2016). There is also a body of literature that links particular phenomena of ownership (territory, property, possession, etc.) with cooperation, as well (see Schulz, 2022; Hartley, 2019; Bowles and Gintis, 2011; Gintis, 2000; 2001; 2007; 2011; 2013) and Hare et al., 2016).

Management of conflict is an important way in which cooperative behaviors are reinforced and perpetuated. “Territorializing land...has long been recognized as an effective solution for reducing costly conflict between individuals or groups who have a clear interest in expansion. (Purzycki et al., 2022, p. 6)”

Language

Another way to examine ownership phenomena is by looking at the words, grammar and metaphors of ownership and property within and between human languages. There is interesting work done in this realm, particularly by Aikenvald (2013), Bryan (2000), and Rudmin (1994). With the emergence of recent access to enormous text-based data sets and new methods and techniques, like those of mathematical literary analysis, there is also great potential for further research in this realm.

According to the seminal work by George Lakoff and Mark Johnson *Metaphors We Live By* (1980/2003):

The concepts that govern our thought are not just matters of the intellect. They also govern our everyday functioning, down to the most mundane details. Our concepts structure what we perceive, how we get around in the world and how we relate to other people. Our conceptual system thus plays a central role in defining our everyday realities. If we are right in suggesting that our conceptual system is largely metaphorical, then the way we think, what we experience and what we do every day is very much a matter of metaphor. (p. 3)⁸⁰

When we deploy English terminology of ownership, property, possession and even territoriality and ownership-related claim, we are doing so through a cultural linguistic lens (Coombs, 2012; Yandell, 2015; Hain & Jamal, 2013; Beck et al., 2004; Johnson et al., 2023). Conventional Western definitions of these terms, and our usage of them in the conventional ownership paradigm, reflect this in how they suggest spatial metaphors, as Lakoff and Johnson explore. For instance, in the above terms, one might

⁸⁰ I would add this affects how we relate to the rest of life kind, as well.

detect the implication of directionality (from owner outward); the implication of hierarchy or verticality (owner over the owned entity); and the implication of linkage (a link between owner and the entity in question). Lakoff & Johnsons' work is rich with similar analysis of how words and usage suggest metaphors of positions in space (1980/2003).

There is fascinating work regarding spatial referencing in language as well. Nolle et al (2020) say that:

There is high variation among the world's languages in how people express spatial deixis (Levinson et al., 2018) or relations between objects (Levinson and Wilkins, 2006). Interestingly, while industrialized, urban speech communities seem to prefer egocentric frames of reference reflected in expressions like left and right, more rural speech communities often rely on expressions reflecting prominent properties of the local environment to express spatial relations (Levinson, 2003; Palmer, 2015). These expressions (e.g., uphill, downriver or oceanward) are viewpoint-independent and thus rely on different geocentric conceptualizations (p. 2)

Work by linguist David Harrison, primarily with Indigenous Siberian people and their languages, delves deeply into the intimate relationship between language, worldview and place. As the Tofa people of Siberia undergo rapid cultural change and the weakening of their language, he draws attention to the effect of language loss on place-centered knowledge, identity and breadth of understanding: "as societies become larger and inhabit a greater range of environments, and as people become urbanized and detached from nature, languages and people shed specialized knowledge pertaining to the environment" (Harrison, 2008, p. 29).

Harrisons' study often intersects with ways in which language shapes and constrains how we think about things, and in the case of language loss, how much more is lost than just language. Worldviews, concepts, methods, traditions, and quite centrally, connectedness to landscape, lifeforms and community are all deeply impacted. For my study, language research offers insight because of how languages themselves are involved with the construction and maintenance of worldviews related to

landscapes and entities – what can be owned, what owning means, what the contours and latitude of agency, relationship, information (see Chapter 4) are within a language and how it influences culture.

What about language and nonhuman beings? We really can't delve into this because, while there is fascinating evidence regarding language in nonhuman beings (Slobodchikoff, 2012), we currently have rudimentary to minimal ideas of what exactly they are communicating with their languages,⁸¹ let alone what concepts and frameworks these indicate, thus we certainly cannot yet discern whether the contents of the languages shape their ideas or behaviors regarding ownership phenomena. We do know that vocalizing or other communication is very often observed with regards to territory and possession of entities of various kinds in nonhuman beings. And that information sharing via communicative signaling is central to defense/guarding/boundary preservation amongst creatures. But that is a different aspect of what I am talking about here, which regards how language shapes worldviews and vice versa.

Linguists have long explored questions about how language shapes perception. Kramsch (2004) says that “the hypothesis that language both expresses and creates categories of thought that are shared by members of a social group and that language is, in part, responsible for the attitudes and beliefs that constitute what we call “culture,” is a hypothesis that various disciplines have focused on in various ways” (p. 235). Harrison (2008, p. 184) gives some of the history of this idea:

...this notion - that the language you speak determines the kinds of thoughts you can have – is popularly known as the Sapir-Whorf hypothesis after American Linguists Edward Sapir and Benjamin Lee Whorf. It holds that the language a person speaks places strict limits upon his or her potential individual thought patterns. Speakers are trapped as it were, within a conceptual universe their language builds around them, and their worldview is inescapably shaped by it.

Harrison says that while the effect is no longer thought to be as deeply impactful as some initially claimed, today most scientists do accept that language does shape thought, but the extent and

⁸¹ Furthermore, this is an area in which researchers struggle with the use of the term “language” due to cultural and other issues with this area of inquiry into the nonhuman world.

manner in which it does so is still under debate and investigation (see Demuro and Gurney, 2021; Nolle et al., 2020; Sharifen, 2017).

I reviewed a number of works that investigated property-related words across cultures.⁸² Rudmin and Aikenvald directly examine the way words are used to describe property phenomenon, both in cross-cultural perspective. Rudmin's intent (1994) was to uncover different worldviews and psychological orientations of OP within language conventions. Aikenvald's intent (2014) was to explore the variation between linguistic expression of different culture's experience of what property is, what can be possessed and owned, and how that is articulated. There is more research since that time as well, and all of it offers potential insight, but two issues arise. First, intercultural contact can swiftly alter meaning and usage of ownership related language because of the ubiquity of and lengthy timeframes associated with cross-cultural economic exchanges, as well as the requirements of translational response to territorial incursions, which nearly all cultures have experienced once they are at the point where they are being examined by an anthropologist or ethnologist or linguist in this regard (Napoleon Chagnon has an extensive discussion of the effects of cultural contact in his renowned and at times, reviled ethnography of the Yanomamo (Chapters 2 and 7 in the 3rd edition, 1983; see also the ethnography of the !Kung by Lee (1984) and see Harrisson (2007)). Second, these individuals as the contact points themselves, carry dominant paradigms of ownership into their work, which may impede their capacity to wholly perceive usage and meaning of words they already understand through a robust dominant paradigm.

Words and definitions arise over time through cultures and contexts, and embody history and usage that usually span centuries or even millennia.

⁸²Note that we find in both the ostensible bias towards examining property vs. ownership, which, as I have mentioned, is common.

How you speak also informs the concepts in your mind. Our Hidatsa language is—just as an example, everything is moving and flowing. Okay, so that affects your worldview, how you look at things. Things don't seem so discrete, separate, objectified. And the relationship between you and that becomes different because you're also moving, flowing. The breath of life is moving through you, the elements. These are all encapsulated in our language. (Webber, 2023)⁸³

Another intriguing example of this in a term that comes out of Taoism, according to Jenkins:

“*Tzu-jan* is often used in modern Chinese for ‘nature’: significantly, however, it does not appear to have been used until modern times for nature as a resource for human exploitation (2002, p. 42).

If words are part of a written language, usage and meaning changes, along with awareness of these changes, would logically be slower than those in an oral language. In written languages, etymologies may offer insight into the conceptual and associational path a particular named/described entity or phenomenon has taken through time, generally since the initial moment that the word was recorded in writing in such a way that its meaning became codified as a result, such as in the connections between the word ownership and the word dominion (see Chapter 2, Part 1).

Worldviews and Belief Systems

In Chapter 2, I repeatedly touched on worldviews and beliefs, as they are interstitched with much of what I was arguing, from a variety of angles. Worldviews and beliefs range from religious and spiritual perspectives or systems to the cognitive framework a culture (from imperial nation states to small scale hunter-gatherer groups) a polity or even a kin group employs to interpret and influence the operations of the world (see Purzycki et al., 2022 on rituals, traditions and venerative activities utilized to try to have agency over the present and future; also Atran, 2002; Guthrie, 1993). There is fascinating research – much of which I have touched on elsewhere (such as Lane & Lior (Eds.), 2022; LaFreniere,

⁸³ This quote is from Part 5 of the Scientific American podcast series *Science Quickly*, "A New Nuclear Age," hosted and produced by Ella Webber. She is quoting Edmund Baker, environmental director of the Mandan, Hidatsa and Arikara Nation. Published 11/24/23.

2023; Haidt, 2013; Henrich, 2020; Atran, 2002; Purzycki et al., 2022; Sosis, 2011; Lakoff and Johnson, 2003; and others) about how cognitive frameworks – worldviews and beliefs – have profound implications for how humans (and very likely many others, but that is much more difficult to research and draw conclusions about at the present) go about their lives, and how they interact with the environment and other organisms.

This is reflected, already, in many of the points I make in this text, particularly in Chapter 2. As ownership itself, within my new paradigm, can be much more clearly explicated within the framework of a socioecological phenomenon⁸⁴, the connections between worldviews/beliefs and ownership can be interrogated through this framework.

According to Purzycki et al., 2022, p. 1:

The social sciences have long recognized a relationship between religion and social ecology. Upon closer inspection, religious systems not only correspond to important features of a society's social ecology, but also appear to directly address these features.

Purzycki's statements not only pertain to religion, but to worldviews as well. Worldviews and belief systems are the same as, though also have some distinctions from religion. Both serve, however, to structure human cognitive frameworks about the world, from what behavioral choices to make to who one associates with, from who the enemy is to what foods to eat. Niche construction , again, is an excellent way to investigate these phenomena:

At both the cognitive and ecological levels, the niche construction paradigm opens up our understanding of culture as a powerful force in human evolution. It centers the discussion around the agency of individuals and groups, without downplaying the powerful selective influence of environmental settings to constrain and channel the human phenotype. Consequently, it provides a middle ground between biological models of human behavior and social science and humanities perspectives that emphasize the role of practice and agency in the social construction of human life (Kendal, 2011). Shifting to an evolutionary approach to religion in this context takes as its focus the processes which enable the creation and maintenance of distinct sociocultural niches across time and space, and how

⁸⁴ Socioecology is a field in which scholars examine human and nonhuman patterns of behavior and change within ecological and population contexts.

these lead to the convergence of individual cognitive patterns within shared material and natural environments. (Balch in Lane & Lior (Eds.), 2022, p. 369)

While Chapter 2 included much about ownership-related worldviews and belief systems, within and outside of religious, spiritual or moral contexts, there is much more that could be done within this realm. According to Botero et al., 2014: “It has long been theorized that the global distribution of religious beliefs may be shaped by ecological factors (7–9). Recent empirical findings indicate that beliefs in moralizing high gods not only intensify (22–27), but also promote cooperation (28–33) in situations of increased environmental risk” (p. 16784).

I would suggest that investigating ownership as an organismal phenomenon could yield some interesting additional insights about the initial formation of ownership worldviews as agricultural lifeways became an increasingly significant human subsistence strategy. Particularly the interaction between monotheism and the evolution of perspectives regarding human separateness or superiority with regard to nonhuman beings.

FOUR: RECONCEIVING OWNERSHIP

Introduction

In this chapter I will explain and support my novel description of ownership as a phenomenon of lifekind.

In summary form, I argue that ownership is a *phenomenon* of organism(al) behavior with regards to abiotic or biotic entities (inclusive of the self), both tangible and non-tangible, that is characterized by *decisive agency; predicated on internal and external sources of information; relational in nature*, and that confers *survival or fitness effects and/or legacy effects* on the agent(s), and in many cases the entity, concerned.

Before I begin my explanation and defense of this description, I start by suggesting a novel mental framework or idea structure: a *schema*. This may help provide a scaffold for firmer understanding. Schemas are understood to exhibit powerful influence on our ability to assimilate novel information. Boutyuline and Soter (2021, p. 2) cite a founding author in the field of cultural schemas defining them as “knowledge structures that represent objects or events and provide default assumptions about their characteristics, relationships, and entailments under conditions of incomplete information” (DiMaggio, 1997, p. 269). Schematic revision is a critical step to making my arguments clear, as our existing schemas about ownership are so robust.

Both my description and conceptual structure challenge the existing dominium ownership paradigm in many ways, not least of which is how property, especially private property, sits at the conceptual center where ownership, and a variety of ownership-related concepts, have ambiguous and sometimes contested positions in relation to it.

A Structural Framework for Ownership as a Phenomenon

I am arguing that ownership is the core phenomenon from which all others stem. Ownership could usefully, and perhaps more easily within Western cognitive constructs, be construed as a “hypernymn,” but that term includes the notion that it is an “over”-arching concept. My visual analogies have been created and chosen deliberately to make it clear that I am arguing that ownership is an *underlying* phenomenon, and concept, from which other phenomena, and its derivative concepts (its epiphenomena), emerge.

To understand this and the schema I am trying to supplant, it helps to visualize it. We will begin with an illustration of the old paradigm (figure 4 below), and then move into the new.

Figure 4: “Its All in our Heads” (Drawn by Scott Prinzing, 2024)



Old Paradigm – ‘Its All In Our Heads.’ Here I suggest that Western and westernized people have come to broadly perceive the ownership “family” of concepts (such as property, ownership, possession, territory) as concepts that humans have conceived of. They are words for ideas that come out of ‘our’ heads. Further, we often categorize them using a convention of “X”+ ownership. Such as *private property* (or just property) *ownership*, *communal ownership*, *territory ownership*, etc. Therefore, “ownership” itself is conceptually left without its own identity in common parlance and usage, and is frequently subsumed into, or conflated with the identities that we ascribe to the other concepts.

“Private property” is also the primary, central concept in this paradigm existing in a central location in Western minds, and influences our ideas about everything else in the ownership family of concepts. This means the beliefs about what each of these concepts entail: thus it is where we find lingering ideas about the nature of what these words mean and how they operate or should operate in daily life. Variations on the iterations of this conceptual paradigm and its usage and conventions exist between specialists (i.e., lawyers, economists, academics) and laypersons (from laterally specialist individuals to your average everyday person). As we have discussed, these cognitive constructs are evident and influential in our society in a spectrum of ways, from policy to business practices, to the operation and goals of institutions, and in general, via our behaviors towards myriad external entities (living or inert). They are abundantly evident in the literature.

New Paradigm: ‘An Ecologically Embedded Phenomenon.’ Here I suggest that ownership is the *base concept*, the foundational phenomenon, the fertile *ground*, if you will, for the rest of the conceptual family. Thus, the source from which the other concepts grow. Here I have illustrated ownership as the soil in which an embedded, flowering plant grows, representative of ownership phenomena. To continue my visual metaphor, these flowers bloom, producing both nectar *and* pollen, which then occasions a visit from a bee. This bee gathers nectar and pollen from each or either (perhaps

they are representative of possession and/or territory/ality), and thus becomes the germinator of further phenomenal elaborations of ownership, such as property and its myriad variations.

Figure 5: “An Ecologically Embedded Phenomenon” (Drawn by Scott Prinzing, 2024)



Property is thus, in this visual metaphor, an outgrowth of the real-world manifestations of ownership, which is embedded in the Earth. And property – made up, as it is, of the dusty, sticky possibilities generated by and inherent within the blooming of the phenomena of ownership – is pregnant, then, with possibilities for configuration and elaboration where it is useful and/or necessary in the existences of organisms.

Private property might be one configuration that would arise. Communal ownership another. Many cross-pollination possibilities exist, as the bee lands promiscuously upon a variety of interesting flowers in this metaphorical field that sprouts out of the fecundity of the living earth. Out of these interactions and connections may then germinate further variations and elaborations of the central phenomena, grown out of ownership, as suits the needs of the organisms engaging with them.

This illustrating is done to assist in the conceptualization of an *interrelated family of phenomena*; rather than of disembodied concepts, invented by humans, that are chronically ambiguous as to specific and shared understandings of exactly what they are, who has them, who doesn't, why or why not, and ultimately, why (and how) they exist.

Terminology of the New Description.

In this section, I will explain and support my description of ownership as a phenomenon of lifekind. Each element of the description will receive analytical attention, in order that all the components are clear. I will begin with explanation of two of my oft-used and important terms.

Phenomenon

First, why am I using the term “phenomenon?”

Doing so is a strategic choice, and, as I argue, it is accurate to the nature of ownership. Strategically, using “phenomenon” moves thinking about ownership out of specific and usually narrow fields into a broader realm of conceptualization/thinking/imagining, and inquiring into *something that's going on*. This places ownership into a conceptual sphere that allows us to examine it more like a “happening” – which gives it conceptual flexibility – rather than a behavior, which is limiting and could perturb some people's sense of human and/or Western cultural exceptionalism. Or, it could send some into rabbit holes of questions about specific species' life histories or into deeper questions about behavior itself. Or worse, trigger thoughts of some *instance* of ownership phenomena, or cognitively elicit a category term in common usage regarding an ownership epiphenomena. Phenomenon more effectively highlights ownerships' widespread and ubiquitous nature and moves it out of the realm of a category.

Phenomenon - as an attribute of the *nature* of ownership - will be discussed further below.

Entity

I frequently have and will use the term “entity” in this paper due to its neutrality and broad applicability. Entity can encompass organisms of all kinds, or systems, ideas, places, units of abiotic/inanimate nature (i.e., things), or most anything else that could be involved in ownership phenomenon, as far as I am able to conceive.

The Nature and Component Attributes of the Phenomenon of Ownership in the Earth System

“...differences in conceptual schemes affect how we describe behavior, and thereby our moral, legal, and social interpretation and evaluation of human action” (Chan, 2016, p. xi).

This section gets to a core exercise of this study – positing and identifying the common denominators⁸⁵ that make up the phenomenon of ownership, and how can identifying them can usefully clarify it. Remember, this is a *description* in the sense that an organism is described when discovered. This will contribute to a clearer view of why the Roman model of ownership (aka, the “ownership model” discussed above) does *not* actually define ownership, and is only *one* instantiation of the phenomenon, a phenomena emergent from ecological and/or cultural exigencies.

Ownership Is...

My description posits that ownership is a *phenomenon* of organismal behavior with regards to abiotic or biotic entities (inclusive of the self), both tangible and non-tangible, that is characterized by *decisive agency*; predicated on internal and external sources of *information*; *relational* in nature, and

⁸⁵ Because identifying the common denominators, and just showing that there ARE common denominators, is requisite to reaching an understanding of the nature of ownership phenomenon.

that confers survival or fitness *effects* and/or legacy effects on the agent(s), and in many cases the entity, concerned.

To highlight certain particularly significant points with additional precision and details, ownership is a phenomenon...

- *Of decisive **agency***, in *relation* to an entity; unilateral, bilateral or multilateral in nature;
- That is based in and dependent upon ***information*** for its existence, persistence and perpetuation (both externally sourced information, and usually, information internally sustained by the agent, and in some instances, information internalized by the entity);
- That is ***relational***, occurring and existing and sustained between agents and/or between agent(s) and entity(ies),
- And that has significant ***effects*** on outcomes and legacy outcomes for the agent(s) and in many instances, entity(ies).

The central, common denominator attributes of ownership as a phenomenon are thus agency, information, relationship and effect. Therefore, I will often use the acronym AIRE to refer to the properties of the ownership phenomenon (as in 'a whole new paradigm plucked out of the AIRE!'). Now I will explore the logical and evidentiary basis of/for these properties. Note that some of the design of this section is after Sutton et al., 2022.

First of all, we will look again at phenomenon, this time as to its accuracy with regard to the *nature* of ownership.

What phenomenon is:

A phenomenon is fundamentally, but variously, defined as something:

- observable;
- known or knowable through the senses, or can be experienced that way;

- that can be described or explained;
- that is significant or singular.

This term has a long and storied legacy in philosophy, but more recently has seen a great deal of use in social sciences, particularly in research around significant trends or notable occurrences in medicine, cognitive neuroscience and social services. Particularly those of particular importance to us (Thompson, 2007; Khan & Turri, 2022; Neubauer et al., 2019; Pickles, 1985).

Phenomenon as reflective of the nature of ownership:

To provide support for my use of the term “phenomenon” here, I will offer instances below. These are intended to apply across species, though many will relate more to human beings than to nonhuman beings. Also, instances of ownership will exist on a spectrum ranging from strongly observable/knowable/explainable/singular to weakly so, and these will also vary in their definitional strength or weakness between and among species.

Observability of ownership instances:

- the behavior of different conspecifics around the same entities (contrasting or not);
- Location of objects or entities in proximity to an agent, or in general;
- Existence of enclosure/exclusionary technologies;
- labels/markings: text/symbols/colors/chemicals/arrangements;
- Perceivable occupation patterns of agents;
- Defensive activities (behaviors and strategies/tactics that are visible or sense-able, ie, surveillance, patrol, aggression...);
- Defensive structures (includes (but is not limited to) fences, guarded openings to habitations);
- Land use patterns, including spacing of habitation or use areas;

- Residency;
- Physical contact (direct) of agent(s) with entity;
- Treatment of entities by agent (style/matter of);
- Preferential access to entity by agent(s) [granted and perhaps assisted by group or other friendly agents];
- Enactment of agency in regards to; behaviors in regards to an entity.

Knowable through the senses:

- Vision: Visible/visibility of the above.
- Smell/taste: Chemical marking and detection.
- Touch: contact with entity; with signs of observable instances of ownership; violence/physical contact from the agent with regard to the interloper (or non-owner) engaged in or attempting contact with the entity; touch-sensed indicators of claim held on an entity; physical familiarity with the identities of external entities.
- Hearing: audible delimitation; territorial calls, sounds associated with proclamation of ownership status and relationships; sound pattern sharing (i.e., singing the same song or an agent-sanctioned audible pattern).

Further, in instances where the owned entity is a being, the entity itself may have sensory experiences of being owned that could also be reflected in these categories. There are also sensory capacities - magnetoreception for instance – that some nonhuman beings may possess and utilize to know instances of ownership.

Can be...described or explained:

Ownership – in all its diversity – can be and has been described and explained at length (albeit, using terms other than ownership, oftentimes). This dissertation attests to this, as does the extensive literature on or related to ownership. Outside of the human realm, description/explanation/notification regarding ownership of entities (such as spaces, as in territory) is established as extensively occupying the communicative exchanges of birds and most other vocal species (Kamath & Wesner, 2020; Strassman & Queller, 2014; Malmburg, 1980) – such as it does amongst humans.

Is significant or singular:

Again, the preceding (and following) content of this dissertation argues for, discusses and is demonstrative of the significance and singularity of the organismal experience of ownership/owning to humans and non-humans alike. The extensive literature on the cultural and nonhuman expression of ownership and ownership-adjacent behaviors does, as mentioned frequently above, as well.

WHAT PHENOMENON ADDS

By understanding ownership within the conceptual framework of a phenomenon, we are able to view it comprehensively. We are accustomed to piecemeal conceptions of ownership that exist via particular cultural lenses; limited-applicability frameworks (such as a specific legal system); single/singular sensory understandings; proximal experience; or limited applicability heuristics. Achieving comprehensive understanding requires a more holistic view, enabled best by contextualizing ownership within a phenomenon framework.

WHAT OWNERSHIP PHENOMENON IS NOT

In many definitions, phenomenon is used to describe a remarkable or singular event, and I do make a case that ownership is remarkable. However, looking at the phenomenon in the light of everyday experience demonstrates a ‘flip-side’: ownership is very much an undercurrent in

contemporary society, so much so (Rudmin, 1991) that it is often very much in the “assumed” category, operating in the background or in the unremarkable foreground of our daily lives. It becomes notable and singular when conflicts occur around ownership, and it becomes an event when individual disputes occur, or more frequently, when economic exchanges around entities are engaged in (which may be food, shelter, apparel, transportation, tools). Again, these exchanges happen daily, even minute-by-minute in our society and those of other creatures. These could be accurately termed survival-level events, and as such, they may only rise to the level of “remarkable or singular event” infrequently. Nevertheless, they *are* constantly significant, important ongoing occurrences, and thus singularly significant.

Additionally, ownership as a phenomenon is *not* narrowly associated, and thus confined; it is not confined to one creature, one group of creatures, a type or a variety of creature, and it is not confined spatially to a place or temporally to a time.

The Properties of Ownership

Now that I’ve argued for ownership as observable, knowable, describable and significant, what are its attributes and characteristics/properties?

We will take the components of my definition in a cumulative fashion, as they relate to and build upon one another, beginning with agency.

Agency

WHAT AGENCY IS:

A definition by philosophers of science Hugh Desmond and Phillippe Huneman (2022): “At a very general level, “agency” refers to how organisms exhibit goal directed behaviors in response to environmental change” (p. 1).

Walsh and Rupik (2023) say that “an agent is a certain kind of goal-directed system, one that pursues goals of its own initiation...a goal directed system attains and maintains a stable end-state (or process) despite perturbations and impediments, by actively enlisting elements of its repertoire” (p. 342). Sultan et al., say “an agent is a system that is capable of attaining and maintaining a stable, viable endstate, by mounting adaptive (i.e. functionally appropriate) responses to its circumstances” (2023, p. 8).

Agency is an important concept, particularly recently, both in the humanities and sciences. Agency is both a more precise and culture/worldview neutral word to articulate and explore concepts like behavior, intention, causality, drivers of movement and action, purpose, and intentionality. Agency has a long pedigree of discussion in moral philosophy and is well-woven into age-old thought quests regarding free will (Walsh, 2015; Moore, 2016; Carter & Charles, 2013).

The topic has growing salience within a range of fields grappling with thoughtful, reexamination of core, long accepted premises, such as in biology, physiology, neuroscience, philosophy of science, physics and information theory, and in cultural and historical work, including feminist, race and poststructuralist theory. Recent books and articles by Dennis Walsh (2015, 2023), Scott Turner (2016), Kevin Mitchell (2023), Robert Sapolsky (2023), and Thomas Metzinger (2009) tackle the topic in exciting, often opposing new ways.⁸⁶

In interrogating agency, we become increasingly aware of the operation of, and effects of worldviews of superiority (see above for discussions of the “Chain of Being” and “Natural Law”) on our beliefs about other (usually non-pale) people, women, and nonhuman beings of all kinds, from whale to orchid to tardigrade to amoeba. At times historically, Western worldviews have often denied the

⁸⁶ *Free Agents: How Evolution Gave Us Free Will*, Kevin J. Mitchell 2023; Robert M. Sapolsky, *Determined: A Science of Life Without Free Will*, 2023; *The Ego Tunnel: The Science of the Mind and the Myth of the Self* by Thomas Metzinger (2009).

existence or sufficiency of agency in non-Western peoples, particularly those whose lifeways differed dramatically from those of the West. This is also true for nonhuman beings, in contrast with beliefs found in many non-Western societies (Carter & Charles, 2016; Gibson, 2020; Kim et al., 2023).

Harkening back to earlier discussion of the work of both Aristotle and Locke (and others), withholding agency as self-determination was a priority because of its importance to Western societies' social functioning. Successfully doing so enabled, via justification, social institutions and norms such as slavery, dispossession of Indigenous lands and freedoms, and exploitation and commodification of nonhuman life forms. 🏠 This has changed quite a bit over the last 50 years, as many contemporary scholars and philosophers, scientists and religious leaders have recognized this dynamic and have begun to challenge it in practice and in legacy.

Science, coming out of and helping construct the Western world views we have been discussing, continues to wrestle with agency. In many ways, the scientific endeavor and many science premises revolve around dualistic, mechanistic, and even essentialist outlooks that can have a myopic effect on it (Principe, 2011; Baigrie (Ed), 2002; Turner, 2016). This is true especially recently, as the pace and reach of science has exploded. With its integration into the diverse societies around the globe, it has, almost virulently, injected these tenets into other cultures' worldviews (Cajete, 2000; LaDuke, 2005; Kimmerer, 2013; Mika in Ludwig et al, (Eds.), 2021).

Worldviews regarding agency have thus become an issue in the advancement of scientific understanding of evolution. This is discussed further in Chapter 5, but what is significant here is that organismal agency – 'all the way down' – is increasingly being seen as key to fully understanding how the evolution of life works.⁸⁷ But there remains reluctance – really, elegantly articulated foot-dragging –

⁸⁷ The reference is to the Aeon article by Levin and Dennet (2020). See references list under Levin.

amongst some in regards to integrating this perspective into contemporary science research perspectives and methods (Walsh & Rupik, 2023).

Nevertheless, evidence for organismal agency is becoming ever clearer. Within the humanities, where recognition of cultural blinders and frameworks of superiority have begun to be acknowledged as long residing within European cultural expression and social organization, agency is being grappled with broadly.⁸⁸

Yet at its core, despite its involved, interdisciplinary and often controversial pedigree, agency is the term best suited to labeling action that exceeds reflex and that engages, at some level, with intent.

While human agency is grappled with around culture and self-determination, humans are also well understood to experience and express agency with regards to both place and things and living entities; biotic and abiotic entities with whom they have some kind of engagement or relationship. In other words, human beings are legendary manipulators of the tangible world around them, and orchestrators of the actions of other beings, both human and non. Moreover, as I have been arguing, ownership-centered agency, emerging from and responding to cultural, cognitive and physiological frameworks and experiences, manipulates and orchestrates the surrounding world in particular ways.

Agency is deepening conceptually as scholars and thinkers explore cultural understandings and philosophies that embrace the agency of nonhuman beings as reality. In the book *Animals, Agency and Resistance* by Carter and Charles, 2013, p. 323, the authors say that:

⁸⁸ An interesting instance is an event organized around the idea. Here is the event abstract: From <https://irh.wisc.edu/event/agency-what-does-it-mean-across-the-humanities/>: “Agency” means something quite different across cultures, including the different academic cultures of the humanities and interpretative social sciences. Agency is also often hotly debated in such fields as feminist theory, race theory, and poststructuralist theory. Is “agency” a product of Enlightenment thought, a keystone of “liberalism”? Or do different cultures and times produce varying notions of individual and/or communal agency? Within the framework of a Foucauldian discourse theory, agency appears as a fiction; within the framework of social movement theory, agency is foundational for change.

The attribution of agency to non-human animals, and indeed to plants and rocks and other features of inanimate nature, has long been recognized as characterizing hunter-gatherer cosmologies. Thus hunter-gatherers experience the animals they hunt as actively consenting to being killed and as reacting to and predicting the actions of humans just as humans react to and predict the actions of animals (Ingold, 2012; see also Jerolmack, 2009 re pigeons). Indeed Ingold argues that “the constitutive character of their world is not intersubjectivity but interagentivity” (Ingold, 2012, p. 41). In such societies, and in our own, “consciousness, self-awareness, intentions, thought and language” are attributed to animals and agency is not understood as a purely human capacity...

Another definition, this time concerning biological agency, highlights some of the otherwise controversial aspects of the concept in this context. These leading thinkers in the field of philosophy of science say agency is,

...the capacity of a system to participate in its own persistence, maintenance, and function by regulating its own structures and activities in response to the conditions it encounters. Attributing agency to a biological system is based on natural, empirically determined processes and connotes neither consciousness nor deliberate intention. (Sultan, 2022, p. 4)

Clearly, agency is a significant aspect of the considered life, but in this context, it identifies a crucible of the dynamic of an as-yet insufficiently holistically examined system - ownership.

How Ownership is Agential by Definition In the understandings of agency above, a common thread revolves around the capacity of an entity to act in regards to objectives. With very narrow exceptions, such as the passive receipt of ‘property’ of some variety by an heir that stands prior to or apart from the agency of decision making or action taking with regards to it, all *owning is agential in nature*.

How so?

Owning is action-dependent, as it requires some level of active and relational engagement by the “owner” in order to sustain and perpetuate the owning status. Khan and Turri (2022) say “the senses of agency and ownership substantiates that perceived agency is a powerful cognitive primer to the sense of ownership” (p. 447). For instance, ownership requires intentionality such as in obtaining title,

negotiating with a neighbor, setting up an enclosure, patrolling or defending a perimeter (or having someone do this for you). It is agential as well in terms of being responsive: i.e., if competition for an entity exists or may arise, ownership may be staked out. It offers frameworks of active consequence that can safeguard something, such as rules or laws that are understood and cooperated with by those concerned, like outward indicators of possession, structures of prevention of incursion, threats of physical force.

The level of action involved/required will vary enormously in each situation, but also in terms of how it is managed between conspecifics, amongst them, and between and amongst species. Due to the requirements of ownership itself, by definition (whether the old or my new), owning is an active, and thus agential status.

WHAT AGENCY ADDS

The use of the term agency offers far more precision, worldview-neutrality and encompassment than using terms derivative of culture, worldview and societal structuring, such as “control,” particularly, and even “power” (as dominance), that those of us enculturated in the West are accustomed to using. This is also applicable to our ability to understand ownership in non-human beings. An analogous example in the literature is the work I have cited above, where Kamath and Wesner (2020) question the lens of domination and power structures in understandings and research around territory.

As discussed above, in Western definitions of ownership, “control” is invariably cited as a descriptive attribute of ownership (see discussion (p. 57) in “private property” in Chapter 2, and see Christman, 1994, pp. 21-25; Stake, 2004, p. 1764; Rudmin, 1988, p. 152; Bandar, 2017, pp. 19-20, and Ruppel, 2008, p. 7. Further, in informal survey of colleagues and others, the word control is reliably cited as the common denominator attribute of “owning.” However, again, this is problematic because it is actually a Western culture-characteristic notion (Henrich, 2020; Haidt, 2013; Kim et al., 2023). We

examine and refute this more thoroughly above, but when understood through a neutral lens, what is control? It is a variety of or expression of agency, but one that is more directive, forceful, coercive or at times violent, and frequently enacted within a context of social or conceptual hierarchy. And it is more confluent, thus, with individualistic worldviews. Thus, to articulate the phenomenon most precisely as to its breadth of expression, ownership is an enactment or expression of agency, with regard to something that the agent is capable of influencing. This is as a result of the nature of its relationship with the entity, and with the community within which the agency and relationship exists. It can be, but is not necessarily controlling, coercive or violent. Neutral terminology is capable of being descriptive of the phenomenon of ownership, where a culturally infused concept like control can only describe instances of ownership phenomena.

As will be touched on in coming sections, the agency of ownership necessarily has a cognitive aspect as well, in terms of how cognition (at a variety of levels, from rudimentary to complex) shapes the nature and form or complexity of the enactment of ownership agency/behaviors onto the surrounding biotic and abiotic world. Involved in cognition are memory, communication, learned skills, sensory interpretation, discernment, along with the survival-related capacities to reason, strategize, and plan with regard to critical behaviors such as foraging, shelter or nest creation, habitat and/or migratory choices, defense or protection of territory and/or resources, offspring and co-parent provisioning, etc.. Many of these are directly or indirectly involved in the enactment of ownership phenomenon (J. Smith et al., 2022; 2023).

WHAT AGENCY IS NOT (generally and/or with regards to ownership)

The caveat repeated often by scientists and philosophers who grapple with organismal agency is that the term “in no way imputes...intentions or desires” or that “it is neither an “intellectual” phenomenon, nor a “merely mechanical” one (Sultan et al., 2022, p. 5). I find these cautions useful and

helpful in this case as well, particularly as regards to breadth of the applicability of ownership phenomenon across life. While we now freely ascribe a great deal of intellectual activity to the enactment and codification of ownership in human societies, we can just as freely withhold it from much of the rest of life kind – as necessary for the comfort of the reader/critic. While I roundly disagree with this choice, whether or not individuals prefer a view that ascribes or withholds intellect, intention or desire to the agential capacities of most of life kind is not important to making my point regarding *agency as a core aspect of the phenomenon of ownership*.

“As an organism responds to its conditions, it structures and alters the configuration space: this reciprocity between configuration space and system is unique to organisms” (Sultan et al., 2022, p. 5). Ownership: what is ‘mine’ or ‘not mine,’ is one part of that response and structuring dynamic (Braun et al, 2018). Therefore, it does not fundamentally require the mental processes humans deem “thought” or the glorified status of “intelligence” in order to effectively enact ownership agency in the world. Also, agency isn’t simply action (Carter & Charles, 2013), nor is it the same thing as “free will” as free will (broadly) regards the extent of determinative effects of causal chains in living systems.

The cooperation problem and the problem of the origin of unified minds embodied in a swarm (of cells, of ants, etc) are highly related. The key dynamic that evolution discovered is a special kind of communication allowing privileged access of agents to the same information pool, which in turn made it possible to scale selves. This kickstarted the continuum of increasing agency. (Levin & Dennett, 2020, para. 29)

Information The connections between agency and information are an illuminating way to begin this section. Agential purpose itself is founded in information: and externally sourced information influences the decision to make, to sustain or surrender, to enlarge or to share a claim (Turner, 2016; Walsh, 2015) and contributes significantly to the rationales or motivations for so doing.

Cognitively driven purpose, behavior and relationship are facilitated and structured, fundamentally, by information. In organisms the information can be encoded as memory/information (or

learned or instinctive behavior), it can be encoded in the genome, and it can be encoded in the environment that interacts with the organism.

When information resides within the physiology of the organisms primary animating organ (such as the brain) as memory that organizes, influences and animates the behavior of the organism, this can also be externalized into mnemonic entities, such as symbols, signals, objects and technologies that codify and enable exchange and transmission of information as well as behaviors and behavioral strategies (Brown in *Entangled Life*, Barkett et al., 2014). These have been established already as variations on the principal technique – information sharing – through which organisms establish ownership (see above).

WHAT INFORMATION IS

What is information?

In this context, we are talking both about information as generally understood in human daily life; information as understood within the life sciences; and information as understood and later described by Claude Shannon, the ‘father’ of information theory. These are inclusive of the more broadly understood concept of information, as content that is transmitted between living entities (and in many contexts now, between non-living entities like computers) with the purpose of conveying meaning (Barbieri, 2016; Roederer, 2016; Ball, 2016; Loughmiller-Cardinal & Cardinal, 2023).

Information is used to describe genes and other aspects of biological activity within an organism that enables subsequent action, such as the development of an embryo with inherited alleles.

Information is also used to describe what languages or writing systems transmit. Information is what is held in the memory structures of organisms, as well as what is contained within their cells and enzymes and proteins. Information is considered, oftentimes, to be the basis of knowing or knowledge – upon its

receipt, information (can) become knowledge. And perhaps most importantly, information constitutes meaning – which is what motivates and makes significant and useful its transmission.

Information describes an abstraction that is transmissible or transmitted, somehow understandable and actionable, between entities. According to Battail (2014), “recognizing [information] as an abstract entity is mandatory for understanding that it provides a bridge between the abstract and the concrete. It can thus act on physical objects” (p. 6).

A 1997 definition by computer scientist Joseph Goguen is satisfyingly abstract, yet generalizable. He says that information is “an interpretation of a configuration of signs for which members of some social group are accountable” (p. 18).

Information, in the sense of transmitted meaning between and amongst organisms, can be learned and intuited; it can be preserved and contained; it can be shared or concealed. It can be shared broadly or it can be shared very specifically; it can be shared deliberately or processually. Transmission can be biological (DNA) physical, mathematical, spoken, written, coded; it can be created from experience that creates knowledge and then becomes encoded into information, it can be well-preserved or it can readily degrade; it can be instantiable, time-independent, spatial, or a building block for cumulative results or actions, understandings or directions.

An excerpt from an article on physiology provides a particularly clear description of information transfer to and between living beings, and the storage and utility of the same:

Neurophysiology has borrowed from, and contributed to, the information theory used in communications engineering. The function of sense organs is to gather information both from the environment and the organism. The central nervous system integrates this information and translates it into a program of response involving the entire organism. In addition, the brain can store information previously received (memory) and has the ability to initiate actions without obvious external stimulation (spontaneity). (Sheer, n.d., Physiology, para. 33)

Another way to understand information is by considering it as a resource that an organism inherits. Odling-Smee and Laland (2012) highlight “two principal kinds of resources that organisms inherit – “algorithmic information,” [“by algorithmic information we mean *anything that reduces uncertainty about selective environments, relative to the fitness interest of organisms* (Odling-Smee, 2010)] – and energy and material resources” (p. 224). They go on to say “...carriers of algorithmic information include DNA, RNA, several other types of molecules, brains, language, and many artifacts... but all that matters in evolution is that the algorithmic information ...can potentially influence the fitness of organisms” (p. 225).

This, naturally, includes both learned and innate algorithmic information: “the transmission and acquisition of this knowledge is itself dependent on pre-existing information acquired through genetic evolution, complex ontogenetic processes, or prior social learning” (Laland & O’Brien, 2011, p.197).

HOW IS INFORMATION RELEVANT TO OWNERSHIP?

Ownership requires information to exist. Recall our earlier discussions of territoriality and possession amongst humans, as well as among nonhuman beings. Also recall our discussion of human property and ownership systems as studied over time and in places. For ownership to exhibit its most useful features, it must be communicated and understood by those to whom it is relevant. When this is undeclared or unclear, ownerships’ utility may be reduced or impaired.

When the declaration seems self-evident, as we may believe it to be in the case of one’s own body, the operative statement of boundary would be the physical form itself. This is an important fundamental starting point for the experience and understanding of ownership within the organism. However, it still is not definitive. Under many circumstances we encounter claims made in regards to the physical form of bodies other than of those who inhabit them (i.e., slavery). This is meaningful to our

discussion, as it leads us to grapple with complexities in the discernment and contexts of ownership in both human beings and others.

In many human societies, children, spouses, other human dependents or connections, pets, domestic animals, workers (within their labor role), slaves, nonhuman and non-animal beings themselves, as well as those residing or existing within spaces claimed as “owned” by humans (who exist within particular worldviews and cultural/legal models are claimed by those outside of those physical self-boundaries) are not deemed owned by themselves, instead being owned by a physically separate human. Thus, one’s own physical self is not necessarily informative as regards to a boundary statement with regard to ownership status. The same is true with physical spaces (a landscape, a forest, a lake, etc.) themselves, which are also argued to be (or could be) self-owned (see Stone, 1972; 2010) but in the Western worldview context, generally are not (yet – see Favre, 2000). And this is most certainly true of ideas and creations, that, along with often not having a tangible form apart from that which exists within a communication system (which would usually then have an association with a being, such as a person, who “entangled⁸⁹” it) have no inherent self-ownership status in currently prevailing worldviews.⁹⁰

Instead of the physical form providing definitive information then, some informational exchange between the owner and the owned, and the owner and other non-owners who may otherwise make a claim, is important to establishing “ownership” – here also understandable as the endeavors of agents to organize their and others’ selves to whom and with which they have a particular relationship.

The above quote from Goguen (p. 174) corresponds well with this abstracted description.

⁸⁹ Yes, I have penned here another neologism.

⁹⁰ This is interesting, however, as other cultures *may* accord a self-ownership status to dreams, visions, rituals or spells, and the like. Further research is warranted.

Fundamentally, information transmission and reception regarding the existence of an ownership stake of some kind, enables that stake to be sustained. This is particularly true with conspecifics, but it is also true between species.

Examples that include inter-, intra- and conspecifics include the use of fencing to exclude intraspecifics that would otherwise eat crops or enter dwellings. The use of urine or other chemical markers to delineate an area of territory (historically by nonhuman beings, but now used in “pest” control strategies by humans with nonhumans (see Brookshire, 2022)) is another. Possessive behaviors provide information to their observers. Familiar to us, of course are legal documents including receipts, titles, statements, certificates.

The information aspect of ownership is deeply stitched into the legal framework of human ownership systems and institutions. The systems themselves rest on information and norms, which according to Loughmiller-Cardinal and Cardinal (2023), are fundamentally information:

...social norms as the normalization of collective social information that represents the convergence of mutual information across a given social network. Social norms and normative institutions are the natural and necessary consequences of a fundamental need to filter and curate that information. (p. 3)

Land tenure systems, title conventions, the machinations of elaborate legal systems that industrialized societies use to organize themselves: all of these are wholly dependent on the information aspect of ownership structuring, maintaining and clarifying status to legitimize or challenge any or all ownership claims.

But as mentioned earlier, information *transmission* is involved in all ownership systems and enactments. Formalized with documentation, negotiated and agreed upon amongst neighbors, signaled and understood between creatures who share resources and locations on a landscape, and accorded via the existence of body.

WHAT INFORMATION ADDS

Information enables us to see the HOW of the workings of this phenomenon. Without information, there isn't a method/medium to stabilize owning and make it useful. According to Loughmiller-Cardinal and Cardinal (2023):

All the experiences, observations, and outcomes from our physical and social environments are (at some level) assessed and translated into our individual pool of information. This information is the resource from which we accumulate knowledge, form opinions, establish beliefs, and make decisions. The unifying thread is that information from those events is being acquired, digested, evaluated, distilled, and utilized. (p. 7)

Identifying information as critical to the phenomenon of ownership highlights an oft-overlooked fundamental mechanism. Because it is somewhat obvious, it is also somewhat invisible. Yet this characteristic holds a great deal of explanatory power – not only as to the nature and operation of the phenomenon, but in the links and continuity with the variety of other manners in which information is understood and utilized to enable prediction, stability, undergird expectation, cohere behavior, create useful distinctions and explanations, and generally enable singular and cumulative understanding in other fields.

Thus, essentially, it is the informational nature of the ownership relationship that undergirds its establishment – its useful presence – in the world. Recall the property triadic recited by multiple sources, whose most salient feature to these authors are its attributes of relational-informational exchange (see Carruthers & Ariovich, 2004, p. 24; Freyfogle, 1993, p. 1294; Christman, 1994, pp. 23-24).

Information may not only support ownerships existence, but it also mediates conflict with regards to it. Conversely, the informational exchanges relating to ownership can themselves be a source of conflict: making a claim of “it’s mine and not yours” can readily ignite a dispute. But as we have discussed already, ownership can provide avenues, heuristics and conventions that enable the resolution

or adjudication of conflict (Gintis, 2005; 2013; Hartley, 2019; Stake, 2004; Connelly et al., 2016; often emerging from that very aspect – the informational topography – of the phenomenon.

Therefore, again, the information transmissibility aspect of ownership is crucial. We have been discussing it as a phenomenon *of organisms*, and being knowing, sensing, communicating–based. However, where the phenomenon is institutionalized by humans, that knowing/sensing/communicating may frequently be converted to a symbolic analog derivative of those organismal attributes. I.e., from a discussion of owning claims to a dossier of documents shuttled between computers, both with the same effect of establishing ownership with all its benefits and responsibilities.

WHAT INFORMATION IS NOT, in regards to ownership

Information is not mundane, nor obvious.

A critique of the inclusion of “information” in the definition of ownership might understandably arise from a belief in the ‘obviousness’ of it. Why, of *course* information would be part of the equation! However, the obvious nature of this attribute of ownership and ownership systems chronically obscures its foundational significance, and obligatory nature.

For instance, human beings – amongst one another – share informational systems that are very effective in being active without their actual physical presence. Thus, legal title to something can reserve ownership to an owner across immense space and surprising lengths of time. This gives ownership systems that exist within cultural contexts where the information systems have these capacities great durability and advantage. This is transmissibility, which is intimately bound up in wealth.

Information is also, on its own, not sufficient. Earlier, I briefly touched on the claim by some researchers that ownership is “respect for possession” (Hare et al., 2016; Gintis, 2005; 2013; Hartley, 2019). As I said earlier, it could mean that simply by withdrawing respect, one can have the effect of summarily cancelling out the owning status of the heretofore owner, thus being free to become the

owner of whatever entity is in question. Further, it can mean that granting respect to someone's possession of something suddenly gives them owner status. A thief may take your car, but if your friends respect the thief's possession of the car, does that really make him the owner?⁹¹

But this leads to a more significant point: information cannot supplant or substitute for agency. The "respect for possession" line of thought grants all the agency to those external to the owning status, in effect saying that ownership is, in the end, independent of the agency of the owner, and that the agency of the owner is less relevant than the agency of all others with whom the owner may engage. This neglects the role of the agent in initiating, instantiating, integrating and imparting the information to others, as is discussed above. The agent and their agency is the core aspect of the AIRE paradigm of ownership.

But what of those with whom the agent is engaged, or might engage? This leads us into a discussion of *relationship*.

Relationship

Stepping deeper into the analysis of the fundamental profile of ownership, we detect another pervasive theme that may be the most profound, even poetic, common denominator attribute of ownership of them all: relationship.

As per the above, not only is ownership dependent upon information exchange to exist, but it is fundamentally about the relationships that are the stuff of, and the conduits for, the very information being transmitted - and of the meaning that they impart - that materialize ownership into a lived reality.

WHAT RELATIONSHIP IS

⁹¹ This could lead to an examination of the concept of "adverse possession" which is an important point of discussion in the law literature. Adverse possession is basically claim/possession that goes unchallenged over a codified temporal span, resulting in ownership status being granted to the adverse possessor (see Rose, 1985).

From the Oxford English Dictionary, relationship is defined as a noun that describes “the way in which two or more *people or things are connected*, or the state of being connected” [emph added] (n.d.). Additional meanings given include “the state of being connected by blood or marriage;” and “the way in which two or more people or groups regard and behave towards each other” (www.oed.com).

Relationship itself is a very broad concept, applicable in almost all areas of life, as no one of us or any life form on the planet emerges, exists or survives long in isolation from others. Relationship is part of the experience of being alive – whether we are in relationship with others of our species, with other species, with spatial or temporal phenomena, with ideas, with properties of the universe (like relationships *with* OR *in* math, physics, etc., - all of whom have relationships of significance within their very structure, existence and usefulness) with our technologies and our objects, with the past and the future, with where and how, etcetera. This breadth is touched on in the broad generalizability of the Oxford definitions above.

Relationship is not only posited by many of the scholars whose work I read as the deeper phenomenon underlying property (i.e., Singer, 2000, 2008; Blomley, 2022) but it is also deeply stitched into the intellectual and experiential trajectory of the history and philosophy of science as well, up until transformative ideas of separation and mechanism emerge in 17th century Europe (Baedke et al., 2021; Principe, 2011). 

WHAT RELATIONSHIP ADDS

But what can a concept so broad add to this redescription exercise? Relationship allows us to look at the nature of the connection between persons (agents/entities/beings), or between persons (agents/entities/beings) and things and find further insight.

Most obviously, as addressed above, relationship is already well accepted by legal scholars to be a significant aspect of ownership, property, possessions and territory. In fact, it is one of the main generators of continuing discussion within the literature.

Ownership is often defined as a “legal relationship;” indicative of ownership being a relationship within the context of law – such as “the legal relation between a person (individual, group, corporation, or government) and an object” (Britannica Academic (see footnote 14 on p.20). This is still a myopic definition, but it does clearly reiterate a general understanding of relationship being central to ownership. Clearly, therefore, I am not treading wholly novel ground. Rather, I am drawing attention to ownership as fundamentally *relational*, as in *connected*.

And again, ownership can and does exist, as I’ve argued alongside others (Gintis, 2007, 2013; Stake, 2004; Kreir, 2009; Sherratt & Mesterton-Gibbons, 2015; Ellis, 1985), external to a law framework. In reviewing how ownership can and does exist outside of such a framework, the attribute of relationship comes to the absolute fore: “...a relational understanding of ownership, although not widely acknowledged amongst nonhumans, unites a range of established behaviors across taxa” (Hare et al., 2016, p. 1179).

This makes abundant sense, of course. As touched on above, owning/being an owner has so much to do with *relationships* – with con- or interspecific individuals and/or groups and social structures. It is the context of that relationship, how it is understood and treated in – or between – a particular society, moral or legal system, institution, or between groups, between a group and an individual/(s), or within the context of a particular unique relationship (me and you, person and dog, two male nymphalis antiopa butterflies, or a spotted knapweed plant and an alpine rose (*rosa woodsii*)) that is operative and relevant.

Relationality is also the most significant feature of traditional ownership systems, experiences and behaviors (see Chapter 2, Part 1). This lends further credence to claiming relationship is inherent to ownership, in that empirically, cultural narratives, along with the prehistoric, archeological and historic record, indicate that ownership has long been primarily understood in the context of relationship (Gibson, 2020, pp. 14-16).

More recently, as previously argued, with the rise of the dominion worldview of ownership the relational nature of ownership has become obscured and instead, a *transactional*, abstracted nature of the phenomenon has become its defining feature, highlighted to the point of actually eclipsing its relationality.

Writing itself, along with math, are thought to have emerged as a way to “document and quantify surpluses so they could be expropriated from the people who produced them” in early states like Sumer, where cuneiform tablets over 5,000 years old demonstrate early and formative instances of transactionality replacing relationship (Gowdy, 2021, p. 105). Citing Childe (1951, p. 144), Ellis also says (1985) that “the first known use of written language seems to have surrounded property transactions (p. 129).”

This dynamic meant that in these contexts, the deeply relational nature of ownership can be seen undergoing transformation from a primary feature to a shadow feature: *transactionality*. In the present day, where the Roman ownership model has hegemony, ownership conceptually revolves around transaction *instead* of relationship, as seen in the contrasts between aboriginal and colonizer land ownership concepts, and the degradation of the former over assimilative time: “the varieties of relationships have increasingly become *transactional* in nature: they are no longer founded in any real understanding of moral obligation or foundational sense of duty other than mutual expediency” (Bryan, 2000, p. 14 – italics in original).

This change is reflective of Western worldviews and belief systems, as described in Chapter 2. But again, my point is that this is *not the actual nature* of ownership as a phenomenon. I argue that this becomes apparent when we are able to compare attributes/characteristics of various ownership systems as well as the behaviors, economic systems and outcomes of the phenomena.⁹²

Relationality is also interesting in that it is woven into agency, information and effect.⁹³ For example, the agent is engaged in a relationship with the entity. Information is an exchange between the agent and others, with regards to both the entity and those within the information exchange relationship. We will discuss “effect” below, but an additional, of the many, ways relationship is relevant, is the engagement with the past, present and the future that the relationships already mentioned enable.

Becoming transactional can confer significant advantage onto particular practitioners, such as those who have a society constructed (both literally and within our cognitive frameworks) around transactions, such as labor, capital, goods, services – which then become commodities. Morphing ownership into a transaction reduces the social and physical/psychological infrastructure – demands and requirements - of relationship. A transaction model can effectively restrict/confine/boundary and create accumulations and unequal distributions, and especially significantly, it can *exploit*. Moreover, these behaviors/activities are generally good for the owning agents in the *short* term. Whereas, the fluidity, openness and flexibility of relationship-oriented ownership systems *limit the scope of the potential*

⁹² In fact, if one subjects a variety of examples of ownership (those we have discussed) to a test – i.e., does it exhibit the four characteristics we are discussing in this section, thus qualifying it as ownership – the only system not fully compliant is dominion ownership, as the relationship aspect of it, of late, is so often replaced by transaction. Again, dominion is divergent. In “testing” for ownership, using my model, this again becomes clear.

⁹³ This is interesting also because of the role of relationships in physics, and the “Dynamical Model” of conflict in which that physics-based framework is used to understand the nature and trajectories of intractable conflict (See Vallacher et al., 2010; 2013).

actions of agents (while also enabling more adaptive response to changing external (social and ecological/environmental/climactic) conditions, in stark contrast to control/dominion/exclusion systems which are often quite fixed by nature (formally codified, as within a complex, writing-based legal system)). Therefore, in the short term, changing from relationship to transaction can be beneficial for the agent, as it provides more latitude in optimizing gain and hoarding (to self or offspring or other favored kin/sphere members) advantages into the future. This is not necessarily true in the long term, however.⁹⁴



Another important way we can observe relationality being fundamental to the ownership phenomenon is in sharing practices. As discussed above, relational/kincentric ownership systems are usually centered around sharing. Sharing itself is of great evolutionary importance. It is said to be a central purpose of group/sociality formation in organisms, because of how advantageous it is/can be for survival and thriving (Sterelney in Barker et al., (Eds), 2014).

To share is almost definitionally equivalent to what relationship is. One cannot share without someone to share with, and that sharing is formative of or consequent from relationship, of whatever proximity.

Sharing systems are a very significant part of what changes, fundamentally, in the shift into a transactional, exploitation-oriented, *dominion* ownership system, where sharing dynamics emerge out of a reciprocal – generally more egalitarian - model and are subsumed into a transactional, hierarchical model.

However, this becomes a practical necessity when societies become so much larger that one is obliged to engage in exchange – of resources or luxuries or information – with strangers. 

⁹⁴ The meaning of “short” or “long” in this context would likely be marked in counterintuitive ways – the short term here could apply to the entire 12,000 year Holocene, and the long term could encompass the past 100 years as well as the entirety of the remaining future lifekind now faces.

WHAT RELATIONSHIP IS NOT

But what it is not, is the noun that relationship acts as an adjective to. In other words, while a relationship can be transactional, a transaction is not necessarily a relationship. While a relationship can be commodifiable, a commodity is not a relationship. And so on. This is critically important to this particular exercise, as it highlights differences about where *connection* resides, versus where a *distinction* exists - between people (*agents/entities/beings*), or between people and anything, or everything, else.

Further, relationship is not innately positive nor negative. It is not a fleeting, nor a permanent status. It is not in itself optional, though its iterations present many options for organisms. It is not even necessarily deliberate or consciously sought or engaged in, though in many instances it is. While this may seem like mere musings, it is actually an exercise in distinguishing the difference in the notion of relationship as some level of engaged connection between organisms/agents/beings and a connection – perceived by organisms/agents/beings – between tangible and intangible non-agential entities. All of this enables us to direct our attention to the richness in this attribute for facilitating more useful understanding of the phenomenon of ownership within the Earth system.

Lastly, relationship is not all that ownership is, however much some areas of the property literature may seem to imply it (see especially Rose and Singer). As a whole phenomenon, ownership has interdependent facets, reflective of the world in which we live. But what emerges from the phenomena and has high temporal salience, perhaps attributes most roundly meaningful and consequential for earthly life, is its *effect*.

Effect

Defined generally, from the Oxford English Dictionary: **effect, n.** = Something accomplished, caused, or produced; a result, consequence. Correlative to cause; or **effect, v.** = To bring about (an event, a result); to accomplish (an intention, a desire) (n.d., para. 1). Drawing from these basic

definitions of this term, and within the context of what I am arguing with regards to ownership, *effect* is the result or consequence of the ownership phenomenon. But this is meaningless on its own. What matters is its lasting effect: an intertwined influence on *fitness* and *legacy*.

“Fitness” is used and can be defined in a variety of roughly analogous ways⁹⁵, but all address the concept of conferring a useful suitability to a/the context individuals or populations exist within, thus potentially enhancing the individual or group survival and/or legacy toolkit. Here is an evolution-oriented definition: “How much an individual contributes to future generations, usually measured empirically as total lifetime reproductive success of an individual” (Losos (Ed.), 2017, p. 223). A similar definition that spans disciplines comes from Rosenberg and Bouchard, 2023;

In a more abstract fashion, one might refer to the properties of an entity and how they correspond to the constraints of its context. In a biological setting one could focus on an organism’s traits and how they correspond to various aspects of the environment the organism is living in. (Rosenberg & Bouchard, 2023, para. 5)

Articulating the aspect of *effect* in the ownership phenomenon is meant to draw attention to something that may generally be perceived, again, as an obvious result of ownership. However, general definitions or usages in various fields I draw from often neglect to sufficiently explore⁹⁶ what I would argue is an overridingly important characteristic of ownership: its fitness implications and its relevance to legacies of fitness, inclusive of implications beyond just human experience.

Highlighting effect is important to arguments I’m making in the context of evolutionary and cultural legacy, which will be addressed more completely in the next chapter, but are especially

⁹⁵ Fitness is another term often discussed and continually redefined, in this case, in the biology and evolution literature.

⁹⁶ Meaning, that it is narrowly viewed as just being in Western systems, and just in people – thus, not noticing the broader (organismally) and deeper (philosophically) fitness effects of ownership phenomena.

meaningful to the ways in which ownership phenomena arise from and are situated in the Earth system, and how they change, and create and respond to change, over time.

Of course, the term “effect” itself could simply refer to the general utility “owning” has on the existence of the organism (the simple ‘I own X’ effect, which means Y). What seems neglected – or at least under examined – is the advantageousness or disadvantageousness of it to organisms generally; to some more than others; and the reverberations of this both spatially (on the “ground”) and temporally (for species and populations/for lifekind over spans of time) in the big picture of the trajectory of earthly life. I believe this is under examined in large part because of the confusing, disconnected nature of conventional conceptualizing of ownership *as its phenomena* rather than ownership as a phenomenon. The concepts prevent meaningful engagement with many potential questions. 

WHAT EFFECT ADDS

Survival/fitness effects – both positive and negative - accrue to organisms from the attributes and functions of ownership phenomenon. I argue that these are intertwined with the causes for the existence of ownership phenomena, why they are common, persistent, and important. This is especially relevant to complex, densely populated contemporary human societies (from the existence of the societies at all to their actual attributes), and to nonhuman societies and life histories.

As recounted in my “functions” (Chapter 3, p. 109), across species, ownership phenomena and systems structure and affect outcomes like access to resources and who has decision-making agency over entities - which then may consequently enable strategy/planning/provisioning behaviors to be engaged in. Further, ownership/ownership systems can undergird, manipulate or alter social hierarchies and status between society members.

Ownership and ownership systems have effects on conflict, on how societies are organized, on how other social systems and norms operate, and on the nature of relationships (as already discussed)

and particularly on wealth, its transmission and its legacies. Effects (advantageous or disadvantageous) are accrued to agents via the utility potential of the owned entities themselves: for instance, tools and technologies; food or other survival resources; shelter; apparel; preferential mate access or encouragement or participation in guarding behaviors; breeding and brooding spaces; materials for tool creation that enable or improve the above-listed activities or benefits; defensive tools or labor; spaces themselves (territories, areas, or constructed spaces), landscapes, routes, and tangible social prestige markers. And of course, their capacity to be transmitted intergenerationally is of enormous consequence and effect.

Being in the position of having the level of agency that empowers decisions or directives to be made with regards to owned entities has substantial effects, often benefits. It also influences the extent to which the owned entity can then provide advantages (to the agent or its favored compatriots or offspring) such as access to nourishment (even gradations of the nourishment as well); enhancements to breeding (i.e., mate choice or quality), reproduction and provisioning successes or consequent success; territorial agency enabling access to resources, protection and sheltering of conspecifics and other entities – all of which can improve or influence survival and success in a variety of ways, thus having fitness effect, especially where transmissible. 

WHAT EFFECT IS NOT

Effect, as alluded to above, is not directly indicative of advantage or disadvantage, though it *can* mean either. In other words, we are not talking about effect in terms of a *positive* or *negative* effect (on fitness, in all its meanings). Effect can be *either*. Whether positive or negative will rest upon where in the relationship spectrum (as agent or entity; or to what degree you are both or either, or where in the individual/group or some level of population level) you exist. Consequently, understanding effect on a spectrum also enables us to see that any individual or group may move around on the spectrum, either

within lifetimes or over spans of time. For instance, one can readily pass on one's lack of wealth status (either material, relational or embodied) with lasting implications, as well. Furthermore, one must always note that there is an additional relevant spectrum to keep in mind (relevant to each of these elements of the phenomenon of ownership as well): the varying degrees of strength or weakness of effect itself.

Conclusion

Coming to the end of this section brings us to a place where we can ask ourselves not only *what explains ownership*, but more importantly and usefully perhaps, *what does ownership explain?*

Answers to the first question have been put forward throughout history by many others. I would assert that their answers have failed on multiple levels, neither providing a satisfactory explanation for ownership, nor illuminating what ownership itself can tell us. I assert that this is because they all suffered from the same initial problem: the conceptual map we use to define and understand the phenomenon of ownership. As we have discussed, there is a great deal of cultural and species bias stitched into this map over multiple millennia: this means research of all kinds, from humanities to the sciences, can be flawed from their outset.

I believe the strength of my new paradigm comes out of analyzing ownership *without* anthropocentric and xenocentric blinders while also *within* ecological, biological and evolutionary frameworks – something not yet done, to the best of my ability to discern.

Looking at ownership through these lenses revealed to me what I believe are the nature and extent of the dominion ownership framework, and supported what I would argue is new insight into the hidden contours of interconnectivity of ourselves with – and our utter dependence upon - the Earth system.

These become possible courtesy another paradigm shift, this time through the work of biologists, ecologists and evolutionary scientists: Niche Construction Theory.

FIVE: NICHE CONSTRUCTION

Ownership is Niche Construction and Cultural Niche Construction: an
Explanatory FrameworkEvolution and Niche Construction Theory

I have touched on niche construction and cultural niche construction in the above chapters, and provided highly abbreviated explanations for each in the second footnote in my introduction.⁹⁷ “Niche construction” has an intuitive clarity, as most generally understand that a “niche” is an area or realm of special knowledge or influence or, spatially, is a small and defined location (Holt in Losos (Ed.), 2017, p. 291). Construction, a term in common parlance, requires minimal definition, i.e., ‘making or building something.’ Those of us who are interested in the sciences will likely have come into closer contact with the term niche in regards to its biological/ecological use and meaning: Holt says “the niche describes how an organism with a particular phenotype performs in its demography (birth and death rates) as a function of environmental conditions” (Holt in Losos (Ed.), 2017, p. 291). However, the story of the term and its use has a still-evolving history within evolution, ecology and biology. Basic familiarity with this history and the context in which it arose, along with a sense of where things stand today will contribute to understanding and following my ensuing arguments.

What is now referred to as standard evolutionary theory (SET) originated (roughly) from Charles Darwin’s “On the Origins of Species” (1859), though he certainly wrote other important treatises that contributed to its development as well. Most of these are not as widely known.⁹⁸ The theory of evolution from Darwin’s work centers natural selection – essentially, the external environment acting on

⁹⁷ The symbols I have been using for niche construction and cultural niche construction will not be used in this chapter, as it is here the focus of discussion and the symbols would be redundant.

⁹⁸ Including books on worms and mold, orchid fertilization by insects, plant movement, emotions in humans and non, insectivorous plants, and much, much more. He was quite prolific!

organisms to influence their survival in such a way that the organismal response is heritable - as the causal force for evolution. At a slightly deeper level, natural selection is also understood as being part of a matrix of other influences that work together to underpin the changes in life forms that result in diversification and novel origination of new life forms (such as mutation, genetic drift, gene flow, sexual selection... Nowicki, 2012, p. 323). These forces have generally been considered by the biological sciences to be responsible for the diversity of life on Earth. At the time that Darwin was writing, the important mechanisms – the internal biological bits and pieces (genes) – of natural selection were not yet known. Nevertheless, the theories that Darwin put forth were eventually widely accepted and celebrated, and much of the life sciences are understood as being built upon his foundational work(s).

Darwin and Mendel

During the same time frame in which Darwin's seminal works were published, Gregor Mendel was on his own quest into understanding the mysteries of life using methods of Western science. Though his inclination was always towards science and discovery, Mendel spent his professional life in a religious order as a friar and an abbot. In that role, however, he was able to begin his famous experimental work with legumes that eventually resulted in the identification of 'genes' as the conduits /facilitators of natural selection. Scientists like James Watson and Francis Crick would later characterize genes as vehicles of "information," delivering the instructions for the form and development of new life (Berry & Browne, 2022).⁹⁹

In the early years of the 1900's, a community of scientists engrossed in the study and exploration of evolution as both theory and phenomenon brought Darwin and Mendel's work together, particularly in the book by Julian Huxley "Evolution: the New Synthesis", published in 1942. The resulting body of

⁹⁹ This usage of "information" is consistent with my usage in Chapter 4.

thought became known as “the Modern Synthesis” (Dickens & Dickens (Eds.), 2023), though Standard Evolutionary Theory is its common contemporary moniker, so we will use its acronym SET from now on.

SET has been the standard (thus the name) for generations of scientists and young learners, as well as for those who just existed alongside its presence in Western scientific thought. Unbeknownst to many, however (and this is true into the present), scientists in the evolution community began to find themselves grappling with some puzzling shortcomings of the gene-focused SET. In particular, the SET and genes themselves were found by some to be increasingly lacking in their ability to explain things such as developmental bias, plasticity, extra-genetic inheritance, and “particularly thorny is the observation that much variation is not random because developmental processes generate certain forms more readily than others” (Laland et al., p. 164, [Nature Comment] 2014).

Adaptation

Controversy also began to simmer around “adaptation.” What exactly is meant by this term and how is it used? Is it accurate to what it describes or does it create a framework that begets confusion? In other words, what is adaptation and what is just an artifact emerging in a life form that does not directly result from the winnowing forces of natural selection, but may seem to be such to our eyes/minds, primed as they are by existing ‘natural selectionism’ frameworks to perceive it that way?¹⁰⁰

¹⁰⁰ There are other arenas in which discussion of adaptation takes on a bit of controversy. In *Sense and Nonsense: evolutionary perspectives on human behavior*, Laland and Brown (2011), discuss the difference between adaptation (“a character favoured by natural selection for its effectiveness in a particular role”) versus adaptive behavior (“functional behavior that increments reproductive success”) as well as current adaptation (“remain[s] adaptive due to a continuity in the selective environment”) vs. past adaptation (“no longer adaptive due to a change in the selective environment”) vs. exadaptation (“enhances fitness but was not built by natural selection for its current role”) vs. a dysfunctional byproduct (“a character that neither enhances fitness nor was built by natural selection.”) (p. 92). There is also the “adaptivist” approach that “identifies adaptive behavior among humans but may bear no relationship to human adaptations” (p. 93).

These questions are conundrums that some in the scientific community tried to confront when faced with the critiques of the use and deployment of ‘adaptionism’ originating within the conventional evolutionary frameworks by researchers in the field. Richard Lewontin, Stephen Jay Gould and Richard Dawkins were leaders in this ground-shifting discussion, with Dawkins in the adaptation-defending role. The famous article by Gould and Lewontin, “The Spandrels of San Marcos” (1979) was an important touchstone paper, churning cycles of discussion and reconsideration regarding the sufficiency of longstanding, fundamental ideas about natural selection-based evolution that had been very influential in SET to this point.

Niche Construction and Lewontin

In “Spandrels,” (1979) as it is often referred to, Lewontin and Gould first bring the idea of niche construction as a factor in evolution to a larger audience, though that terminology is not used in the piece. Prior to this, and influential in Lewontin’s work, two earlier scientists had explored the idea of organism-environment interaction – the central phenomena in niche construction - playing a significant role in evolution; Erwin Schrodinger (in the mid-40s’) and Conrad Waddington (in the mid and late 50s) (Laland, 2016). According to Baedke et al, however, these ideas were not absent in biology and the sciences. Instead, they were the source of methodological impediments (Baedke et al., 2021).

According to Kevin Lala¹⁰¹, writing about the history of niche construction theory at www.nicheconstruction.com, “while Lewontin’s articles focused attention on niche construction, they were generally interpreted as a critique of adaptionism, and it was not apparent to most biologists how these ideas could be translated into practical science” (Retrieved on December 19, 2023). In 1988, it was

¹⁰¹ Laland now uses his original family name of Lala. In my text I will refer to Lala unless citing a work he published under the name Laland.

Oxford biologist John Odling-Smee who first used the term “niche construction” in the context of an evolutionary process (Laland, 2016).

Between the early 80s’ and 2003, more biologists began to argue for organisms as “not merely, or not always, passive recipients of environmental challenges...[and as taking] an active role in their evolutionary fate” (Aaby & Ramsey, 2022, p. 351). In 1988, Odling-Smee labels “active modification of selection pressures by organisms” niche construction (Aaby & Ramsey, 2022, p. 351).

In 2003, the monograph *Niche Construction: the Neglected Process in Evolution* (Odling-Smee, Laland and Feldman) was published. This marks the beginning of a period of rapidly growing interest in the usefulness and explanatory power of Niche Construction Theory, with many publications by a wide range of scholars in a variety of fields reaching publication, now at an increasing rate every year.¹⁰²

This booming interest is occurring as a cause and consequence of a larger challenge to SET that argues that it lacks sufficient recognition of the very essential, very demonstrable dynamic of organism-environment reciprocity, which highlights organisms as agentially involved in the processes and outcomes and effects of evolution. “Agency is the crux where NCT and SET depart” according to Scott Turner (2016), p. 208.

Niche Construction Theory is a central part of what has begun to be known as the Extended Evolutionary Synthesis – which we will refer to as EES – in which the organism has a more active and agential, participatory role in the unfolding of evolutionary change (Laland et al., 2015).

NCT differs from standard evolutionary theory (SET) in recognizing that the evolution of organisms is co-directed by both natural selection and niche construction.....NCT recognizes natural selection and niche construction as reciprocal causal processes in evolution, and treats the adaptations of organisms as products of both processes....NCT provides both a philosophical shift in the way we view and understand evolutionary processes as well as a testable scientific theory. (Kendal et al., 2011, p. 785)

¹⁰² See www.nicheconstruction.com for a disciplinarily-organized index of examples.

Up until this discussion began, phenomena like organism-environment interaction were seen through the lens of unidirectional effect. Ecological engineering, for instance, long understood by ecologists as the activity of an agent in an environment to change the characteristics of the surrounding environment to underpin survival and thriving, was not seen as extending its effects back to organisms, influencing them in ways that had/have lasting downstream genetic effects on both their offspring and the lives and offspring of other organisms, via both biotic and abiotic interactions. This thinking is much changed in niche construction theory and the extended evolutionary synthesis.

The debate among scientists continues, however, and agency, niche construction and other more recent, more interactive, “entangled”¹⁰³ views of the workings of evolution are not yet fully accepted by the evolution community, nor are its propositions and theories completely settled. Many in the evolution community do not agree that SET needs to be revised, arguing it already incorporates (or easily can) much of the perspectives and processes under discussion. They argue it does not need a retooling as much as an elaboration and expansion (Scott-Phillips, et al., 2013; Laland et al., 2014; Sultan et al., 2022; Wade & Sultan, 2023; Turner, 2016; 2022; Richards & Pigliucci, 2020).

Worldviews, History and Philosophy

Other than the historical trajectory of Niche Construction Theory itself, what is material to my study is the philosophy and scientific worldviews that rest at the invisible center of the discussion. SET is colored by a mechanistic, inanimate, dissociative (separation, fragmentation, disconnection) approach consistent with and derivative of the Western dominion worldview, particularly that which grew out of the scientific revolution (Principe, 2011; Walsh & Rupik, 2023; Turner, 2016; Baigrie, 2002).

¹⁰³ See *Entangled Life* (Barker et al, eds, 2014).

Baedke et al., (2021) argue that these attributes of the SET perspective originate from scientific exigencies: namely, the need to be able to have precision in quantifying and modeling and avoid the potential fuzziness of subjectivity:

...a move away from studying organism-environment reciprocity was welcomed by classical and population geneticists. Clear boundaries between organisms and environments are a stipulation for fruitful research and “a practically and theoretically valuable abstraction”: in those fields (Haldane 1936:349). (Baedke et al., 2021, p. 48)

The SET, as it existed prior to the challenges posed by niche construction theory and the EES, had a notably thin emphasis on the reciprocal or interwoven nature of organism-environment-organism, or organism-organism interaction as a distinct force in evolutionary change, for these reasons. As a result, agency, reciprocity, relationality and interconnectivity have not been frameworks explored as significant driving forces in the form and existence, and trajectory of change in earthly life. The focus is instead on the gene; conceived of as an inert blueprint detached from contextual influences. The gene is easily studied, in contrast to the messy complexity and sweeping breadth of environment-organism-environment (ad infinitum) interaction.

Identifying the distinguishing attributes between the SET and EES can be done by examining their ontologies: Walsh and Rupik (2023) identify a critical primary difference between the SET and the EES as perspectival. They accuse the SET of “illicit reification” in its abstractionizing and objectifying of a biological phenomenon (evolution), though done in the service of “generalizing and precision” that clearly enables significant advances in understanding the constituents and the mechanisms that scaffold life and its processes and change over time. Walsh and Rupik identify the contrasting perspective of the EES as “agential” and “organism-centric” which, he says, finds its utility in the realism it represents. He

says each plays a role in our understanding of evolution, but neither, alone, can provide a full understanding. Thus, both are needed (Walsh & Rupik, 2023).¹⁰⁴

What is especially significant to my study is that Niche Construction Theory embodies the “agential” perspective, and is informed by an organism-centric viewpoint. This is congruent with central contrasts I am highlighting: contrasting dominion ownership, an abstraction of reality that withholds agency to serve the purposes of those who deploy ownership as a means to a wealth- and resource-accumulating end, versus the “AIRE” model I suggest above, which is thoroughly agential; generalizable to potentially all of lifekind; and demonstrates fidelity to reality, in which beings exist in space, have agency of a variety of kinds and degrees with relation to space and things and beings, and engage with them enduringly, with the result of profoundly influencing trajectories of their own and others’ lives and ultimately, based in factors of spatial and temporal scale, and the Earth system itself...but is also extremely inconvenient to science, industry and contemporary lifeways and objectives.

At this point, organisms’ agential and reciprocal engagement with the environment in the grand trajectory of evolutionary change seems to be gaining wider acceptance and integration, as are many other tenets of the proposed revisions to SET, several of which are relevant to my arguments.

¹⁰⁴ I want to point out here that the SET had exigencies that were addressed via abstractionization: in order for the model to be most useful, the messiness had to be cleared out, thus a paradigm was born within which the biological and ecological world was examined from a mechanistic and inanimate perspective. Thereby enabling science to work best, with the most useful results. This is the same dynamic as the dominion ownership model, which requires certain worldviews to achieve certain ends. This is what we are discussing in many places here, but I wanted to make sure to make this link here in case it is not clear. We can see this same dynamic at work day in and day out in human existence, and it is a dynamic of both niche construction and cultural niche construction depending on the context/instance being examined.

Concepts in Organism-Environment Interaction

This section will explain central concepts in this analysis that appear throughout the text. I begin with the main ideas of niche construction, ecological inheritance and cultural niche construction, but also explain ecological engineering, the engineering web, and the affordance landscape. Each of these relate to previous and later discussion and highlight ways of seeing, studying and understanding organism-environment interaction.

According to a growing body of work, whose leading voices include Kevin Lala, Sonia Sultan, and John Odling-Smee, niche construction is an ecological phenomenon in which an organism or group of organisms modify the environment in which it/they exist (both physical and/or social) in order to better secure benefits such as safety, security, thermoregulation, nutrients, and habitat for its self, mate(s), offspring and/or group. Niche construction as an evolutionary process (which is what Niche Construction Theory is concerned principally with) occurs when the organism(s) niche constructing activities consequently have an evolutionary effect (advantageous or not) on the constructing organism(s) and/or other species it impacts. Both ecological and evolutionary aspects of niche construction are relevant to my claims. A recent article portrayed niche construction this way:

An ubiquitous feature of organisms is the way their life-histories and behaviors alter their encounters with the environment (Brodie, 2005; Odling-Smee et al., 2003; Sultan, 2015), a property broadly termed niche construction (Lewontin, 1985, 2000). There are three general categories of niche constructing activities: organisms may preferentially move from one environment to another; they may modify their environments; and they may develop differently in alternative environmental conditions in ways that mediate their experience of those conditions. (Wade & Sultan, 2023, p. 453)

Understanding what characterizes and distinguishes niche construction, beyond the intuitive understanding of environmental modification by organisms, has been a central interest of many since its early ideas first reached audiences roughly 40 years ago. With the publication of “Niche Construction,

The Neglected Process In Evolution” (2003), the scope and attributes of the phenomenon have become clearer.¹⁰⁵

How does niche (habitat) construction it work?

Table 2: Four categories of niche construction (Recreated from Odling-Smee et al., 2003)

	PERTURBATION	RELOCATION
INCEPTIVE	Organisms initiate a change in their selective environment by physically modifying their surroundings.	Organisms expose themselves to a novel selective environment by moving to or growing into a new place.
COUNTERACTIVE	Organisms counteract a prior change in the environment by physically modifying their surroundings.	Organisms respond to a change in the environment by moving to or growing into a more suitable place.

This table also appears on the website nicheconstruction.com, an academic website created “to provide an accessible introduction to the subject of niche construction, explaining what it is, and how it is being used across multiple academic fields” (Laland & Chiu, 2020). The site is overseen and maintained in part by Kevin Lala, perhaps the most active academic in the field, along with other researchers. The text that follows the above table nicely synthesizes the central aspects of these categories:

“Organisms modify the selection that they experience both through physically changing their environments (‘perturbational niche construction’) and habitat choice (‘relocational niche construction’).

Their activities can create novel selection (‘inceptive niche construction’) or respond to existing selection (‘counteractive niche construction’). An additional category, “experiential niche construction,” refers to the ways organisms alter their experiences of the environment without changing it.

Perturbational and relocational niche construction:

¹⁰⁵ A confusing aspect of this discussion is that niche construction is terminology long used within ecology, underlies Niche Construction Theory, but is not wholly synonymous. Sonia Sultan (2014) suggests the use of “habitat construction” rather than niche construction in this context, making it easier to distinguish which is being discussed. At times I will make that distinction where it helps to clarify what is being discussed.

The defining characteristic of niche construction is not organism-driven modification of the environment per se (a special case known as perturbational niche construction), but rather modification of the organism's niche (that is, modification of the relationship between the organism and its environment)¹⁰⁶. Hence the term 'niche construction' includes such cases as dispersal, migration and habitat selection, where organisms relocate in space to modify both the environments that they leave and that they enter (known as relocational niche construction).

Inceptive and counteractive niche construction

If an environmental factor is already changing, or has changed, organisms may oppose or cancel out that change, a process labelled counteractive niche construction. For instance, many wasps and bees will engage in temperature regulation of their nests, heating it up through muscular activity in the cold, and placing droplets of water on the surface, allowing it to cool through evaporation, in the heat. Counteractive niche construction is therefore conservative or stabilizing, and it functions to buffer organisms from shifts in factors away from states to which they have been adapted.¹⁰⁷

Experiential niche construction

Organisms can also make adjustments that change their experience of the environment, without changing the environment itself (experiential niche construction) (Sultan 2015, Chiu 2019). For instance, penguins huddle to keep warm, whilst plants shift the orientation of their leaves to maximize input from the sun. (Laland & Chiu, 2020)

Niche construction activities occur within a variety of frameworks, and these frameworks continue to be refined and expanded (see Aaby & Desmond, 2021 and Aaby & Ramsey, 2021). Aaby and Ramsey argue for constitutive niche construction (not changing factors or relocating, but changing the relationship between features (traits) and factors (environmental variables); relational niche construction ("relations that the organisms bear to one another and to other factors of the biotic and abiotic environment" p. 360); and external niche construction ("changing the factors themselves" and thus,

¹⁰⁶ This seems like it should be profound, and to me it is, but what the researchers are saying here is intended to refer simply to how the organism fits itself to/is fitted to the context it is in, which is a type of tinkering with relationship. This, rather than a more transcendent meaning, like two entities in a dance of existence or entwinement relative to one another. If read that way, it actually can make the statement contradictory and/or confusing. Nevertheless, the relationship aspect is also correct, and will factor in later discussion.

¹⁰⁷ I.e., human adaptation strategies to the effects of global warming.

changing selection pressures for others” p. 361). Aaby and Ramsey also explore the mechanisms that act within and across generations to alter or modify selection pressures, saying that “we thus see niche construction as a set of mechanisms that yield novel explanatory and theoretical resources involving the active role of organisms in their own evolution. Apprehending the interplay of these mechanisms can result in a more detailed and nuanced understanding of evolutionary dynamics” (p. 367).

It is repeatedly made clear that a key insight in niche construction theory is reciprocal effect – the organism reshapes the environment, via its manner of relationship with it; the reshaped environment – via *its* manner of relationship with the organism –reshapes the organism, and oftentimes, other organisms; and thus, in the continual response loop that ensues, the cycle continues.

Organisms often alter their environments in pursuit of fitness needs and thus modify some environmental selection pressures... Niche construction theory introduces a reciprocal causal process that modifies natural selection relative to three general kinds of environmental components: abiota, biota (other organisms), and artifacts. (Odling-Smee & Turner, 2011, p. 283)

This agential reciprocity, relationality and entanglement (Sultan, 2014; Sultan et al., 2022; and Barker et al., 2014) that niche construction theory brings into focus distinguishes it from standard evolutionary theory - SET (aka the modern synthesis).

The hand in glove complementarity of organism and environment is regarded as being brought about by two co-causal processes: 1) natural selection, which shapes organisms to be suited to environments, and (2) niche construction, through which organisms shape environments to states that are suited to their biology (and less frequently to states that are not). (Odling-Smee & Laland, 2012, p. 221)

Reaching this understanding and integrating it into evolutionary theory begins to echo Indigenous and traditional wisdom and worldviews about the integrated, interconnected, inter-influential nature of all of lifekind with one another, and with the Earth itself: landscapes, seascapes, atmospheres and their myriad resident living creatures (Kinsley, 1995; Mika in Ludwig, et al., 2021). It also reflects the cyclicity of Earthly life and the intrinsically relational nature of it. Therefore, not only

does it much expand the breadth of understanding of life that SET offers, but it also offers an authenticity derived from its confluence with traditional ecological knowledge and global wisdom traditions.

Ecological Inheritance Another central attribute of niche construction theory (NCT) is inheritance. Where SET, as addressed above, is very focused on the gene as the central conduit of inheritance that shapes development and changes in/of life on earth, NCT invites a view of inheritance that is more encompassing, thus again, more reflective of traditional understandings of the complex, interwoven and reverberative nature of life and its generational unfolding.

...environmental modifications produced by niche-constructing organisms [that] persist for longer than the individual constructors, continuing to modulate the impact of these effects on subsequent generations of the population...is referred to as an ecological inheritance (Odling-Smee & Laland, 2011, p. 221)

The authors continue with examples, such as the:

...presence of burrows, mounds, and dams or, on a larger scale, changed atmospheric states, soil states, substrate states or sea states...[that] persist or accumulate in environments as modified natural selection pressures, either relative to successive generations of organisms in the niche-constructing population or in other populations (Odling-Smee & Laland, p. 223)

Laland and O'Brien (2015) say that "ecological inheritance requires intergenerational persistence, often through repeated acts of construction, of whatever physical – or, in the case of humans^[108], cultural — changes are caused by ancestral organisms in the local selective environments of their descendants" (p. 3).

John Balch (in Lane and Lior (Eds.), 2022) says that "niche construction hinges on "ecological inheritance," or the idea that organisms can pass to their descendants not just genetic material but also substantially altered environmental conditions" (p. 364). In *Entangled Life* (2014), Rachel Brown

¹⁰⁸ This caveat is misleading: Lala addresses culture in nonhuman beings elsewhere (Laland, 2008).

describes it further, saying that that these effects can “endure or accumulate over many generations, so that organisms inherit not just genetic information but features of their selective environment” (Barker, ed., p.252).

Again, the idea of ecological inheritance is congruent with the reality of multigenerational effects of the decisions and actions of the present generation, and is a prominent aspect of Indigenous philosophies and worldviews, particularly as popularly associated with the Huadenosenee (Iroquis) constitution (LaDuke, 1999, p. 14). Western evolutionary science, in the form of the EES, is beginning to catch up with Indigenous understandings of the multiplicity of generational effects that significantly transcend the concept of the gene.

Cultural Niche Construction and Inheritance Cultural niche construction is deeply intertwined with inheritance. Genetic inheritance is one contemporary default understanding of inheritance: the one integral to and defining of standard evolutionary theory. Another understanding in common parlance, of course, is of the inheritance of *wealth* (money and things: entities).

Natural and cultural selection “collective decisions that construct and bias the learning environments for other[s]” (Odling-Smee & Laland, 2011, p. 22),¹⁰⁹ can result from niche construction activities. But it is also widely recognized that there is a “physical (energy and matter) component to cultural inheritance, as individuals inherit money, houses, property, land and so forth” (Odling-Smee & Laland, 2011, p. 227) – all descriptive of material wealth. As we discussed above, and Odling-Smee and Laland (2011) also discuss, nonhuman beings inherit wealth to their profound evolutionary effect as well.

¹⁰⁹ Birch and Hayes define cultural selection through two schools of thought: “a Darwinian process in which cultural variants spread because they cause their bearers to have more biological offspring, and because offspring learn from their parents ... “ [and]...because they cause their bearers to attract more learners, giving them higher cultural fitness” (2020, p. 2).

Inheriting culture –through one’s kin or other conspecifics, or via presence in a particular context of influence – is also colloquially understood. However, “cultural inheritance” is important to, and specifically defined within cultural niche construction (CNC), another realm of niche construction theory. Here, cultural inheritance is understood as having the capacity to impart evolutionary outcomes as well (Ready & Price, 2021, p. 76).

In NCT, we take culture to include the nongenetic inheritance of culturally acquired information, or “knowledge,”: and of material culture, or “artifacts”, both of which can modify the selective environments of organisms, within and between generations (Odling-Smee & Turner, 2011, p. 285)

Odling-Smee and Laland (2011) have defined cultural niche construction as “*that subset of niche construction that is the expression of culturally learned and transmitted knowledge* (as opposed to individually learned or genetic information)” (p. 226 – italics in original). They go on to say that while:

...not all human niche construction is cultural niche construction, the vast bulk of the impact that human beings have made on this planet has undoubtedly resulted directly from socially transmitted knowledge. We all acquire knowledge and skills from other people. We express that knowledge in our behavior, engineering, and technology, in the process modifying our environments in a myriad of ways, from tending crops to burning fossil fuels ...we build on that reservoir of shared algorithmic information iteratively, manufacturing ever more efficient and diverse solutions to life’s challenges and ever more advanced technology, which frequently translates into ever more dramatic impacts on our environments. (p. 226)

Some interesting examples of cultural niche construction with genetically discernable consequences are often cited in the literature. These include the development of lactose tolerance over generations of pastoralist milk utilization and consumption (Laland & O’Brian, 2015, p.4) and the development of malaria-resistant sickle cell alleles due to yam farming practices that optimized mosquito habitat in West Africa (Laland & O’Brian, 2011). Each of these instances are demonstrative of cultural practices and strategies that result in heritable genetic changes in groups of people.

More recently, human language has been investigated through the lens of niche construction. Stutz (2014) says “linguistic communication and symbolic representation may have co-evolved with a

niche significantly constituted by embodied interfaces between the somatic and extrasomatic environments and within the somatic environment itself.” Stutz says that this work is complementary to, but more comprehensively explanatory “than recent proposals in paleoanthropology and linguistics” (Stutz, 2014, p. 1). Stutz also similarly discusses the evolution of memory, and its reciprocity with the external world, as we explored in Chapter 3.

Odling-Smee and Laland (2011) say, “We suggest that cultural processes and cultural inheritance can be viewed as the primary means by which humans engage in the universal process of niche construction” (p. 220).

For this study, inheritance and CNC are particularly salient concepts because of how important inheritance is in the legacies left by both ownership phenomena and the objects of ownership – the entities – in the outcomes of organisms as well as the effects organisms have on one another and the environment. This is not to downplay day-to-day effects upon, or capacities enabled by ownership phenomena (these are described in Chapter 3, especially). But the profound parallel of the importance of inheritance to both NCT and ownership phenomena merit a close examination. This is the “temporal dimension” (Odling-Smee & Laland, 2011, p. 221) that relates to the “effect” element of my AIRE model, and that is distinct from the extended phenotype concept.¹¹⁰

Information, another element of my AIRE model, is central to culture. Odling-Smee and Laland (2011) cite Richerson and Boyd (2005, p. 5) in identifying the operative role of information in culture: “Culture is information capable of affecting individuals’ behavior that they acquire from members of their species through teaching, imitation, and other forms of social transmission.” They add that “it includes learned knowledge, beliefs, values, and attitudes, which are expressed in behavior, artifacts, and technology” (Odling-Smee & Laland, 2011).

¹¹⁰ That we touch on below in scalable dimensions of NCT (Balch in Lane & Lior (Eds.) 2022, p. 365).

Human beings are rich in their capacity to collect, hold and transmit information; this is one of our most salient features as terrestrial beings, providing substantial benefits in all the lifeways in which we engage (Lenski, 2005; Sterelney in Barker et al (Eds.), 2014; Balch in Lane and Lior (Eds.), 2022; Reide in Prentiss (Ed.), 2019; Birch and Heyes, 2021). This is particularly important in terms of understanding the operations and feedback loops of cultural niche construction. It is also thought to have beneficially influenced our capacity to cooperate with one another, and is thought to be critical to human evolution (Sterelney, 2014, pp. 275-276).

Reide (in Prentiss (Ed.), 2019) points out that traditional ecological knowledge (TEK) constitutes semantic information resources sustained and conveyed via cultural transmission. TEK is intimate and immersive knowledge of the biotic and abiotic world, which is at times codified not only “in stories and legends (Sugiyama & Sugiyama, 2009) but also in art and other artefacts (Barton et al., 1994; Mithin, 1991)....this is knowledge that plays a critical part in how human communities act in and on the environment” (p. 340).

Reide also discusses the intentional use of fire, saying that “hominins are associated with fire since at least 1.5 million years ago” and domestication “the beginning of animal and plant domestication in the period between ca 20k and 10k b.p. as constitutes a major inflection in human biocultural evolution... the model case for human niche construction that recursively impacts a wide range of other species” along with the humans themselves” (in Prentiss (Ed.), 2019, p. 344).

But again, animals and others beyond humankind also engage in and benefit from cultural transmission. Laland and others (Garland & McGregor, 2020; Brown in Barker (Ed.), 2014) discuss this. It is significant and deserving of research attention, and becoming more common (Smith et al, 2022; Garland & McGregor, 2020) including instances employing lenses more congruent with nonwestern worldviews and methods (Mika in Ludwig (Ed.), 2021).

“Traditions for exploiting prey or food sites, tool use, and vocalizations, are reported in a variety of animals...Social transmission is widespread” (Odling-Smee & Laland, 2011, p. 227). The presence of language in the nonhuman world is also being investigated with greater nuance and insight, yet still within Western scientific frameworks. Additional research will further illuminate cultural transmission’s existence, advantages and mechanisms amongst nonhuman beings.

Transmission channels and what they transmit are the conduits that provide the foundation for a central concept of significance to both NCT and CNC: persistence of effect, which is encapsulated by ecological inheritance.

Ecological Engineering “Niche construction applies the insights of ecosystem engineering to an evolutionary framework” (Balch in Lane & Lior (Eds.), 2022 p. 365).

In many ways, niche construction is congruent with an established concept in ecology touched on in our discussion of the ecological activities and effects of the Roman empire (Chapter 2, part 1): ecological engineering. The “modification of habitat by organisms...by which organisms modulate flows of energy and matter through environments (Laland & O’Brien, 2015, p. 3)” is known as ecological (or ecosystem) engineering, a concept first fleshed out in the 1990’s and further refined over the last thirty years. “Ecosystem engineering by organisms (Jones et al., 1994, 1997a) is now well-recognized as an important general kind of ecological interaction of basic and applied relevance” (Jones et al., 2010, p. 1).

It describes, fundamentally, the changes the organism makes to its environment in order to reap benefits such as those enumerated above. These activities can leave important ecological and/or cultural legacies – i.e., ecological or cultural inheritance (see above). In important ways the concept can be understood as synonymous with niche construction, but within NCT, not only does legacy effect and its evolutionary impact matter, but deeper distinctions have to do with the level of agency, according to Turner, that each theoretical construct ascribes to the engineers themselves (Turner, 2016, p. 205 - 206).

The concept moved ecology towards greater integration of the role of organismal involvement in shaping the world around us. Odling-Smee (in Barker et al. (Eds.), 2014, p. 195) explains the idea this way:

In ecosystem ecology, the concept of ecosystem engineering (EE) was introduced to make a point about ecological structure: that in modifying their own surroundings organisms change ecosystem features in ways that have effects on other organisms as well; that the features of ecosystems that are affected may be either biotic or abiotic; and that these processes have certain kinds of ecological consequences (Jones et al. 1994, 1997; Moore 2006; Cuddington et al. 2007; Cuddington et al. 2009). Types of ecosystem engineers can be distinguished according to the nature of their effects....

Structural engineers change or create relatively durable structural features of their surroundings: beaver dams, termite mounds, coral reefs, and the woody parts of plants are all examples of this sort of engineering. Structural engineers often reduce disturbance and increase the heterogeneity of their surroundings.

Bioturbators such as burrowers and excavators disturb and mix materials in their surroundings, often producing an increase in uniformity.

Chemical engineers modify the chemistry of soil, water, or air through processes such as respiration or photosynthesis, or by moving or depositing materials.

Light engineers alter the local patterns of light transmission, changing the intensity of light in nearby locations by casting shade or causing light scattering, for example.

All of these kinds of ecosystem engineering can be either allogenic or autogenic, i.e., they can take the form either of effects organisms have on their (external) surroundings, or of aspects of the organisms' own growth and development (Jones et al. 1994). ...In either case, ecosystem engineers have effects on ecosystem functioning that may be important for other organisms as well as for themselves. Importantly, ecosystem engineering is defined so as to exclude competitive and trophic interactions, since the ecological roles of these are already accounted for in existing models and theories.

Jones et al., 1997, p. 1949 distinguish between autogenic engineers, who “directly transform the environment via endogenous processes (e.g. tree growth, development) that alter the structure of the engineer” who remains part of the environment, and “allogenic engineers [who] change the environment by transforming living or nonliving materials from one physical state to another...[with] the engineer...not necessarily part of the permanent physical ecosystem structure” (Morrison, 2018, p. 198).

To many, ecosystem engineering and niche construction sound strikingly similar, which it is and it isn't: Odling-Smee and Laland, 2011, p. 222 say "Unlike ecosystem engineering, niche construction must be evolutionarily as well as ecologically consequential." In 2013, John Odling-Smee led the writing of an article about Niche Construction Theory specifically for ecologists. In it, he provides this definition: (p. 8).

Ecosystem engineering: The creation, destruction, or modification of habitats and/or modulation of the availability of resources to other species by organisms (Jones et al. 1994). Ecosystem engineering can be equated with the environment-altering component of niche construction, although some definitions of ecosystem engineering are more restrictive.

Engineering Web Ecological connectivity is further understood through the concept of the engineering web, which, when NCT is integrated into the concept, extends the breadth of insight possible within the ecological cascade of connection. Laland and O'Brien (2015) say that organisms both destroy and produce resources and habitats for other organisms via niche construction and ecosystem engineering, "generating an additional "engineering web" of connectedness and control that regulates ecosystem functioning in conjunction with the well-established webs of trophically connected organisms" (p. 3).

Affordance Landscape The "affordance landscape" is a conceptual device first suggested within the field of ecological psychology, and is used in the context of the NCT to contrast with the concept of "adaptive landscape" that is often in play in SET. Its originator says: "The affordances of the environment are what it offers the animal, what it provides or furnishes, for good or ill...I mean by it something that refers to both the environment and the animal... It implies the complementarity of the animal and the environment (Gibson, 1979, p. 127, as cited in Walsh & Rupik, 2023, p. 342)." Walsh and Rupik say that "agents, unlike run of the mill objects, experience their conditions of existence as affordances... proper[ies] of the interaction between an organism and its conditions" (p. 342). I bring it into this

discussion because of its usefulness in conceptualizing the interplay of ownership phenomena with organisms and evolution.

One can understand wealth, whether material or embodied or relational, as affordance. One can understand owned entities as affordances, whether termed property, territory or possessions:

“Affordances are opportunities for action; they are properties of the animal-environment system that determine what can be done” (Stoffregen, 2003, p. 124). They may be considered intrinsic emergent properties of the organism/environment system (Stoffregen, 2003) or “relations between the abilities of organisms and features of the environment” (Walsh in Barker (Ed.), 2014, p. 221).

What is interesting about this, is that an affordance is deemed entwined with the organism in a particular way, where the capacities of the organism itself are relevant to the utility and influence of the affordance to the organism. “The capacities of the organism in turn depend (in part) on the features of the environment. Organisms and their affordances are co-constituting and ‘commingled’ (Walsh in Barker (Ed.), 2014, p. 222). These ideas are deeply consonant with niche construction and cultural niche construction.

He goes on to note that affordances are not all external – “the inner workings of organisms present affordances too” (p. 222). This is particularly useful in terms of conceptualizing how ownership worldviews – which are interior operatives – can be of real consequence to the cultural and environmental trajectories we are discussing. It can also be illuminating to consideration of the implications of internalization of ownership – whether as owner, non-owner or owned.

The concept of the affordance stands out because it is contextual: unlike the reciprocal organism-environment inter-effect that most fundamentally characterizes the workings of NCT, affordances can offer twists and turns to the evolutionary trajectory without necessarily themselves being causal of environmental change. The affordance can create the context for change, but then the

resulting change to the organism feeds back with the environment from the organism, not the affordance.

Scalable Dimensions of Niche Construction

Definitionally and processually, the crucial ‘facilitator’ of niche construction as an evolutionary process is *inheritance*; the passing along of legacy, through time, of the effects of niche construction endeavors. Niche construction can thus be conceived of as a spatial and a temporal phenomenon – changes made by organisms are made in the spatial context in which they exist, and the effects are meaningful over time scales (Odling-Smee, 2013). This can be, but is not always true of ecological engineering. Cultural niche construction can add a level of abstractedness to this way of understanding niche construction, while retaining its spatial and temporal properties.

This temporal aspect is one of the important ways NC is distinguished from the extended phenotype, an idea that bears some similarity to niche construction but that originated with the work of Richard Dawkins in his influential 1982 book on the subject. Odling-Smee and Laland say that:

This temporal dimension to niche construction, in shaping inherited patterns and intensities of selection experienced by distant descendants, is missing from the extended-phenotype perspective, yet formal population genetic models have established that it can strongly affect the evolution of the constructor population. (2012, p. 221)

The events that constitute niche construction, and that result in beneficial legacies, usually rely upon another scalable attribute – frequency -- to be beneficially bequeathed to following generations of the same organism, and to other affected organisms. Isolated incidents that result in isolated benefit are far less likely to have a meaningful legacy effect. Accrued legacy effects exponentially increases the likelihood of an evolutionary effect on both/either the organism itself and the organisms affected “even organisms whose individual impact on their environments are very small, may nevertheless cause huge

ecological effects if they occur in sufficiently high densities, over large enough areas, and for sufficient periods of time.” (Laland & Boogert, 2014, p. 80).

The beneficial effect of accumulating and bequeathing wealth – embodied, material or social – to descendants (or others who can experience benefit, such as other kin, members of a social network, institutions, interspecifics) through time has been discussed above. In Shennan’s 2011 article, he argues that this has reproductive advantages, even though we see doing so as an end in itself, and that “strategies focused on the maintenance and increase of wealth can even be more successful in reproductive terms than strategies directed at maximizing reproductive success in the short term.” And in humans, this can be “seen as a process of niche construction related to the increasing importance of fixed and defensible resources in many societies after the end of the last Ice Age” (p. 918).

This is congruent with the argument that ownership phenomena, such as wealth, have significant fitness effects. After the last ice age was a time in human history in which there was a gradual shift from hunter-gatherer/forager social structures, which tend to be egalitarian and where sharing is customary: “changes in foraging efficiency are associated with technological or social change, such as the origins of agriculture and the emergence of social hierarchies (Ready & Price, 2021, p. 72). Agricultural societies have certain features, including, very often, exclusion: demarcation of bounded areas in which agency is enacted with regard to entities by particular groups to the exclusion of others (even in communal owning systems) where the others can be conspecifics, domesticates, interspecifics, and what are colloquially called “pests” – agents who may encroach on the “owned” resource, here being the crops or livestock that are the purpose of agricultural food systems. Exclusion of others from the wealth of owned resources is the basis for social inequity.

Another important point about scale is the question of whether we are talking about individuals or populations in this overall discussion. The answer is both, but the important element is one we have

already touched on: the more organisms are engaged in the activity/behavior of concern, the more significant its influence or potential influence on the environment and organisms, where reciprocal effects can change evolutionary outcomes.

What Constitutes Niche Construction? As niche construction theory developed, particularly after the publication of the seminal book on the topic *Niche Construction, the neglected process in evolution* (2003) by Odling Smee, Laland and Feldman, researchers in the field clamored for more specificity and clarity regarding just what exactly, in terms of observed or modeled phenomena, *is* niche construction, and how is it determined. This led to the development of a set of criteria (still in use) by Matthews et al, 2014, that enables researchers to “test” for niche construction. This evaluates both the:

presence of niche construction (Criteria 1 and 2) [and it] determine[s] when it affects evolution (Criterion 3):

1. An organism must significantly modify environmental conditions;
2. Organism-mediated environmental modifications must influence selection pressures on a recipient organism;
3. There must be an evolutionary response in at least one recipient population caused by the environmental modification. (Laland, 2016, p. 193)

Laland, et al’s discussion of the criteria is illuminating. They say “the key issue is whether the environmental modification is sufficiently substantial in scale, duration and impact to plausibly affect selection” (p. 193).

Aaby and Ramsey (2022) say that “niche construction occurs when an organism actively changes a factor-or its relationship with factors – in such a way that selection pressures are altered. In this way, organisms are active participants in constructing their adaptive fit” (p. 356).

According to Odling-Smee and Laland, 2012, p. 222, it is not niche construction¹¹¹ when environment-altering organisms do *not* cause evolutionary changes as a result of ecological changes they may make in ecosystems. Further, if the operative process is passive (not directed in an agential way by the organism) it is not niche construction.

A point of clarification that harkens back to the beginning of this section is that niche construction can be an ecological process engaged in by organisms, and niche construction can also be an organismal process with evolutionary effect. In this study we are talking about both as they are both relevant to my arguments regarding ownership phenomena, but it matters to the arc of my arguments to demonstrate that ownership phenomena fit the criteria for the latter, not *just* the former.

Niche Construction and Ownership Niche construction (as an evolutionary process or an ecological reality) and ownership phenomena are foundationally connected. Here we will examine their parallels and commonalities more closely, drawing on the characteristics of niche construction (especially as described by Kevin Laland and John Odling-Smee), and show their alignment with the phenomenon of ownership.

On the next page, I will present this information in a table format, in an attempt to make the information more comprehensible.¹¹²

¹¹¹ As in conforming to niche construction theory, versus the niche construction previously understood within ecology – aka habitat construction. This is the confusing lexical overlap for which I again apologize. I’m not the only one to note it: “...we prefer the terminology of Sultan (2015)—“habitat construction”—as niche construction has been used to refer to a large variety of ways that an organism can alter its fitness” (Scheiner et al, 2022, p. 1).

¹¹² Note also that the cognitive construct of “who” we think we are talking about in the right hand column may shift depending on whether one is reading it through the frameworks of the conventional paradigm of ownership or through the framework of our new paradigm... which in itself is illuminating.

Table 3: Niche construction and Ownership

1) Niche construction consists of: environmental modification.	Ownership phenomena: ...enable/encourage/are at times prerequisite to modification of environment as a function of the particular agency inherent in owning. In other words, I/we own, therefore I/we have the distinct or particular latitude to change/alter, damage/destroy, use, share or gift, keep or hoard an entity/entities (animate or non). Examples: -Building a nest, a beaver lodge, a burrow, a den entails the stake of ownership regarding the location and the domicile, and its construction and existence alters the landscape and conditions for other organisms at large or small scale. -Hoarding and/or caching seeds, entailing the hoarder/cachers ownership stake, modifies the environment both by distributing the seeds in an organism mediated way, defending and tending them, and the resulting potential for germination and its effects.
2) Niche construction consists of: Inceptive, counteractive, perturbative, relocational, experiential modification.	Ownership phenomena: ...play important roles in decisions and strategies regarding each of these manners of modification, again based on the agency of owning, the breadth of access it enables, and the texture of the latitude therein. In other words, the breadth of decisive agency and latitude owning enables, along with awareness of the existence of the same amongst con- and heterospecifics can influence decision making and choices, thus actions that are taken that affect the nature of the environmental modification itself. Example -whether and where to migrate based on, for instance, wealth (material) portability, whether there are locations to migrate to that are not already owned.

Table 3 Continued.

3) Niche construction consists of:	Ownership phenomena:
Reciprocity of effects between organism and environment.	...entail behaviors, strategies and systems that are modified within and between organisms/groups, based on the success or failure of ownership strategies and systems in terms of the health, fecundity or mortality of the organism or organisms, or the ripple effects of these things on other biotic or abiotic entities with whom the environment and environmental outcomes are shared. For instance, an ownership system or practices or behaviors are developed/enacted, and the environmental/ecological feedback (inclusive of evolutionarily significant results (success in resource securement, mating/reproductive opportunities, the effectiveness of transmission of strategies and wealth) shapes whether the systems/behaviors/practices are sustained, altered or abandoned. An excellent example is the dominion ownership worldview, which allows for and encourages a wide variety of significant environmental degradation, ultimately threatening the organism whose system it is and all the organisms and ecological systems affected by it. Receiving and attending to the resulting environmental feedback can instigate changes to the ownership paradigm and its practices, with potential for positive and sustainable ownership behaviors, strategies and systems to emerge.
4) Niche construction consists of:	Ownership phenomena:
selection pressures resulting from niche constructing activities.	...have the potential to strongly influence health, fecundity and/or mortality; wealth transmission can have strong direct or indirect effects of the same kind. This includes the constructing organism(s), recipient or collateral organisms, and ecosystems. OP can advantage or disadvantage organisms by securing a variety of resources for particular organisms use, and this can reduce or increase access to these resources by both conspecifics and interspecifics. It can alter access to reproductive opportunities or improve or impinge reproductive outcomes, and it can result in alterations to the environment itself. An excellent example is human wealth accumulation, which places short and long term selection pressures, particularly with regard to resource access, on both conspecifics and interspecifics. (Think of how gold, especially in the present, has reverberating environmental and organismal impacts and legacies.)

Table 3 Continued.

5) Niche construction consists of:	Ownership phenomena:
Effects on environment and other organisms.	Through innate or learned behaviors and cognitive frameworks, as well as resulting from environmental modification activities that themselves are influenced by ownership phenomena factors, ownership can act as a potent intensifier of agency towards, and effects upon self, conspecific or interspecific organisms. Examples above relate to this attribute of niche construction as well. Another could include an ant colony, whose defense of, elaboration of, and fealty to its nest and its location – all enactments of ownership phenomena – can result in changes in local biota, warfare with other ants and colonies, and most significantly, changes to the local environment that influences the composition of the ecological community in that location.
6) Niche construction consists of:	Ownership phenomena:
Inheritance/legacy of evolutionary effect.	Ownership phenomena can alter and/or influence (to lesser or greater extent depending on the organism, the varieties of environmental modification it does or can engage in, and scale-related factors like population size, technological magnifiers of effect, sociality and cooperative capacities, etc.) evolutionary selection pressures and filters upon other organisms. These can feed back to create new selection pressures on the niche constructing organism, resulting in evolutionary and/or cultural evolutionary response. Examples and instances in numbers 3 – 5 above apply here as well.

Above, I have detailed notable points of intersection of ownership phenomena with the characteristic features of niche construction. When OP as a pan-organismal phenomenon is understood, the myriad ways in which an organism may have or has decisive agency with regard to the external world (biotic or abiotic) are illuminated, and this in turn reveals its significance for trajectories of organismal existence and evolution.

What is operative here is something distinct and important about ownership – the **stake** it provides organisms with. This term well articulates the distinctive, decisive agency of ownership. It is,

once could say, organismal investment or interest in the world around them – and the immediate, short or long term benefits that it earns.

This latter – the recognition that organisms broadly have an agential interest in their own existences and the existences of those they exist alongside – is something innate within Indigenous and traditional wisdom. Western science shut itself off from these perceptions and insights, I would argue, due in substantial part to the cultural niche constructing dynamics of the dominion worldview of ownership. As I argue elsewhere, these uniquely enable the cognitive frameworks required in order to step up resource extraction, wealth accumulation, inequality, conscription of landscapes and beings, and exploitation of, damage to or destruction of innumerable lifeforms. These worldviews and schemas are then much better able to accommodate the myriad ecological demands (inceptive, counteractive, perturbative, relocational and otherwise) of growing human populations.

Now, in an effort to make the links between niche construction theory *as an evolutionary process* and ownership as a phenomenon, we will subject two basic instances of ownership phenomena in action to the niche construction test criteria.¹¹³ We will use the table format again, and our source for quoted material is Laland, 2016, p. 193.

¹¹³ Note that *all* enactments of ownership phenomena may not meet all three criteria (see criteria for niche construction status earlier in this chapter) all the time. However, due to their interwovenness with basic niche construction processes like environmental modification (ecological engineering) and inheritance (ecological and otherwise) ownership phenomena offer robust potential for myriad diverse and mundane examples of niche construction with evolutionary effect.

Table 4: Niche construction criteria and ownership

Niche construction criteria 1:	Ownership enables modification via protection/securing of resources:
“An organism must significantly modify environmental conditions.”	NonHuman example: A beaver/beaver family, who own their lodge and a certain amount of area around it, transformed the area with their construction and maintenance of the lodge, and by securing sustenance in the surrounding area, modify conditions for multiple creatures. Their ownership of the lodge and area enables these activities, discouraging or preventing other uninvited beavers from moving in or helping themselves to the delish aspens nearby, preventing or reducing the incidence of harmful conflicts or reductions in access to resources. Human example: A human family establish a residence and clear land for use in horticulture. Due to their ownership of the area that they establish via conspecific and interspecific information exchange, they have a sense of latitude to engage in extensive modification activities, including clearing land, erecting structures, removing species, to attempt to prevent potentially costly conflicts or resource availability reductions.
Niche construction criteria 2	Ownership influences selection pressures as:
“Organism-mediated environmental modifications must influence selection pressures on a recipient organism”	NonHuman example: Beavers alter stream flow with dams, often changing ambient water temperature, and creating new kinds of habitat for aquatic organisms. Beaver damming also alters water tables and has ameliorative effects on flammability of meadows. All of these have potential to affect natural selection filters, potentially effecting evolution in a range of local organisms. Beaver lodge and dam construction also co-evolved with the beaver itself, thus the activity of the beaver in the environment influenced the trajectory of beaver evolution (Brazier et al., 2021). Human example: Human activity similarly can create or change habitat features. And in this case, irrigating, introducing or favoring species by deliberately advantaging their health and fecundity both influences selection pressures on the cultivated organism and organisms that may be extirpated as competitors to it. It can also create favorable habitat for species that had not existed in this location previously, introducing these organisms into this sphere of potential for heterospecific influence.

Table 4 Continued.

Niche construction criteria 2 (continued)	Ownership influences selection pressures as (continued)
	Investment of effort is also associated with an increase in sense of ownership of an entity (Sherratt & Mesterton-Gibbons, 2017), thus ownership itself (the stake) may intensify activities of environmental modification. Here ownership is the mediator, facilitator, enabler, gateway or scaffolding for niche construction processes. Proactive protective and defensive environmental modification activities, such as those associated with ownership, can also be a source of selection pressure influence as well. I.e., enclosures or patrol activity can change habitat features or usefulness for other organisms, or result in their extirpation or poor nutritional outcomes.
Niche construction criteria 3	Ownership enables modification which results in evolutionary response(s):
“There must be an evolutionary response in at least one recipient population caused by the environmental modification.”	NonHuman example: Beavers are well known to have occasioned evolutionary response in a variety of organisms wherever they reside, including the Northwest of the United States where they have influenced the evolution of salmon, and many other species as well (Brazier et al., 2021). Human example: Human horticultural activities that change and/or create habitat are known to occasion evolutionary responses in both human beings and a wide variety of organisms as well. From domestication of crop species to extirpation or adaptation of organisms that would otherwise feed on the crops, and to the creation of optimal breeding habitat for malarial mosquitos through horticultural practices, such as in Africa where yam cultivation created conditions for human cells to undergo heritable change (sickle cell disease alleles) that enhanced resistance to malarial infection (Laland & O’Brien, 2012). Here the ownership phenomena are at the initiating center of a cascade of events that have ecological and evolutionary impacts, along with beneficial effects on the initiating organism. The ownership phenomena influence the extent, duration and temporal stability of the activities as well. Many other examples are possible.

I hope this clarifies, even if narrowly, how the phenomenon of ownership can be closely associated with organismal agency over the spaces and entities with which they engage, especially with regards to existential necessities like nourishment and reproduction opportunities that ensure life and its continuation. Each of which are often significantly mediated by the capacity of an organism or group of organisms to retain sufficient agency (and engage in sufficient information exchange or relational dynamics) in regard to space or entities to achieve or at times, grossly amplify, these survival level goals/needs. I suggest that this makes ownership highly adaptive – and adaptable – and likely to exist and persist and, in particular instances, become quite elaborate as a result.¹¹⁴

Ownership, Niche Construction and Culture

For thousands of generations humans have been carving their existence in the world with cultural tools that have become integral to their livelihoods, thereby shaping their environment at all scales, both intentionally and unintentionally. Attempting to answer the question of what are the extensions of human biology through culture leads to a striking conclusion: There are few aspects of human biology that have not been shaped by our culture. Human culture has also affected the biology, even the survival, of nonhuman species. (Creanza et al., 2017, p. 7785)

Understanding both niche construction and cultural niche construction as extremely influential eco-evolutionary processes enables us to see how the dominion ownership paradigm exemplifies cultural niche construction. As a process transmitted through generations, originated and propagated by human groups who benefit the most from it; that currently operates within an accelerating feedback loop, and that has scaffolded the creation and exponential expansion of systems of enclosure, exploitation, extraction, exclusion, extirpation and extinction that have led to the world we live in today: perched precariously on the verge of ecological collapse.

¹¹⁴ See footnote 100 on p. 194.

Cultural niche construction has a great deal to do with how culture – as algorithmic information – is beneficially transmitted between individuals and between generations (Odling-Smee & Laland, 2012). This can shape those engaged within the dynamic, as well as those outside of it but whose cultural and ecological context is influenced or shaped by it. An ownership paradigm is a significant part of that package of transmitted information, particularly for societies or groups heavily oriented towards ownership systems and structures (such as a large-scale capitalist society). The perpetuation of this cognitive schema, as we tracked in the above historical section, is stitched into cultural transmission due to its interlinkage with worldviews and belief systems interlaced within socio-normative frameworks like laws and religions, along with subsistence and economic systems, and equal or unequal social relational structures. These are all the fabric of human society. Sterelney in Barker et al (Eds.), 2014, says:

The legal system of a culture is clearly the collective product of that culture, and is a characteristic of the culture as a whole rather than of the individuals within the culture. The same is true of much of the normative and ideological life of a group: its norms, customs, religious rituals, and representations. (p. 274)

He goes on to say that “we think normatively; we represent the world in religious and magical terms; we consume and produce stories and other fictions” (p. 275). The dominion ownership paradigm is a story we have told ourselves for generations in the West, and while it began as a fiction, it has become a reality in tremendously consequential ways.

Dominion worldviews have become a conceptual bubble in which societies exist, a bubble that can be appraised also as a cultural ‘innovation’ that underpins conquest, exploitation, and methods of resource securement – including enclosure and exclusion - for the purposes of extraction and utilization on ever-expanding scales. These are concepts and behavioral patterns associated with historic and contemporary enactments of private property, the epitome of the dominion paradigm.

The cycle of reinforcement of a conceptual schema is rich with advantages:

Once the retention-innovation cycle takes off, groups extract more resources more efficiently from their environment, thus making it more likely that they can support or expand their population base. In sum, seeing humans as collective niche constructors helps explain the fact that the collective features of human groups can drive an evolutionary trajectory. (Sterelney in Barker et al. (Eds.), 2014, p. 275)

But human beings are not alone in creating a bubble of existence for themselves. While our most significant bubble may be cognitive, in the form of a paradigm that informs and supercharges our acquisitive juggernaut speeding towards ecological collapse, termites also live in a bubble of their own making, and which confers advantage: “The extent and transforming character of the human niche is far from unique. Termites, for example, live in worlds that are almost entirely termite-constructed, and their entire phenotypes are adapted to a world they have made” (Sterelney in Barker et al. (Eds.), 2014, pp. 276-7).

But the scale of the bubble created by Western worldviews is what is distinct: it has now stretched itself in suffocating near-totality around the entire corpus of our planet.

In above chapters, I have recounted the cultural trajectory of the dominion worldview of ownership. And I have recounted the active presence of the phenomenon of ownership within niche construction in organismal life and evolutionary outcomes. Here I bring these threads together to help us understand, then, the emergence and proliferation of not only a dominion worldview of ownership, but ownership as dominion in the world.

The dominion worldview of ownership is a *culturally transmitted cognitive niche* that we can find evidence of from antiquity and the Roman empire to the formation of early Christianity, to the development of the Holy Roman Church and mediaeval European society, to the emergence and fixation of Enlightenment era philosophies and worldviews into law, subsistence systems and both institutional and personal morality, and into recent developments of our present societies.

This cultural worldview of dominion exemplifies an organism – here particular human beings in particular areas, and acting through time – responding to and shaping ecological conditions to optimize access to resources. This is niche construction of both immediate and generationally conveyed consequence, that has over time and is currently profoundly shaping the selective environment. With the result that these humans “thereby act as co-directors of their own, and other species’ evolution” (Rendell et al., 2011). But as discussed, these dynamics are occurring within a response loop of increasing ecological demand from changing subsistence strategies (agriculture and eventually industrialism) and changing social structures (growing social hierarchy and the inequalities of wealth accumulation), changing goals (profits) and the swelling and spreading populations associated with them.

Cultural worldviews and belief systems are thus seen building a paradigm of ownership that normalizes the cognitive infrastructure (religious, moral, institutional, scientific, economic and political) that justifies, venerates, perpetuates and makes conceptual orthodoxy out of exploitation, exclusion and extraction in the unquestioning service of acquisition, accumulation, and hoarding of resources. “Resources” – the plants, animals and landscapes that constitute the living beings of the world we share.

Conclusion: Connectedness and Commonality, the Contributions of an Eco-Evolutionary Framework

Looking at ownership in the context of niche construction presents opportunities to explore how it – as a phenomenon of the Earth system – can be advantageous or disadvantageous to organisms, and how that is, and why that is. Particularly intriguing is tracing how it became, via ecological exigencies arising from varying opportunities or challenges in climates; available resources; competition, predation and pathogens; and existing alongside or intertwined with population, technological, cognitive, and cultural changes both positive and negative; a particularly impactful instance of not only niche

construction but cultural niche construction with a variety of iterations amongst a particular species; our own. The utility of this includes reaching novel understandings of ecological and evolutionary drivers, within the dominion worldview of ownership, of events like slavery, colonialism, dispossession, extractive and growth-centered economic systems, and barriers to change therein, even in the brazen face of looming anthropogenic apocalypse.

At the same time, applying niche construction theory to a deep analysis of ownership is intended to enable a grounded viewpoint of interlinkage that highlights the agency and consequentialness of all life forms in a novel way. The theory and its broad scope bespeak the interconnected, interwoven nature of existence. Understanding the phenomenon of ownership within niche construction theory reaffirms the reality that nonhumans and humans are fellow actors in a phenomenon of existential significance of the living world.

Instead of allowing ownership to be *only* a shadowy driver of worldviews that scaffold the idea of humankind as a superior and entitled exception to – or as being apart from – the rest of lifekind, revealing it as a phenomenon of the Earth system that can be understood as to its operation and effects through niche construction and cultural niche construction places human activity, agency, actions, beliefs, inventions, systems and foibles within ecological, evolutionary and biological frameworks *along with everyone else*; and reminds us that Earth’s own living and changing nature is *at the center of that*.

The result can be expanded vision: enabling us to see our species deeply engaged in the co-creation of this world, for good *or* for ill. This with regards to ownership: something that has been reified as an instrument of humankind, and believed relevant to the rest of the living world only in limited ways that are lacking in the agential qualities the dominion worldview generally – and the dominion worldview of ownership particularly – reserves for humanity.

Seeing ownership anew enables us to grasp, in a newly meaningful way, the notion of life engaging together in an illuminating dialectic of inceptive and counteractive perturbation and relocation, in a matrix of reciprocity and legacy within and upon the Earth, where human beings are just one of many talented engineers in a web of engineering, making use of and influenced by affordances encountered. This makes possible a rekindling of awareness of all of our talented colleagues: beavers, termites, badgers, dung beetles, condors, earthworms, trees, fungi, and all myriad of creatures who are integrally engaged in the ‘making and remaking’ of this planet, just as we are. And for the same reasons,¹¹⁵ many of which are driven by the goals and purposes stitched into the *phenomenon* of ownership, and which are distinct from the *dominion worldview* of ownership: a view that is just *one* novel organismal strategy that has been long misunderstood as *being what ownership is*.

The phenomenon of ownership is part of the fabric of the strategies of living things, stitched into the niche constructing process of co-creating the world: perhaps ownership is most succinctly summed up as the *stake* that organisms have in that process.

¹¹⁵ The danger, of course, is that we may then fall into the old trap whereby seeing ourselves and our activities as a part of nature, we may begin to think all we do is natural, and thus “good.” Chellappoo cites Buller (2005) discussing this pitfall, saying that concepts of something being ‘evolved’ and/or ‘innate’ can problematically lead to an inference that they are “then, by extension, unchangeable and natural” in Ludwig (Ed.), 2021, p.216. E.O. Wilson commented on this in regards to sociobiology: “There is a dangerous trap in sociobiology, one which can be avoided only by constant vigilance... the naturalistic fallacy of ethics, which uncritically concludes that what is, should be” (quoted in Laland & Brown, 2011, p. 72).

SIX: UTILIZING THE NEW PARADIGM

The Body and the Business of Ownership

Thus far I have called out a dominion paradigm of cultural bias, human exceptionalism and ambiguity lurking in ownership-related thought. That process enabled me to rethink ownership, seeing it as pan-organismal, and as a phenomenon, which made it possible for me to identify its common denominator building blocks: agency, information, relationship and effect. This allowed me to explore its operation and influence through the foundational ecological and evolutionary lenses of niche construction and cultural niche construction theories. Now I will suggest novel interrogatory, investigative, analytical and explanatory frameworks regarding ownership phenomenon.

We have two central novel conceptual frameworks in play at this point. One is my new description of ownership (AIRE), the other is understanding ownership as a prime example of niche construction/cultural niche construction. Reflective of the nature of the world we live in, the frameworks are interdependent. This is both in terms of their emergence in my thinking (neither would have been realized without the other: the two conceptual frameworks co-emerged, as it were), as well as in how mutually informative they are. One could almost cast them as the body (AIRE) and the business (niche construction/cultural niche construction) of the phenomenon of ownership.

In nearly all of the literature I encountered regarding ownership phenomena, there is definitional haze, incompatibility between research programs due to a commitment to divisions rather than shared traits, and obliviousness to fundamental, problematic biases lurking in thought and research, even from sources that are attempting to unwind exactly that. All of this acts to prevent forward movement on research and analysis in a wide variety of fields, and perpetuate the dominion paradigm. Based on gaps I have observed in the literature and articles like Kamath and Losos (2017) "The

erratic and contingent progression of research on territoriality,” it is possible that these issues are even discouraging researcher interest in these topics.

Below I will offer examples of how my new framework could move things forward, beginning with the life sciences. We will start with a closer look at how ownership’s common denominator features - AIRE – can be understood in the context of organisms themselves.

The Study of Living Things

Let us begin with a male robin. Examining its life history, and assuming we can know enough to have sufficient data to judge, when, where and how does the male robin exhibit decisive agency? Perhaps with regards to space, and a nest. Think of these as entities. Does decisive agency extend to its mate, another entity? In what ways, and are there any interesting caveats (i.e., does the mate have more agency with regards to itself than the male robin? Such as in, perhaps, now and then being a bit promiscuous?) How durable is this decisive agency in any of these instances? Is it continuous? Does it change if the robin leaves and returns to the area? Does it last for a short period while accomplishing a goal, or does it continue based more on the presence of the robin in the same area? What about information: what kind of information is the male robin sharing with regards to space, or its nest, or its mate, and with whom is it shared? Is it aimed only at its conspecifics? What explains the intended target? Does the target change? When and how much, if so? How much information transmission is required in order for it to have its intended effect or greatest effect? What kind of information does the male robin receive from external sources that relate to its decisive agency, and how does that affect it? And then there is relationship – where do we find relationships and how do they matter? Do these relationships change in relation to factors to do with the nature or extent or duration of agency or any of the other three factors in consideration here? With regards to space, do the relationships of

consequence all concern conspecifics? How about mates or potential mates? Is there cooperation involved, or competition, or coexistence – and what are the varying levels of each of these, particularly over temporal or spatial trajectories? And finally, what effects are apparent, inherent or likely? Are there implications for nourishment, for reproductive success, for provisioning of and survival rates of offspring? How have effects experienced in the past by this robin or by its ancestors affected the dynamics of the questions we are investigating today? And how might what we determine to be the answers today give us more to think about in terms of the future of this or subsequent robins?

All of the above nuanced questions get to a few things. Such as the nature and durability of the agency and the kinds of information involved, along with the relationships that are most significant in this instance, along with the nature and significance of the results (the effects). These provide a thorough picture of what is happening here.

Another layer of questioning can then be taken on: ‘is this ownership?’ The answer would begin with asking ‘are all the components evident?’ In this example, it seems that the specific space and nest fit, but the mate does not.

Another investigative layer in this scenario might be examining the ownership phenomena for the characteristics of its phenomena: might decisive agency with regard to space that only is maintained for a particular period of time associated with a specific goal held by a bird... perhaps these characteristics fit a pattern often understood as territoriality. With regard to the nest, we detect decisive agency with regard to an entity, so this fits patterns associated with property and possession; it is certainly the property of the male robin (and its mate), and they certainly are the possessors of it. So, here we see robins engaged in ownership phenomena, and the exercise has not only made it possible to see this and its nuances, but it has allowed us to ask a whole slew of new and interesting questions while so doing.

Moreover, we can use the identical questions about my husband Scott, or my indefatigably adorable dog Ren. We might ask the questions about our home, their respective beds, or about one another.

We can extend these questions to the spiders that live in our home, that we attempt to keep out of everyone's beds, and that we thoughtfully avoid physical contact with. Or the many dozens of plants that live in our home as well, that rarely get into anyone's beds but remain in their pots (their beds, or nests perhaps) at all times, and that I handle, in some way, on a bi-weekly basis.

We can step outside, perhaps to nearby ponderosa dominated canyonlands, or the cottonwood lined Yellowstone river – or further to the Beartooth mountains or far beyond to the Pacific Ocean and find organisms big and small of whom to ask these and other questions that emerge from the AIRE paradigm. And then we can compare and contrast what we find.

We might find the phenomenon of ownership evident in the answers to these questions, and at times we might not. Characteristics particularly associated with the nature of certain ownership phenomena may also emerge out of our questions. Regardless, a much more informative-than-usual examinational topography would have been traversed in the exercise. Not only will we ourselves end up understanding and perceiving ownership better, but we understand all these creatures, and their endless interconnected inter-influential interactivity, better as well.

This is without even setting foot into the deeper reaches of these questions, which may include 'how do we recognize decisive agency in a nonhuman being and would we know it when we see it?' How about information – are we even aware of all the information being shared or exchanged? Do our senses or our technologies or our mental frameworks meet this challenge? Similarly, do we reliably see or understand relationships as such when nonhuman beings are engaged in them? And certainly, we cannot pretend to conclusively know all the trajectories of effect relevant to the ownership phenomena

of creatures outside of ourselves, as we rarely entirely or soberly apprise them in our human selves. But critically, if we allow ourselves to remain within a conceptual paradigm that reserves ownership for humanity and defines it only in exploitative and coercive terms, the *phenomenon* of ownership will remain oblique.

The framework can also aid in interrogating the past with regards to OP, such as in archeological or historical contexts. For instance, in looking at the Roman empire, which could extend our earlier discussion about ecological engineering (see p. 209) into very interesting territory. Naturally, certain data might not be discoverable from the past, but the possibilities suggested by the kinds of questions that can be asked via this framework are valuable.¹¹⁶

¹¹⁶ Additional questions could include ‘why might there be more or less decisive agency with regard to an entity in one instance, or in one species or individual in a species, or in one kind of environment or ecosystem than another? Do differences relate to being or not being a social species? Do they relate to behaviors known to be observed or engaged in? Do they relate to phenotypic traits? Do they relate to the resources they utilize? Do they have to do with learned skills or knowledge or innate propensities? One could ask how much information is required in a target instance of OP, and why? What relationships are necessary, and how are they maintained? What types of relationships are we talking about? Can they be passed on? How durable are they and what are the reasons for the durability or lack thereof? How do different environments and resources influence the balance of decisive agency, information, relationship and resulting effects? Are there similarities in this balance between species in the same ecosystem or different ecosystems? Or are there distinct differences?

How do larger groups of conspecifics (communities) show different balances of AIRE? Can we look at these things in quantitative *and/or* qualitative ways? How can we quantify something like OP information amongst nonhuman groups or solitary species, or can we? Does this show us that in some instances we may not be able to get sufficient information, which does not mean OP is not present but instead, perhaps, that we are not able to answer enough questions to really say that we know. In this case, the framework of questions can reveal data we are missing that would undergird solid judgements or attributions about animal behavior and experience.

Another interesting series of questions could look at the idea of expended versus imbued decisive agency. In other words, in some settings having decisive agency with regards to an entity requires expenditure of quite a bit of effort, say in initiating or maintaining relationships or in conveying information (which would include defensive or offensive activities). An example of imbued decisive agency would be inheriting something that has a robust ownership structure around it: such as would be the case with wealth transmission through the means of a testamentary will in the present day in America, or the inheritance by subsequent generations of termites of a large, well-functioning termite mound in Kenya. Where it is fairly easy to maintain or where it is managed by others (such as might be the case in a large human estate) the expenditure of or engagement in actual agential activity is reduced.

Based on the above, we can also think about how the OP building blocks can be understood almost as ingredients in a recipe. So, different amounts (ratios, weights, emphasis, proportions) of each A, I, R, or E can constitute useful information about an instance of organismal (group or individual) OP; it can offer the capacity to compare and contrast – qualitatively and potentially quantitatively - with the same organism or other organisms; it can show how these ratios may change through time or in varying contexts for the organism (which can then lead to useful explanation or further interesting questions), and it can reveal useful patterns.

My framework and its potential for structuring and enhancing inquiry bears some similarity to another analytical framework: Niko Tinbergen’s foundational 1963 “levels of analysis” that he developed for the study of animal behavior. I have recreated these in table 5 below.

Table 5: Tinbergen's Levels of Analysis, or “Four Questions.” (Adapted from Rubenstein & Alcock, 2019)

Proximate level	Ultimate level
Development	Evolutionary history
How genetic-developmental mechanisms influence the assembly of a [lifeform] and its internal components	The evolutionary history of a behavioral trait as affected by descent with modification from ancestral species
Mechanism	Adaptive function
How neuronal-hormonal mechanisms that develop in a [lifeform] during its lifetime [influence] what a [lifeform] can do behaviorally	The adaptive value of a behavioral trait as affected by the process of evolution by natural selection

This is interesting, because it allows us to see the advantages of attributes of ownership phenomena that are heavily weighted in information and relationship, as organisms’ own bodies are less involved and less at risk. This exemplifies the benefits of a novel approach, rather than relying on a flawed premise (say, the dominion worldview of property or possession), and then getting mired down.

This thought experiment may also reveal another advantage in sociality and suggest how ownership phenomena parallels exist between social insects and human societies. It teases out the insight that maybe some human ownership systems *reduce* agency, or information or relationships (as we discussed in the transaction or commodification section (see especially pp. 183-184) but increase effect/legacy... not readily detected or trackable within existing ownership interrogative or analytical models.

Niko Tinbergen

Niko Tinbergen was a Dutch scientist, born in 1907, who studied zoology and animal behavior. He won the Nobel prize with two others in the category of “Physiology or Medicine” in 1973. Tinbergen’s levels of analysis are known to the three scientists whose work I reference below and are valued for their significance in adding structure to research questions and expanding the potential quality and depth of explanation (Bateson & Laland, 2013). While I do not want to imply that my work in any way sits on par with that of Tinbergen, I do see a parallel in creating a methodical framework to help both structure and suggest deeper levels of inquiry. His is a well-known, still-utilized example of an analytical framework that made possible new research questions and approaches, which is what I hope mine could become. Moreover, Tinbergen’s framework can be coupled with mine to extend usefulness of mine further, making for even more novel pathways into ownership phenomena research.¹¹⁷

Interrogating Ownership Phenomena

Understanding the building blocks of ownership phenomena emphasizes the how and why of interactions between entities with regards to one another and the context - the environment - within which they exist. This is in stark contrast with efforts to analyze ownership as possession, property or territory/ality sprung from our hairy heads, that are culturally biased, human-centric, have ambiguous and shifting definitions, and which firmly limit the scope of investigations around them as a result.

¹¹⁷ For example, within Tinbergen’s levels of analysis, one could look at each of the four building blocks through each of Tinbergen’s levels, opening up a questioning model through which you can better understand both the building blocks and their influence on the life history of the organism(s). One could use just the idea of ultimate or proximate to understand each of the building blocks more deeply. Much more could be done with this, but most importantly, this way of interrogating and learning more about ownership phenomena is *not currently possible* outside of the new paradigm I am suggesting.

Earlier, we used the phenomena terms of territory/ality, possession, property. By using these terms still laden by the dominion paradigm, does it pitch us back into the definitional and paradigmatic abyss? No. Starting from a non-dominion premise - that ownership is a pan-organismal phenomenon - is the first step to preventing this. Then, we can use the building blocks of commonality to assemble our understanding of the particular instance of ownership phenomena we are investigating. We can then select terminology whose attributes and usage have commonalities with what we observe. But wait, isn't that one of the problems – what exactly *are* those with regards to each of these terms?

This suggests another exercise where we can start with the concepts – the phenomena like territory/ality, property, possession¹¹⁸ - and their shared building blocks, and investigate, for instance, differences in the distribution of importance of each of them. How are they weighted differently in general usage? And what is their nature? Often what contributes to distinctions between the terms is the *entity* being regarded in the particular phenomena or epiphenomena. In other words, space or landscapes, objects, places, beings, ideas. What or whom constitutes the entity¹¹⁹ in this relationship, and how does that parallel how these concepts are currently used or differentiated?

¹¹⁸ We could also interrogate communal property or just property, intellectual property, or land tenure, but I will leave that to your imagination, dear reader.

¹¹⁹ Entities are another way we can use our description to open a door of inquiry. For instance, I wonder if the general disinterest of nonhuman beings in accumulating (and compounding) entities such as currencies, landscapes and objects may contribute to the difficulty some humans have in perceiving ownership amongst nonhuman beings? It is in our nature, logically, to attempt to understand nonhuman beings from within our own experience and institutions, as that is what we know. (Again, see DeWaal's 2016 book, and see also Temple Grandin's *Animals in Translation* (2005)). This can impede our vision. An important concept is that of *cumulative culture*: the idea that culture builds upon itself over time. We innately perceive that very much in our tools and material culture. Thus, I propose that this may contribute to existing cognitive impairment with regards to ownership detection by contemporary persons living in industrialized societies. Western observers have not noted sufficient object hoarding and manipulation by nonhuman beings. Support for this could be found in how we much more readily perceive ownership phenomena enacted by nonhuman beings around landscapes and food: thus perceiving and acknowledging territoriality and possession.

In contrast, natural world-immersed cultures (such as are many Indigenous, hunter-gatherer and nomadic societies) are far more capable of seeing the parallels between human and nonhuman, as their

For example, with regards to possession, one might explore the importance and nature of relationship, as proximity to the entity is associated with the word possess/possession. With property, one could investigate its reliance on information (engagement with systems, with communicative technologies). With territory/ality, one could examine spatial agency. Further, these all can have significant aspects regarding the resultant heritability of it as wealth and/or provisioning, or influence (gifting and sharing).¹²⁰

Publication Critiques

Now that we have looked at the investigative and descriptive utility of the paradigm, let's move to applying it to published work. I will start with three peer-reviewed journal articles from the life sciences. The researchers all have strong interests in studying ownership phenomena but either speak of or just demonstrate the conceptual and research barriers to doing so within their text.

In table 6 (below) I give the titles, authors and abbreviated abstracts of three peer-reviewed articles I have selected for this critique.

lifeways enable them to have a vastly greater exposure to the lives and ways of nonhuman beings. And, their own lifeways are not as deeply contingent upon a wide array of inanimate and controllable objects.

¹²⁰ Remember that I am *not defining* ownership, I am **describing** it. This is a very important distinction grounded in observational methods and drawing on diverse epistemologies.

Table 6: Articles and abstracts.

1) <i>Privatization and Property in Biology</i> - Strassman and Queller, 2014 - Animal Behavior, #92
Organisms evolve to control, preserve, protect and invest in their own bodies. When they do likewise with external resources they privatize those resources and convert them into their own property. Property is a neglected topic in biology, although examples include territories, domiciles and nest structures, food caching, mate guarding, and the resources and partners in mutualisms. property is relatively rare in animals compared to humans. The lack of institutional property rights in animals ... contributes to their rarity..... Privatization enhances the likelihood that the benefits of cooperation will go to relatives, thus facilitating the evolution of cooperation as in Hamilton's rule or kin selection. Mutualisms often involve exchange of property and privatization of relationships. Privatization ensures the stability of such cooperation....
2) <i>Evolutionary Routes to Stable Ownership</i> - Hare, Reeve, Blossey, 2016 - Journal of Evolutionary Biology #29
Ownership can evolve in potentially any species. Drawing on insights from across disciplines, we distinguish between possession and ownership and present species-neutral criteria for ownership, defined as respect for possession. We use a variant of the tug-of-war evolutionary game to demonstrate how ownership can evolve in the form of a new, biologically realistic strategy,determines whether ownership is adaptive. and discuss how ownership unites previously described behavioural phenomena across taxa. We propose that some but not all mechanisms of territory formation and maintenance can be considered ownership....investigate the biological importance of ownership, and we call for a comprehensive account of its evolutionary logic and taxonomic distribution. We propose that ownership should be considered a fundamental, unifying biological phenomenon.
3) <i>Animal territoriality, property and access: a collaborative exchange between animal behavior and the social sciences</i> - Kamath and Wesner, 2020 - Animal Behavior, #164
Territoriality is central to animal behaviourists' understanding of many facets of animal behaviour, ...However, the term itself, how it is conceptualized and defined, has long been nebulous and contentious.a historically and sociologically informed path out of the conceptual gridlock in which animal territoriality has been located for decades. We delineate two key problems with territoriality identified in the animal behaviour literature: First, that it focuses on how animals are expected to behave rather than how they actually behave and, second, that it assumes rather than demonstrates the function of, and specific relationships among, individuals. ... whereas property is focused on how people are expected to behave under juridical–legal rules governing resource use, access focuses on a wide array of means by which people actually access resources. ...problems...due to implicitly embedded notions of property and ownership. ... further problems ... conceiving of ownership is unfeasible in animal societies lacking the particular juridical–legal institutions that establish and enforce property rights. ... we argue that the theory of access...will allow for a fuller and more nuanced understanding of variation in animal behaviour than that afforded by current dominant notions of territoriality.

I bolded the text in the above abstracts that is most central to my critique, arranged the articles chronologically (oldest to most recent) and abbreviated the abstracts for space. I have included the full abstracts in Appendix B, along with the DOI links to the articles themselves.

Initial Observations

- Each of these articles clearly see the value and utility in examining ownership phenomena within lifekind beyond humanity, and to varying degree present evidence supportive of my contention of pan-organismality.
- Each are heavily reliant on definitions and conceptions of the ownership phenomena they state they are interested in, and all of them make some reference to existing ambiguities in that regard that constitute impediments to research or analysis. Nevertheless, particularly in the Strassman and Quellar, and Hare et al. articles, the terms are used as if their nature were settled, which is an example of using implicit social understandings as central investigative starting points (a problem).
- Each reference and deploy common tropes (T) or problematic ideas (PI) that we have addressed elsewhere and that emerge from the dominion paradigm:
 - the *juridical-legal institutions trope (T1)*
 - the *respect for possession trope (T2)*
 - the *ownership “evolves” idea (PI)*¹²¹
- Each lack a common framework of ownership features to interrogate variously which results in the articles being conceptually isolated from one another. Thus, they exemplify a

¹²¹ An implicit conceptual framework of ownership related to a popular erroneous notion regarding evolution as a progression of complexity/ladder. This is not an error these biologists make about evolution itself, but the error exists in their framing/thinking about ownership phenomena.

widespread impediment to building upon one another's work, cross-pollinating ideas and findings, or resolving chronically debated issues in the topic areas they tackle.

- These are common problems across relevant literature, and are not unique to these articles.

Strassman and Quellar, 2014 This is a great paper that would benefit substantially from using "ownership" as their consistent core concept/term rather than using phenomena terminology (privatization, property) fraught not only with cultural baggage and human exceptionalist tropes, but definitional ambiguity as well. Using "ownership" would also obviate discussion of terminology problematics (private property, property, or territory), eliminate the need to reference disciplinary conflicts like the sociobiology debates (p. 305), and avoid the need to allude to adjacent fields (like cooperation research or economics, etc., pp. 305-6), in attempts to distinguish what they mean with their use of terms, and what they do and do not intend them to relate to. And it would prevent further confusing admixtures like "territoriality, which is widespread in animals... is perhaps the best-recognized form of privatization" (p. 306) or a "territory can be defined as a property in the form of an area that an organism controls, uses and defends" (same page).

Instead, with my framework, centering ownership as the central concept, the authors could discuss the behaviors they term privatization instead as highly decisively agential ownership, as private property is experienced in our culture, and further describing what they are talking about in terms of its extent/nature/duration of agency (or similar with the other three denominators). They could even create abbreviations for each of the attributes that they are interested in, such as HdaO (highly decisively agential ownership) and use them in models and equations.¹²²

¹²² Conversely, they could just explain that they are working within my new framework and are going to be using "privatization" to refer to highly decisively agential ownership, clarifying the consequential feature they are interested in, rather relying on definitions that are chronically contested, as they do.

Altering the articles' central frameworks would make it straightforward, avoiding loaded terms and becoming more useful to others researching ownership phenomena, as they would be referencing a common framework, as I mentioned before.

As far as their deployment of trope (T1) in the article, it would most likely not appear, or if the idea remained relevant to mention in the discussion, it would be identified and discussed for its problematic nature and origins (citing the literature that concerns it and the evidence for its erroneousness) within the text.

Hare, et al, 2016 Another exciting paper, again providing excellent support for and even arguing for pan-organismality in the phenomenon of ownership. However, much of the thinking and analysis revolve around the "respect for possession" trope (T2): in fact, these authors define ownership as exactly that. Their game theoretic model revolves around these ideas, and much of the logic applied to their results is situated in them. Because of the centrality of this notion to the article, it would need a substantial revision of emphasis to work well within my framework. For example, the following interesting statement would become more central to the discussion:

When a new shareable resource (e.g. a territory, food source, nutrient supply or potential mates) becomes available, an initial period of scramble will give way to a stable state, most likely without fully equal division of the resource among all members of the population. Such processes are frequently observed in the biological world. (Hare et al., 2016, p. 1182)

The authors then say:

Our model predicts that the transition from scramble to peaceful equilibrium will take place when $k < k^*$. Nevertheless, RWR is not stable under conditions of scramble when $k \geq k^*$, or in all possessor–intruder interactions. Alternative explanations (discussed below, such as RHP asymmetries) are required to explain respect for possession in such circumstances. (p. 1182)

This could also be done with "property" where a phenomena framework might further the specificity of their argument beyond the term "ownership" (as in discussing a nest, burrow, etc.).

The authors' game theoretic model is useful in analyzing conflict and contests and can aid in understanding cooperation and social structuring. However, I do not agree that it enlightens us regarding ownership itself.¹²³ The first paragraph (above) provides an opening for understanding something about ownership phenomena. Good AIRE questions might emerge like: what role does information exchange play in the process of moving to a stable state? Or, what relationships already exist, and how has that affected the ensuing stable state? Are there aspects to these influential relationships that have to do with phenotypic traits (size, teeth)? With learned behaviors (strategies, tools)? What about the decisive agency itself – how might the intrinsic capacity of a creature to assert this (say an alpha wolf or a member of a solitary cat species) in the environment in which this occurs factor into the eventual stable state? And is this incident taking place amongst conspecifics or between heterospecifics? What happens next: how long does the stable state last – do the creature(s) concerned maintain a decisive agency durable enough to produce an effect such as being healthier, reproducing more robust offspring, or conferring more helpful legacy to offspring? None of these questions can be developed, despite their rich explanatory potential, due to the authors research framework.

¹²³ Were it sufficiently relevant to merit further space in the main text, I would continue to argue that game theory is not about ownership phenomena but about conflict and cooperation and contests. These things are undertaken in regard to owned entities, but the models do not illuminate the *nature of OP*, particularly because the models are stripped of contextual dynamics. Perhaps more relevant questions might regard what the game theoretic model is actually examining: is it the agency of the players? is it their relational dynamics? Is it the nature or complexity/clarity or frequency or whatever of information being exchanged? And where/how does effect come in? If the models are used in association with the AIRE framework, they might be more useful or relevant to OP. An additional critique stems from research about gender and risk. According to Daly & Wilson, 1983, as cited in Laland & Brown, 2011, there is cross-cultural evidence that male humans are more willing to engage in risky behaviors: engaging in conflict or contests is risky behavior. Thus, do these game theories take the gender of the modeled creatures into account? Might this not also skew the relevance of the data to understanding ownership, and relate more to the varied topographies of animal behavior? Game theory is not my area of expertise, however, so while I may critique it, I shall neither be proposing any games or discussing them further!

Again, because ownership can be a strategy to manage conflict, but is not itself an instance of conflict, I would argue that game theoretic models do not directly assist in understanding ownership, where they may in understanding conflict. I realize that this takes on a well-established area of biology and evolution, however, persisting with my grandiosity, my rewrite of Hare et al., 2016, would state that, and frame the work as research regarding the nature of conflict and contests among organisms, related to ownership. Rather than these conflict/contests leading to “a biologically realistic yet straightforward process by which ownership will evolve” (p. 1179 – this relates to Trope 3), they would provide insights into situations in which organisms solve or manage problems that relate to ownership phenomena they are engaged in.

A great deal of Hare et al’s article is also mired in definitional problems, as mentioned at the outset of this section. Using my framework would excise them, while also making it possible for the articles points and assertions to be translatable and useful to other research regarding ownership phenomena. (With the caveat that as its main focus is the authors’ game theoretic model, much reframing would likely be undertaken due to its greater suitability to other questions.)

Kamath and Wesner, 2020 This article is a fascinating critique lodged by a territory-specialist biologist (Kamath), in partnership with a social scientist (Wesner), that takes issue with the concept and usage of territory/ality in biology. They extensively discuss the morass of definitions for territory/ality and claim it is being conflated with ideas of property and ownership that originate in the social sciences¹²⁴. In doing so they make the mistake of not noting that there are not solid or agreed upon definitions of either, that they differ across fields and usages, and have histories of their own that are just as, or even more fraught and problematic. In so doing, they further entrench definitional and

¹²⁴ Thus they premise their work on dividing territory/ality from property and ownership. Quite the opposite of my arguments.

conceptual issues within their critique. This is ironic because one of their primary goals is to take issue with underlying ideas of patriarchal and dominance behaviors within territory/ality they argue are unspoken and problematic. They use definitions from the prevailing ownership/property paradigm without questioning them, despite the parallels with territoriality definitions and biases they are critiquing. They also take issue with the Strassman and Quellar (2014) article, and their criticism is lodged from firmly within dominion paradigm frameworks which ironically, Strassman and Quellar also deploy. That is Trope 1 (T1), that property and ownership require a legal system to exist.

Using my paradigm, the article could begin with a discussion of worldview bias in science, follow similar (but abbreviated!) threads detailing its patrimony, move into the definitional ambiguity and other problems in territoriality research, and suggest the use of the AIRE building blocks to create a much more concrete and translatable understanding of territoriality, placing it in context within the OP concept family.

From there, a discussion of how territoriality shows decisive agency particularly around space, and how it uses information to convey its existence, both conspecifically and interspecifically (such as how humans understand that birds are sending messages about territory) could ensue. Increased emphasis on, and logical positioning of territory/ality as being of relational nature could follow. Discussion of how organisms relate to other organisms with regards to space and why, when and with what kinds of engagement, along with discussion of variation among organisms in the immediate and long-term, and the intergenerational and evolutionary effects possible within these ownership phenomena could then occur.

Territory/ality could be interrogated in the ways that we did above – from both the organismal or the conceptual starting point. They could have offered a *description* from this basis and surmounted entirely the definitional ambiguity they wrestle with and inadvertently perpetuate in their work. This

would improve their challenge to the patriarchal and hierarchical frameworks they identify as existing within current usage of territory/ality in the field of animal behavior, showing instead its attributes (the nature/extent of agency, information, relationship and effect demonstrated) disentangled from worldviews of domination, aggression, hierarchy and power. The authors eventually posit that *access* is the most accurate and neutral way to conceptualize territory/ality. However, this again elides and neglects a great deal about its features and functions – in particular, the multilayered role of organismal agency in the phenomena. They thus again condemn territory/ality to ambiguity.

This article does bear interesting similarity to my work in its core objective of taking issue with worldviews (they use the term assumptions) and biases stitched into a scientific field and prejudicing its conclusions. While this isn't featured in their abstract, it is highly significant thread in the text.

The Body and the Business

In tracing the history of the formation of the dominion worldview of ownership in Chapter 2, and in connecting this history with cultural niche construction in Chapter 5, we repeatedly encountered examples of ecological interactions and the cultural movements that were both driven by and drove them. See the gift box symbols placed throughout the earlier chapters. Again, these exemplify the processes of culture and legacy that “can be viewed as the primary means by which humans engage in the universal process of niche construction” (Odling-Smee & Laland, 2012, p. 220).

The Doctrine of Discovery is perhaps our apex example of the cultural niche construction at work via the dominion worldview of ownership, built on the trajectory that we outlined. Exponentially more cultural niche construction takes place, then, in the half a millennium to follow as its' legacy – foundationally concerning ownership of lands and beings – buttresses not only European colonialism but the eventual formation and perspectival entrenchment of legal systems, judicial institutions and decisions, and social and political beliefs and movements here and around the world.

Over 500 years later, we live in the heavily modified world of its creation. A world preoccupied by property, warring over territory, grasping possessions, and believing that ownership is characterized by exclusion, exploitation, enclosure, extinction, extirpation and commodity, transaction, dissociation, alienation and separation – all the qualities that enable and encourage the siphoning of life’s necessities, and life itself, from its surface and its depths. This is culturally-driven and transmitted niche construction that has provided wealth and advantages to a few in the short term, yet is extraordinarily maladaptive in every other sense.

The Marshall trilogy of rulings are an oft-explored example of the dispossessive workings of the Doctrine of Discovery in the American legal system, but here we will look at another lesser-known but significant case that presents clear instances of the dominion worldview of ownership in operation.

Montana vs. United States

Montana v. United States is a 1981 Supreme Court decision (450 U.S. 544) known primarily for its impact on tribal jurisdiction. Less considered are the ownership worldviews stitched within it.

Montana vs US relies on the abstraction and disassociation of riverbeds from surrounding landscapes and landscape relationships and offers a poignant example of cultural contrasts in worldviews of owning, here at fundamental variance with one another.

In 1974, a non-Crow (Apsáalooke) man “openly def[ied] a tribal resolution forbidding anyone who is not a member of the tribe from fishing or hunting anywhere on the ... reservation” (Goldberg et al., 2011, p. 535).

Despite its modest beginnings as a dispute over who controls access to a highly prized trout fishery on the Big Horn River within the exterior boundaries of the Crow Reservation, *Montana vs. United States* has since served as juggernaut for a number of unprecedented changes to core doctrines of Federal Indian law, all of them detrimental to tribes. (University of New Mexico Law School, 2011)

In the dicta of the case, the Apsáalooke people are characterized as wandering, relatively recent arrivals to the area in question. It also casts skepticism upon and ultimately dismisses the Apsáalooke's subsistence use of and connections to the river itself. "As the record in this case shows, at the time of the [1868] treaty the Crow were a nomadic tribe dependent chiefly on buffalo, and fishing was not important to their diet or way of life (Id., 556)." According to Goldberg et al., (2011) and the exploration of Crow lifeways and worldviews in the works of Hoxie (1997), Linderman (1972) and McCleary (2012), both of these assertions are misleading. The dicta is working, however, to characterize the Apsáalooke relationship with their traditional lands as not conforming with the dominion ownership model, and therefore not truly ownership. This makes it possible to justify a decision that frames Apsáalooke people as having less rights regarding, and claims to their traditional and treaty lands.

The intentional use of the term "occupation" instead of ownership is found often in the text of *Montana* and is used frequently with regards to Indigenous landownership. This also helps to place it outside of the dominion paradigms' frameworks of control, enclosure, exclusivity and exclusion of others, and as non-durable.

Montana hinged on ownership of the Big Horn riverbed. The ruling relies extensively upon navigable waters laws and the "equal footing doctrine" which asserts that all navigable waters are held in trust by the Federal Government to be granted to future states upon admission to the Union, "to assume sovereignty on equal footing with the established states, (Id., 551)" absent "international duty or public exigency (Id., 552)," which in this case would logically be the clear and unmistakable treaty language. Yet this was dismissed as "not strong enough" to overcome the presumptions of the equal footing doctrine.

Here we delve more deeply into features of Western dominion ownership worldviews where property, territory, and many possessions are understood as inanimate, including land, without inherent rights or worth, under the control of the owner, lacking agency or self-determination, and not engaged in

reciprocal or familial relationship(s). In traditional Indigenous worldviews, the external world, land, many objects, and certainly beings are alive, have agency, inherent worth, are self-determined, and are in a reciprocal and/or familial relationships: animacy predominates.

Objectification is requisite to a fundamental feature of this, and many other Indian land rulings. However, it is particularly clear in this unique case. Objectification of the land is essential to dissociating, or alienating, it from its logically necessary and interdependent features, such as rivers.

The treaty relevant to these landscapes and its' people fully encompassed the river bedlands in question: "Article II of the treaty described the reservation land in detail and stated that such land would be "set apart for the absolute and undisturbed use and occupation of the Indians herein named..." Second Treaty of Fort Laramie, May 7, 1868, Art. II, 15 Stat. 650 (Id., 553)." Yet the court ruled that:

Whatever property rights the language of the 1868 treaty created, however, its language is not strong enough to overcome the presumption against the sovereign's conveyance of the riverbed...The mere fact that the bed of a navigable water lies within the boundaries described in the treaty does not make the riverbed part of the conveyed land, especially when there is no express reference to the riverbed that might overcome the presumption against its conveyance. (Id., 554-555).

In sum, the river is not part of the land, and the treaty does not mean what it literally says.

The idea of dissociating waterways from landscapes is counter intuitive, counter-realistic and wholly Western in origin. It is also demonstrative of cultural niche construction, as we can see here how the dissociative dominion ownership paradigm makes legitimate – even logical - via law, an act of dispossession of land and critical resources, both desirable to the surrounding colonial power.

The non-exclusivist underlying nature of many Indigenous land ownership systems is weaponized by the dominion ownership system and worldview to provide rationale to dispossess Indigenous people, here the Apsáalooke from – in this case – their rights to the river that flows within their treaty lands.

How would a different paradigm of ownership change this ruling?

First of all, objectification of landscapes and alienation of features within a landscape from one another would be inherently understood as untenable, even ridiculous positions not in accordance with objective reality. This is because within an AIRE paradigm of ownership, the living world is conceived of as agential, capable of exchanging information with *and* engaged in relationship with other living beings and with the abiotic world in which they live. It also does not conceive of living things as inherently subjects of human beings. This is because the AIRE paradigm inherently frames organisms as imbued with sufficient agency to be capable of the decisive characteristic of ownership.

Secondly, occupation would be perceived as an *indicator* of ownership, rather than the reverse, because it robustly demonstrates *relationship* with the landscape. An examination of the nature, extent and durability of the patterns and intentions of the occupation engaged in would provide substantial evidence of that. In this instance ownership is clearly present, based on the longstanding, demonstrably proximate, clearly communicated (in a variety of ways) and highly relational nature (with one another and the landscape and its myriad inhabitants) of the Apsáalooke people's occupation of their traditional homelands.

Questions could arise however: what might it mean that the United States has gained greater decisive agency over these people's homelands than they? What about the informational matrix in which this happened? What can gauging this aspect of the dispute tell us about how ownership as a phenomenon is experienced or expressed? Some might ask whether this AIRE matrix would end up arguing against Apsáalooke peoples' innate ownership of their homelands, if they don't have ultimate decisive agency with regards to it, or their informational milieu isn't durable enough to protect them from incursion. In other words, how would AIRE or niche construction advance justice here?

There are a few answers to this question. First, harkening back to our discussion of the "respect for" trope, I argue that not only is ownership not predicated on a specific formula or recipe, but it is not

predicated on the agency of others to instantiate it (see p. 76 and elsewhere for this discussion). What is more, as a phenomenon, it is not inherently exclusive (see p. 252). Further, this work actually does not center a justice agenda; analysis, inquiry, investigation and conceptual remodeling are the agenda. Injustices flow from a lack of these.

Furthermore, this question provides an opportunity for another way to look at dominion-based ownership: for its qualities of transaction that supplant, in some instances wholly, relationship. One might argue that dominion ownership itself – as a model – is the outlier, being an example of something that significantly diverges from ownership as a phenomenon of lifekind.

“If you just find out something about the structure of your environment, you can make a really wide range of new predictions” – Alison Gopnik, 2017.¹²⁵ Overall, the point is that rather than judging or conferring ownership status, I am using my new paradigm to reveal the processes, nuances, consequences of, and changes in qualities of organismal ownership. Not only how and why they have changed, but perhaps potentially making possible the prediction of effects and events further downstream.

Next I will turn to an examination of a recent instance of Indigenous land claim.

Blackfoot Ancestry and Land Claim

On April 3 of 2024, Science magazine reported¹²⁶ on links between genetic data from present Indigenous peoples (Blackfoot) and genetic data of their ancestors who are known to have lived and died in their present homelands. The data was believed to be useful to further bolstering the land claims of

¹²⁵ From Gopnik’s talk at the National Academy of Sciences Arthur M. Sackler Colloquium on the Extension of Biology Through Culture, Irvine, CA, November 15-16, 2016.

¹²⁶ <https://www.science.org/content/article/modern-blackfoot-people-descend-ancient-ice-age-lineage>

these Indigenous peoples, strengthening their legal footing in opposition to extractive activities and claims made by settler peoples and governmental entities.

Historically, as we've discussed above, thinkers and legal systems have constructed definitions for and legal system frameworks that enforce ideas of what is ownership or property, and who gets it and why. This is what we have discussed elsewhere, and above, as cultural niche construction that creates a framework of justification of conscription of land and resources for the constructors. Land, especially in this case, is a very important kind of owned entity that underwent all kinds of change in usage patterns as private landownership regimes became the norm in the West.

However, when one looks at ownership phenomena, whose ownership phenomena – such as property, (private or otherwise) - are best understood via analysis of the extent, nature, and durability of each of its central characteristics, one readily grasps that Indigenous land claims are unquestionably the most durable of any land claim that can be made by a human being.

Blackfoot people's engagement with their homelands is an example of ownership, characterized robustly by agency, information, relationship and effect. Using the parlance of ownership phenomena, we can ask 'were they in possession of their homelands?' Possession is often linked with physical contact/association at both a temporal and spatial level with an entity, and one can gauge the physical extent, nature and durability of these Blackfoot people's contact with these landscapes. One can also gauge the informational milieu associated with it in their lifeways (traditional knowledge, creation and wisdom narratives, narratives of cultural history, etc), and one can likely find historical accounts of information transmission with European and other Indigenous peoples with regard to their connection with this particular area of land. One can gauge the experience, expression and intricacies of agency with regard to it, via some of these same sources, as well as contemporary sources along with observation of contemporary occurrences. And one can most certainly see a variety of significant legacy effects of the

association between Blackfoot persons and their homelands, considering especially that they have at least an 18,000-year history with these lands (some of the useful evidence the DNA connections provide), and the health and wholeness of both people and landscape were robust upon contact with Western newcomers.

These exercises could be engaged in with the epiphenomenal concepts of property (and all its iterations) and territory as well. And in keeping with our theme of the potential for research and analytic benefits from our paradigm, each of these exercises are provided with rich new potential questions and avenues of investigation.

Exclusivity...Again This brings us to another question that emerges from these thought experiments and has some potential irony to it: can an entity be in multiple layers of ownership relationship? In other words, would the Blackfoot's owning of their landscape mean that no other creature could also have that relationship with it? Can owning be exclusive?

Recall that other creatures typically had little difficulty sharing landscapes with Indigenous humans, due to the mutualist lifeways of Native persons on and within landscapes.¹²⁷ This, in contrast to what could be characterized as parasitic Western lifeways. Here again, when one understands the phenomenon of ownership within the AIRE paradigm, where exclusion is not an inherent feature of any variety of ownership phenomena, exclusivity itself can be interrogated in new and interesting ways. One can think about layers of owning upon a landscape or of space, layers of owning in regards to a specific fixed or mobile entity (through time, in space, with regard to the nature of interactions with it and the causes, reasoning, and consequences, etc), and layers of owning with regard to proximity (imagine the

¹²⁷ Symbiosis, particularly mutualisms and parasitic interactions, provide another extremely interesting way to understand ownership phenomena, but I was unfortunately unable to devote space to it in this paper.

multiplicity of potential ownership layers in the thought experiment I suggested above with regard to my husband, our dog, our spider community, our houseplants...). Where and how much decisive agency is exhibited by who? How does the decisive agency interact? Questions can be asked about layers and interactions/interdependencies of relationships, information, and of course, the results: the nature of and the recipients of the legacies they may leave.

Self and Society

My paradigm can contribute richer tools to examine our present selves and our present societies as well. Clearly, ownership phenomena have an outsized role in our personal and social lives, at varied temporal and spatial scales. Understanding how ownership phenomena shape our experiences, the experiences of our family and friends, our political bodies, our sources of energy and sustenance, and our myriad institutions is constrained by existing understandings of the terms and ideas I have been taking issue with in this paper. Imagine how much we might learn about personal and social experience of, or decisions or actions regarding ownership phenomena if we framed our inquiry in the ways I suggest, such as in our above robin example or in the discussion about layers of ownership.

For instance, insights into why the phenomena of ownership are often associated with strong emotions and drive significant behaviors: attachments, sense of identity, sense of purpose and meaning, sense of safety or anxiety, covetousness, shame, harmful intent, engagement in violence, theft, or desecration. The AIRE framework contributes new ways to ask questions about and reach deeper understanding with regard to these perplexing states. For example, exploring the agency, the informational landscape, the relationships and the effects within our ownership of our home: within the questions possible in this framework, one can begin to find sources of anxiety (perhaps our decisive agency is not as decisive as I would like to believe, if we can't pay the mortgage or the taxes); identity

(interrogating informational and relational landscapes can here potentially reveal how the appearance of our home, including landscaping, may be sources of important information about me, my family, and about our connections and experiences in this place). The relationships involved in our ownership of the home could play an important role in whether or to whom we would be willing to sell or bequeath it... and on and on.

One could analyze conflicts over things or places – at any level, including even Israel/Palestine or Ukraine/Russia – using this framework, thereby possibly revealing previously obscured inner workings of the participants, the bystanders, the society involved. In other words, this new paradigm could open doors to discovery or perception of the meaning and purpose of ownership phenomena at individual to community to societal to global levels that have historically been unavailable.

Social Rhetoric

Social change does come about when there are revisions to and recognition of problematic ideas. For example, feminist ideas eventually transformed many fundamental things about how American lives are led. Similarly, detection and acknowledgement of the existence and legacies of the dominion paradigm of ownership can help initiate the work it will take to turn the ship, dock it and finally, rebuild it.

Naturally, your average Joe Schmoe is not suddenly going to understand ownership differently based on a work like this. Changing worldviews takes time and the attentive, purposeful work of myriad persons putting these ideas into practice – in science, humanities and in a variety of levels of informal and formal public discourse –changing the way ownership is thought about and making it clear as to why. That can then percolate into the lives all of us lead.

Placing the idea into consciousness that there actually *IS* a paradigm of ownership, that ownership is not necessarily what we define it as in the West, that there are other ways of owning, and that owning is for everyone... these are the ideas that can begin to move the proverbial needle. According to Laland and Brown (2011), speaking here from the perspective of the field of cultural evolution,

The cultural traditions of a population may change over time if individuals alter the cultural information that they receive before passing it on. Boyd and Richerson (1985) discuss *guided variation*, which refers to a process by which individuals acquire information about any behavior from others and then modify the behavior based on their personal experience... which may allow behavioral traditions to evolve gradually towards the optimal behavior for that environment. (p. 149)

A paradigm shift alone may seem to pale against the entrenched challenges the dominion worldview of ownership has created. But while the solutions for our problems can align with the replacement paradigm that I suggest, it matters how these solutions are enacted. Fundamentally, if we do not discern the Western worldview of dominion ownership shaping our minds and choices and beliefs, then its norms – of exploitation, exceptionalism, extraction, exclusion, and extinction – will certainly persist, even into a future of more ecologically sustainable technologies.

Again, as James Baldwin once wisely said, “Not everything that is faced can be changed, but nothing can be changed until it is faced.”¹²⁸

¹²⁸ Baldwin, J. (1962, January 14) As much truth as one can bear. New York Times, 11-38

SEVEN: CONCLUSION

Chapter 1 introduced my topic and my approach. In Chapter 2, I probed Western cultural history for the roots of what I have termed the “dominion” paradigm of ownership. I also explored contrasting perspectives in societies Indigenous to the places in which this formative and still-unfolding history takes place. I discussed “dominion” itself, and its applicability in this context. I reviewed established disciplinary perspectives on what ownership is, and important ways in which it is present in our lives.

In Chapter 3, I made the case for the foundational nature of the phenomenon of ownership in organismal life. To do so I reached across disciplines for support and intriguing intersections that all served to highlight the breadth of connections and research potential inherent in recognizing and exploring ownership as a phenomenon of the Earth system

In Chapter 4 I posited my new paradigm, based in recognition of ownerships’ common denominator attributes that I argued consist of agency, information, relationship and effect. I created this paradigm, summarized in what I deliberately term a new “description” of ownership, as a result of extensive research into and consideration of the common attributes and features detectable within the phenomenon of ownership.

In Chapter 5, I explored another new paradigm – the extended evolutionary synthesis especially as it features niche construction theory – that I argue can enable ownership to become explanatory, and reveal to us its workings embedded within and emergent from the interconnected, interdependent nature of the Earth system and of all lifekind. Niche construction theory and cultural niche construction, ecological engineering, ecological inheritance and associated concepts in ecology, evolution and biology all provide novel frameworks for seeing and understanding the phenomenon of ownership in this ecologically embedded new light. Doing so provides a doorway into situating ownership in the Earth system, either as part of the co-creative nature of the organism-environment nexus, or as an increasingly

dysfunctional, maladaptive behavioral strategy materializing within groups of our own species characterized by changing social structures and growing environmental demands.

In Chapter 6, I put my new paradigm into practice using illustrations drawn from scientific research, a historic American supreme court ruling and recent discussion of Blackfoot land claim. I also explore the potential for the paradigm to represent an intervention in contemporary thought and rhetoric.

Here, in my concluding Chapter 7, I bring my threads together and attempt to convey how achieving each of them contributed to the meaning and implications of my exercise. One thread concerns the status quo: there is an invisible paradigm of ownership, a paradigm of dominion, that exists largely unseen within contemporary and historical Western cultures. Sub-threads include its' many effects, most troubling being the social and environmental problems it has and continues to cause, and the blinders and roadblocks it presents to myriad research communities, impeding potential insights and findings.

The second thread posits something wholly novel: ownership as a phenomenon of the Earth system characterized by four building blocks (AIRE). This thread then engages with niche construction and cultural niche construction theories to illuminate ownership's nature as a foundational and explanatory feature of organismal life that provides a novel source of further evidence of the interconnected, interwoven and interdependent nature of life on Earth.

Why Does This Matter?

- I am suggesting a novel way to grasp a profoundly impactful and ubiquitous phenomenon, that if not perceived, is unlikely to change.

- The argument that ownership is a phenomenon has not been made before, particularly as a phenomenon relevant to all of life-kind, and that is embedded in the earth system.
- The dominion ownership paradigm has not been comprehensively examined or “mapped” previously. Many have posed critiques about property and economic systems, particularly in terms of the effects of these social/economic norms and frameworks on people, places and nonhuman beings of a wide variety of kinds. But to the extent that I have been able to determine¹²⁹, I am the first to attempt to map out and challenge the Western paradigm of ownership itself.¹³⁰
- Exposing the dominion ownership paradigm and placing it within an eco-evolutionary context shows its effectiveness for accruing advantage to particular groups of practitioners, and its stealth in insinuating itself into human minds (which also perpetuates it and undergirds its persistence).
- My new paradigm has research utility in that:
 - It may offer clarity that can support new research questions, enhance research design and suggest new modeling approaches in a wide variety of disciplines from science to social science to jurisprudence, and from literary analysis to cultural evolution to the philosophy of science.
 - It could help open a new realm of inquiry into human *and* nonhuman ownership

¹²⁹ I really think I have mined the depths here (but I could be wrong).

¹³⁰ And I have to admit, ironically, that I feel as though I’ve only been able to “scratch the surface” as well!

- The model matters for its novel challenges to Western exceptionalism and human exceptionalism, and to Western worldviews of separation from the Earth system that places most things human *outside* of the earth context.

...Western people-especially scientists-reduce all things, living or not, to objects. The implications of this are immense. If you see the world around you as a collection of objects for you to manipulate and exploit, you will inevitably destroy the world while attempting to control it. Not only that, but by perceiving the world as lifeless, you rob yourself of the richness, beauty, and wisdom to be found by participating in its larger design” – Vine Deloria, Jr.¹³¹

Lessons, Insights and Further Research Possibilities

Further, a possible benefit of a study like this, that attempts to make explicit much that has burbled beneath the surface, is identifying insights (some could be called lessons) in patterns detected within the paradigms. Seven stand out to me: change/inflexibility; sharing; exceptionalism; the mind parasite/introject problem; population; owning as identity; spatiality as fundamental; and co-creating the world.

Change/inflexibility: the dominion paradigm constrains change, but we must change if we are to prevent ecological and social collapse. This is a problem as-yet minimally recognized as originating within the Western ownership paradigm.

For example, the ownership paradigm we live in centers private property, and private property presents structural impediments to flexibility in the face of challenges, including how it makes some groups of persons dependent on wealth access and accumulation for their security of lifeway (subsistence and shelter, etc.) and enables other groups of persons to accumulate inconceivably vast

¹³¹ National Museum of the American Indian (U.S.) (Ed.), 2007, p. 156. *Do all Indians live in tipis? Questions and answers from the National Museum of the American Indian* (1st ed). This quote is from an interview with Vine Deloria, quoted in the Chapter titled “What is the relationship of Native Americans to the environment.”

amounts of wealth, and transmit it to other small units of persons, thus depriving most others of access to it. But further, and more tangibly perhaps, the existence of private property regimes fixes buildings and people upon landscapes (meaning inflexibility of movement: difficult to alter settlement patterns), and perpetuates environmentally harmful activities (such as a business whose private ownership and economic productivity are valued more than Earth and its living things), thereby creating and worsening global warming, species extinction and ecological collapse.

While stability is one of the very useful features of ownership phenomena, within the dominion paradigm it has now become a problem; a problem whose effect is actually, among other things, the creation of planetary and social instability.

Sharing: sharing has been critical to human survival and success, but sharing is harder and harder to engage in within an intensifying dominion paradigm that normalizes wealth accumulation and its preferential transmission. And one that replaces relationship with *transaction* and conceptualizes entities as *commodities*. Sharing will be necessary if we would like a future without profound unrest and catastrophic conflict in human societies. Sharing the Earth's resources with the rest of lifekind is also necessary for the rest of lifekind to continue to exist.

Exceptionalism: the dominion paradigm of ownership depends upon worldviews of exceptionalism and superiority. If human beings do not perceive themselves as both exceptional (in regard to other living things and in certain instances, to one another) and if we do not see ourselves as superior (to other living things, and in certain historical instances, to one another) exploitation (and, to varying extent, exclusion, extraction, exploitation, enclosure, extirpation and extinction) is morally unsupportable and difficult to engage in. This is a central moral conundrum that the dominion paradigm acts to conceal.

Population: This study revealed (to me, though I really don't pursue it in detail, but it would be an excellent possibility for future study) the role of increasing human population levels in triggering the ecological exigencies that drive the origination of worldviews of dominion and the dominion ownership paradigm. Scaling up the need for food and materials changes the calculus of how we regard the world around us.

The dominion worldview currently looks at population in various ways, but one of them is that 'population isn't the problem, it is how we manage our resources.' This is a logical view when one operates from within dominion, where upscaling production of food, increasing the rate and efficiency of the use and extraction of other resources, and preferring/expecting technological solutions to our problems all fit. These are not supportable from a paradigm of agency, information and relationship across lifekind, because of the negative and cascading effects of these actions on the rest of the living world. While both dominion ownership and AIRE ownership paradigms surface out of the reciprocally causative Earth system, the dominion paradigm finds its solutions in doubling down on the behaviors that got us into this mess, rather than looking for the wisdom possible from understanding ourselves within an Earth system, along with everyone else (meaning all the rest of the living things that make up the Earth system along with us). Real solutions face the real problem, not create new ones.

Mind parasitism/introject: This insight actually helped instigate this project. I discovered this dynamic in the course of research in my Federal Indian Law class in 2019, even discussing it at my presentation at the Law and Society 2020 spring conference. I discuss it above in regard to *Delgamuukw v. British Columbia* a 1997 Canadian supreme court case (p. 63) and quote passages that grapple with it from an article by a Canadian legal scholar (Bryan, 2000). These instances provide a glimpse into the subtle workings of conceptual paradigms to occlude awareness of their existence and conscript mindsets at fundamental variance with them. Only with dominion-associated words and frameworks are harmed

parties allowed to engage with it, thus forcing these parties to adopt it to attempt to find redress. In the process, they are unavoidably drawn into engagement in, conversance and familiarity with the worldview, which can then act more rapidly to replace any that compete with it.

Conflict: as I mentioned earlier in a few places, ownership paradigms can create conflict, they can manage conflict and they can prevent conflict. This, along with spatial organization (and the two are related) is what I would argue constitutes an important exigency underlying ownership phenomena. Conflict is as ubiquitous as ownership, and no one would argue with the statement that it is a pan-species phenomenon. In fact, it is a chronic and even necessary aspect of Earthly life. Nevertheless, managing it is not something we center in our cultural transmission endeavors. We do not, in most of America, teach one another about how to manage conflict. This is sorely needed at all levels of society. My own interest in conflict (I am certified as a facilitative mediator) had a significant role in steering me into this inquiry. As I argue in Chapter 6, however, ownership itself cannot be reduced to conflict, and should not be investigated as if it were.

Spatiality: recent research that I touch on in Chapter 4 continues to highlight the presence and significance of spatiality in brains. I believe much more work on the connection between ownership phenomena and spatiality – spatial organization with regard to self and others, along with spatiality within the way brains (and neuronal systems) operate and evolved - would be an incredibly rich and revelatory area of study if undertaken utilizing the AIRE paradigm.

Owning as Identity: another hidden truth that this study alludes to but previous work I have done more explicitly engaged with, is that owning itself is an identity forming and sustaining phenomena. Research around this idea has grown recently, but it is related to work in psychological ownership and acquisitiveness and adjacent fields. Herein lies, again, explanation for the frequent incidence of conflict around owning. It is evident, from my reading of the literature, that there is a great

deal of empirical support for the notion that our connections to entities in the external world has deeper significance to each of us as emotional beings and social creatures than we generally understand. This varies between individual peoples, and between cultures and lifeways, but I believe it is a significant aspect of ownership as a phenomenon. Above I said “Ownership is perhaps best summed up as the *stake* that organisms have in that process” (p. 228).

The nature of that stake – including as identity, belonging, memory, history, narrative, norms and more – is an area that deserves much, much more investigation and societal discussion.

Literature Seeking Explanation

My work joins that of many others in searching for understanding about why we find ourselves standing together – all of us – on the precarious cliff of ecological collapse.

This problem is examined from within a variety of disciplinary perspective including popular press books by Jared Diamond (1997, 2004) and E.O. Wilson (1993, 2012), articles and books from archeology, history, land change science or historical ecology, the majority of climate change, environmental issues and studies literature including piercing works by George Marshall (2015), Gilbert LaFreniere (2023), Lynn White (1967), and certainly those in the religion and worldviews literature, including Santmire (1985), Rasmussen (1996), Kinsley (1995), Tucker and Grim (2104), Hayden (1996), McFague (1993) and Callicott (1999). Many recent theoretical pieces seek to find an inclusive explanation for the destructive trajectory of the “Anthropocene” which could include Ellis (2015 and 2016)’s “anthroecology theory” and Turchin’s (2016) theories on war and cooperation, Gowdy’s fascinating recent inquiry into human eusocialty (*Ultrasocial*, 2020), fascinating work on the ecological dynamics of inequality (E.A. Smith et al, 2022; 2023; Hooper et al., 2018 - in *The Emergence of Premodern States: New Perspectives on the Development of Complex Societies* (pp. 105–130); recent theories and research examining marriage patterns, worldview and cognition profiles (Henrich, 2020;

Haidt, 2012), evolutionary psychology and biology works like those of Robert Sapolsky (2017, 2023), Mark Moffitt (2019), and a variety of titles by E.O. Wilson that turn human nature over in careful questioning, and even rollicking past attempts at explanatory frameworks like those of Robert Ardrey (1966). There are many, many more and many I have likely never heard of as well. Most do not posit a singular explanation for environmental destructiveness, but most are on a path of trying to figure “us” out as to “our” destructiveness – perhaps at least positing an explanatory framework for human cultural evolution. Sadly, most also swim cheerfully in the tiresome “what makes us different” trope, with regards to nonhuman beings.

Many demonstrate a regrettable forgetfulness about the fact that *all* of humankind certainly *is* not and *has not* been destructive – far from it. But some then ask, what is the *difference*? Is it technology? Subsistence strategy? Christianity? Population? Capitalism? Too many make the mistake of omitting or under-examining the relevance of other beings – nonhuman life – to leading us to the answers about what drives resource overshoot, perhaps out of worldviews or experiences or disciplinary dogmas that perpetuate hesitancy in seeing patterns in nonhumans that human beings also conform to. A growing recent literature looks at other complex ultra/eusocial societies, such as those of ants and termites, for insight Gowdy (2021). I find this work inspiring, and suitable starting points for further work on the comparative role of ownership phenomena in different domains of life, especially as offering insight into how our societies have changed through time, and whether patterns therein may give us insights into trends our own species may follow. But much too often the caveats around human difference still continue to limit our capacity to fully interrogate similarity itself for insight.

As I said above, my identification of ownership dynamics as a core problem is not original to me, though my approach is distinct as far as I can apprehend. And I have also said that these earlier investigations are often fundamentally kneecapped by flawed, biased and myopic paradigms.

Now that we are constructing a new paradigm and sharing a new language about ownership, I suggest one gentle way to begin looking at this larger question is that *certain amongst us have taken an excessive amount of decisive agency, regarding entities, upon themselves.*

Final Words

By seeing ownership as niche construction/cultural niche construction, ecological inheritance, ecological engineering, we can find eco-evolutionary explanation for dispossession, environmental and lifeform exploitation, and even the emergence of enlightenment ideas and Western scientific and cultural worldviews of mechanism, separation, dissociation and superiority (and hierarchy), and how/why ownership paradigms of exclusion/exploitation/extraction/enclosure/extirpation/ came to be, and came to be so important.

Dominion ownership has been quite advantageous and has thus been transmitted through the generations and maintained and elaborated upon via high-fidelity information systems. But now it has become the opposite: the advantages it once offered are now the very things at the driving heart of our destruction of the planet: wealth creation and accumulation at all costs along with supremacist and exceptionalist beliefs and behaviors. Ownership is *at* the heart of the former, and *in* the heart of the latter. Perhaps people recognize capitalism, consumerism, acquisitiveness, greed, etc. for their causal contribution but so far, the ‘why’ of this has been primarily a cultural question. Where biology/evolution/environment is posited, contention has often ensued (Shennan, 2009; Gowdy, 2020; Park & Guille-Escuret, 2017; Alcock, 2001; Laland & Brown, 2011; Wilson, 2012). This is understandable, as the abhorrent history of the deployment of biology in racist ideas, institutions and policy has had a profound detrimental effect on society and the credibility of science and scientists. Shennan (2012, pp. 11-12) addresses this reality but Lenski (2005) says it very well: “while there may once have been some

justification for the struggle to deny the importance of biological factors in human life, that time is now long past. *Biological factors do greatly influence human behavior, and continued efforts to ignore or minimize this fact only jeopardize the credibility of the social sciences.*” (p. 45) [emphasis in original].

While here I suggest root causes and foundational explanations in the blueprint that propels our rush to ecological collapse, another logical question would be “Does this mean that it is inevitable?”

One could argue that it is. If ownership phenomena have driven us to this point, why wouldn’t they keep on pushing till we are thoroughly over the edge? Well, it very likely will, in large part because of the inflexibility of this dominant paradigm: its’ got us in its clutches, by God!

But within this crazy yarn of mine may also be a kernel of hope. The EES and NCT fundamentally posit agency and reciprocal causation as stitched into the manner in which Earthly existence unfolds. If we can see human evolution/cultural evolution in a framework of reciprocal causation and see that all other creatures in the Earth system are also living their lives within a framework of reciprocal causation, one can see how the phenomenon of ownership is interwoven into that framework and thus inherently malleable. A more poetic term for reciprocal causation is ‘co-creation.’ The extended evolutionary synthesis and niche construction theory are not discussed in these terms, but they do argue, deeply, for each moment of Earthly life being an enactment of co-creativity. If we see all of ourselves involved in continual co-creation of the world, this can mean that perhaps, [certain] humans are not predetermined to destroy us and all of lifekind.

But *why*?

Because if living itself is a continual co-creative exercise, it means that from this forever liminal moment forward, we are always able to engage in the co-creative act, which *can* mean moving into a connected, relational lifeway that can be sustained, one that is *respectful of all* others.

The ever-evolving Earth system demonstrates that change is always happening, and always possible. And that all of us have some level of agency: even those enthusiastically within the dominion worldview *have the agency to change*.

Perhaps, and let's just humor ourselves here, perhaps mapping out the old dominion paradigm of ownership could enable some new cultural niche construction. Bringing old paradigms under the microscope, making them visible (literally and figuratively) and presenting new ideas in the form of a new paradigm.... perhaps this can contribute a smidge of grist to that cultural niche construction co-creative process. That would certainly be my aspiration. That is what novel scholarship can do, in the best case. Expand, change or shatter our collective cognitive frames and build new frames – hopefully out of flexible, absorbent and mutable (and inert and compostable) materials – that make it easier for us, as a species, to make progress towards a more holistic worldview that could enact a kinder and more peaceful future with less suffering and more joy.

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APPENDICES

APPENDIX A

INTANGIBLES

New forms of intangibles have increasingly become “ownable” entities as well: there is evidence of intellectual property in intangibles prior to the ethnographic era, and certainly, creative intangibles like music, plays, extant in the Western cultural tradition, and many other traditions, over many millennia as well.

As discussed earlier, ownership has existed with regards to abstract, non-living or information/knowledge rich entities such as ceremonial, ritual or medicinal knowledge, performances, music, dance, stories and even quite often, names. This is documented in ethnographic, anthropological and historical literature, and continues to exist in traditional and blended cultures today. It is an obvious forerunner of patent, copyright and intellectual property laws and customs that exist widely today.

In the past, structures for maintaining ‘owning’ of intangibles would have fluctuated in usefulness and durability as the norms and rules of societies themselves experienced a flux, particularly prior to the advent of complex writing and information storage systems. (This is demonstrative of the critical role a written legal system can play in ensuring ‘owning’ continuity over long periods.)

We cannot clearly know whether this category would be relevant to nonhuman beings, as we cannot yet communicate with them on the topic, and our research and observation techniques are nascent. However, research on whale songs and bird songs does demonstrate similarities to how human cultures hold, build upon and transmit intangibles to kin or group members (Garland and McGregor, 2020). Transmitted knowledge and practices along with learning are a distinct areas of research, but do suggest support for intangibles of value being of interest and concern – and owned – by species outside of our own.

APPENDIX B

ABSTRACTS AND DOI LINKS

Paper 1

Strassmann, J. E., & Queller, D. C. (2014). Privatization and property in biology. *Animal Behaviour*, 92, 305–311. <https://doi.org/10.1016/j.anbehav.2014.02.011>

Abstract:

Organisms evolve to control, preserve, protect and invest in their own bodies. When they do likewise with external resources they privatize those resources and convert them into their own property. Property is a neglected topic in biology, although examples include territories, domiciles and nest structures, food caching, mate guarding, and the resources and partners in mutualisms. Property is important because it represents a solution to the tragedy of the commons; to the extent that an individual exerts long-term control of its property, it can use it prudently, and even invest in it. Resources most worth privatizing are often high in value. To be useful to their owner in the future, they are typically durable and defensible. This may explain why property is relatively rare in animals compared to humans. The lack of institutional property rights in animals also contributes to their rarity, although owner-intruder conventions may represent a simple form of property rights. Resources are often privatized by force or threat of force, but privatization can also be achieved by hiding, by constructing barriers, and by carrying or incorporating the property. Social organisms often have property for two reasons. First, the returns on savings and investments can accrue to relatives, including descendants. Second, social groups can divide tasks among members, so they can simultaneously guard property and forage, for example. Privatization enhances the likelihood that the benefits of cooperation will go to relatives, thus facilitating the evolution of cooperation as in Hamilton's rule or kin selection. Mutualisms often involve exchange of property and privatization of relationships. Privatization ensures the stability of such cooperation. The major transitions in evolution, both fraternal and egalitarian, generally involve the formation of private clubs with something analogous to the nonrivalrous club goods of economics

Paper 2

Hare, D., Reeve, H. K., & Blossey, B. (2016). Evolutionary routes to stable ownership. *Journal of Evolutionary Biology*, 29(6), 1178–1188. <https://doi.org/10.1111/jeb.12859>

Abstract:

Ownership can evolve in potentially any species. Drawing on insights from across disciplines, we distinguish between possession and ownership and present species-neutral criteria for ownership, defined as respect for possession. We use a variant of the tug-of-war evolutionary game to demonstrate how ownership can evolve in the form of a new, biologically realistic strategy, Restraint With Retaliation (RWR). In our game, resource holding potential (RHP) is assumed to be equal between interactants, and resource holding asymmetry determines whether ownership is adaptive. RWR will be evolutionarily stable when the ratio of resource holdings between interactants is relatively low, but not when this ratio is sufficiently high. We offer RWR as one evolutionary route to ownership among many, and discuss how ownership unites previously described behavioural phenomena across taxa. We propose that some but not all mechanisms of territory formation and maintenance can be considered ownership, and show that territories are not the only resources that can be owned. We argue that ownership can be a powerful cooperative solution to tragedies of the commons and problems of collective action throughout the biological world. We advance recent scholarship that has begun to investigate the biological importance of ownership, and we call for a comprehensive account of its evolutionary logic and taxonomic

distribution. We propose that ownership should be considered a fundamental, unifying biological phenomenon.

Paper 3

Kamath, A., & Wesner, A. B. (2020). Animal territoriality, property and access: A collaborative exchange between animal behaviour and the social sciences. *Animal Behaviour*, 164, 233–239. <https://doi.org/10.1016/j.anbehav.2019.12.009>

Abstract

Territoriality is central to animal behaviourists' understanding of many facets of animal behaviour, including resource acquisition, space use behaviour, communication and mating systems. However, the term itself, how it is conceptualized and defined, has long been nebulous and contentious. Here, we ask whether juxtaposing debates about territoriality from animal behaviour with parallel discussions of territoriality from the social sciences can offer a historically and sociologically informed path out of the conceptual gridlock in which animal territoriality has been located for decades. We delineate two key problems with territoriality identified in the animal behaviour literature: First, that it focuses on how animals are expected to behave rather than how they actually behave and, second, that it assumes rather than demonstrates the function of, and specific relationships among, individuals. We then link these problems to social scientists' theorizations of the difference between property and access: whereas property is focused on how people are expected to behave under juridical–legal rules governing resource use, access focuses on a wide array of means by which people actually access resources. We thus argue that longstanding problems with animal territoriality have arisen due to implicitly embedded notions of property and ownership. Our juxtaposition raises two further problems with territoriality: first, it unwarrantedly serves to attribute authority to individuals described as territory ‘owners’ and casts others (‘intruders’, ‘sneakers’) as transgressors and, second, conceiving of ownership is unfeasible in animal societies lacking the particular juridical–legal institutions that establish and enforce property rights. Instead, we advocate for an access-based approach that will obviate these problems. Ultimately, we argue that the theory of access, as developed in social science literatures on spatial and relational resource use, will allow for a fuller and more nuanced understanding of variation in animal behaviour than that afforded by current dominant notions of territoriality.

APPENDIX C

END NOTES

