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Integrating Law and Ecology: The Biodiversity Crisis and Juridical Ontology

Abstract: Human activity is dramatically reducing global biodiversity. In response, legal decision-makers have deployed regulations aimed at minimizing the impact of the sixth mass extinction event in Earth's history. However, environmental law has recurrently failed to arrest rates of biodiversity loss. As such, legal scholars have proposed myriad reforms to overhaul the legal protection of biodiversity, ranging from introducing a crime of “ecocide” to granting legal personality to nonhumans. Yet there is a gap in the literature concerning the tendency of these novel proposals to reproduce the limitations of traditional methods. This article addresses that gap by critically reviewing the literature on the ontological tensions between Western-descended legal systems and the science of ecology. It argues that these tensions produce ecological “translation errors” within law that run deeper than is often acknowledged. The article concludes that increased skepticism—but not apathy—toward the legal form may be advantageous in confronting the biodiversity crisis.

Keywords: environmental law, ecology, social ontology, biodiversity crisis, Earth jurisprudence

I. Introduction

Human activity is dramatically reducing global biodiversity, with current rates of species loss “indicating that a sixth mass extinction is already under way” (Ceballos et al. 2015). In response, legal decision-makers have marshaled domestic regulations and international agreements to arrest the functional collapse of ecosystems worldwide (McDonald 2011). However, despite producing “an enormous (and even overabundant) *corpus* of legislation,” legal institutions have been critiqued for their recurrent failure to deliver effective solutions to the biodiversity crisis (Montini 2017, 266).

To improve legal interventions in biodiversity loss, some scholars have contended that juridical institutions should place “the vision, method and conclusions of ecology . . . at the centre of their thought” (Brooks et al. 2017, 2). By integrating observations from ecological science into legal reasoning, it is argued that juridical institutions can operate with greater sensitivity to the processes that constitute ecosystems, thereby helping to minimize the impact of mass extinction. On one view, the primary obstacle to realizing these proposals is political: Getting legal institutions to implement ecologically conscious policies is a matter of handing political power to the “right” actors, who can then introduce suitably “greened” regulations. The problem with this perspective, however, is the assumption that law functions as an impartial vessel through which policy decisions may be enacted by state bodies without alteration.

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This article takes a critical view of such understandings of legal institutions, contending that Western-descended law expresses structural limits that fundamentally constrain the capacity of those institutions to articulate, or reproduce, observations from ecological science without introducing distortions. In turn, the article shows how this tendency inhibits law's ability to conceptualize, diagnose, and address drivers of biodiversity loss. Further, the article illustrates how even seemingly innovative proposals for reform that are cognizant of law's structural shortcomings, like the Rights of Nature movement, often inadvertently recapitulate the self-limiting logic of the traditionalist measures they aim to ameliorate.

The article explains this tendency by contending that the conceptual architecture of Western-descended legal institutions offers limited "tools" for translating foundational principles of ecology into juridical reasoning. It shows how legal concepts do not operate as neutral vehicles or instruments of policy, but rather impose a structure and logic on the content transmitted through them—a logic related to the role of the legal form in sustaining relations of private property within capitalism. In this respect, many legal concepts—even when repurposed and deployed in ostensibly "radical" forms—obscure, rather than capture, ecological realities, potentially making it *more* difficult for political institutions to protect biodiversity successfully. By exposing the structural assumptions restricting the worldviews of legal institutions, this article proposes that the persistent failure of law to integrate ecological precepts into the logic of both traditionalist and newer legal approaches can be understood as a *structural*, rather than politically contingent, clash of ontologies—or theories about "being"—between the two that pervasively "narrows the legal and political imagination" (Purdy 2010, 1125). Thereby, the article questions whether proposals to overcome these clashes by "ecologizing" law through legal reform face an unavoidable contradiction in terms.

To develop this argument, the article critically reviews the literature concerning the ontological limits of environmental law, applying a lens inspired by systems theory and constitutive theories of the relationship between law and capitalism. By analyzing the proposals of ostensibly "ecocentric" movements like Earth Jurisprudence and Posthumanism, this review yields two key contributions. First, the article suggests that many scholars who identify law's ontological constraints recapitulate those constraints in their posited solutions, ironically misusing or subverting ecological concepts when identifying techniques to "green" law. The article frames these patterns as "translation errors" that run deeper than is often acknowledged in the literature, due to a tendency to overlook the nature and impact of the legal form. Second, the article conducts this analysis to ultimately propose a novel means of managing law's ecological translation errors: one characterized by skepticism, but not apathy, toward the legal form itself.

The article develops as follows. Part II outlines the case for integrating ecological concepts into legal thought, before exploring the ontologies of law and ecological science. This enables Part III to analyze three structural contradictions between the two, emanating from law's anthropocentricity, methodological individualism, and proprietary fragmentation. It engages with these contradictions using a series of case studies, including the grant of legal personality to nonhumans and the introduction of the crime of "ecocide." Part IV concludes with a discussion of legal skepticism.

II. Ontologies of Law and Ecology

A. *Ecocentric Approaches to Law*

Environmental law is often conceptualized as a constellation of international and public law norms that emerged historically “as a regulatory response to localised, silo-based problems of environmental pollution and nature conservation, which it has treated in a fragmented manner” (Kotzé 2018, 142). Scholars have critiqued this “fragmented” paradigm for failing to effect meaningful change, citing the “progressive decline” in environmental stability as evidence of a dysfunctional regulatory regime (Montini 2017, 266). Theorists like Bosselmann point to the insufficiently holistic approach of traditionalist methods as the source of the problem, contending that “environmental law needs to change its character from its current specialist discipline at the periphery of the legal system to become the driving force for a greening of the entire legal system” (Bosselmann 2016, 24). On this view, regulatory technologies, like controls on carbon emissions, function as pragmatic but restricted solutions to biodiversity collapse; a true “greening” of the legal system necessitates structural transformation, characterized by a “radical interdisciplinarity” that better aligns assumptions about how ecosystems function in Western-descended legal institutions with ecological scientific knowledge (Philippopoulos-Mihalopoulos 2017, 133).

Proponents of “greening” or “ecologizing” law posit that law’s current formulation is epistemologically insensitive to the ecological dynamics of ecosystems, and thus may be instrumental in facilitating the social practices that historically produced, and continue to contribute to, the biodiversity crisis (Burdon 2014). In this respect, Kotzé indicates the need for “a new legal paradigm that must be able to fully respond to the complex physically, reciprocally, and temporally interlinked Earth system,” encoding within legal institutions a recognition of “the complex interdependencies” underpinning ecosystems (Kotzé 2019b, 6800–01). Similarly, Gear advocates a critical methodology that disrupts the anthropocentric hierarchies she sees as endemic to jurisprudence, reconfiguring legal institutions to prioritize the complex needs of global ecological networks rather than those of human social relations per se (Gear 2020). The methodologies envisaged to accomplish these goals are often not confined to traditional public law environmental regulations, but rather endorse a critical reexamination of “how law more generally organises transactions or processes that prompted the Anthropocene,” confronting the “fundamental legal categories” that sustain the anthropogenic destruction of ecosystems (Viñuales 2018, 12–13).

This current of scholarship, then, posits a conflict between the “interdependent” character of ecosystems described by ecology on the one hand and the atomized, anthropocentric qualities of legal thought on the other, noting how law generally “overlooks . . . the interrelatedness of all life across the boundaries between humans and non-humans” (Bosselmann 2016, 27–28). Law, thereby, is conceptualized as ecologically myopic: By centering humans and their corporations, legal institutions regularly fail to identify the ecological reality of entanglement between humans and nonhumans, a shortcoming that New Materialist scholars, among others, perceive as a contributory factor in the biodiversity crisis (Benson 2019). Likewise, Turner conceptualizes this myopia as a condition of possibility for the functional collapse of ecosystems, describing “environmental degradation” as “a natural consequence of a global legal architecture” (Turner 2013, 2). These perspectives, differing in their theoretical underpinnings, respond to law’s ecological myopia through a shared commitment to infusing legal institutions with a pervasive respect for ecological integrity (Burdon 2013). Such respect may be manifested through a “grundnorm” within domestic legal systems informing how laws are ratified and interpreted, or even as a “global environmental constitution” that takes priority over other juridical norms (Kim and Bosselmann 2015; Kotzé 2019a).

Ecologically conscious lawmaking, Cullinan posits, would “require us to entirely reconceptualize our *idea* of law from a biocentric or Earth-centred perspective” (Cullinan 2011, 8). Accordingly, a “greening” of the legal system would see a reconfiguration of law’s fundamental assumptions about humanity as the principal agent acting within natural reality, embracing ecological conceptions of interdependence at law’s epistemic core. According to Earth Jurisprudence writers like Cullinan and Burdon, this overhaul of law’s *descriptive* premises would resultantly necessitate an implementation of qualitatively new *normative* legal interventions, rather than merely quantitatively increasing the raft of regulations that already exist (Burdon 2014). As Cullinan continues, inspired by the theologian Thomas Berry, an “ecocentric” or “Wild Law” approach to jurisprudence would counteract the anthropocentric focus of law on solely “human” rights by *inter alia* expanding the definition of legal personality to include nonhumans, recognizing the destruction of ecosystems as impermissible violence, and so on (Cullinan 2011, 75). The “Rights of Nature” movement has garnered support beyond Earth Jurisprudence scholarship, including from theorists of Posthumanism, which aims “to dismantle the idea that the human sits in hierarchical supremacy over other subjects—including the environment and non-humans” (Jones 2021, 83). Similarly, New Materialist theorists have endorsed rights of nature as a means of “reconnect[ing] the social and the ecological,” recognizing the “agentic capacities and effectivity” of the “natural” world (Adelman 2021, 56, 57).

We will return to these proposals, and others in the “ecological lawmaking” tradition, in Part III. For now, we can see that many scholars have noted how law often stands epistemically at odds with ecological models of the constitutive processes underpinning ecosystems. As a solution, many theorists in favor of “ecologizing” law posit the desirability of integrating ecological concepts like interdependence into the logic of legal institutions to align the two systems of thought and disrupt law’s ecologically problematic assumptions. For example, in response to the anthropocentric assumptions underpinning legal norms like private property, Natarajan and Dehm ask, “How can we reconfigure these concepts to promote sustainable living?” (Natarajan and Dehm 2019, 7). Yet an implicit precondition of these “biocentric” or “ecological” approaches to lawmaking is that legal concepts essentially *can* be used as instruments for transmitting ecologically sensitive policies. Indeed, it may be true that law’s ontological assumptions are anthropocentric and methodologically individualist, and thus those assumptions demand critical engagement for the ways they sustain anthropogenic ecological damage. However, it is vital to note that such assumptions are not politically contingent *per se* but rather are structurally interlinked with Western-descended law’s historical function within capitalist social relations, and with a legal form that conditions the norms promulgated within its paradigm.

For this reason, overriding those assumptions is not merely a matter of progressively introducing “ecocentric” legislative amendments that reformulate older legal concepts, which risks transplanting the epistemic structure of those concepts into superficially new “forms” while distorting the relevant ecological principles according to law’s “ontological enforcement of a certain world structure” (Boulot and Sterlin 2022, 19). As such, as Part III will show, many novel reform proposals unintentionally have embedded within them the anthropocentric, individualistic, and fragmentary axioms of the traditionalist measures they aim to correct. As a first step in this analysis, to contextualize this tendency and its consequences, the following subsections develop a general ontology of legal systems, beginning with private law relations, with a view to shedding light on the implicit limits and logic of the legal form across fields of law.

To provide three caveats, the following discussion aims to: (1) indicate structural tendencies rather than imply any sense of formal determinism; (2) acknowledge the philosophical influence of ecology on many environmental-legal scholars while noting the inherent limits on drawing legally

normative conclusions from a nonteleological science; and (3) develop a multiscale perspective that conceptualizes the myriad interactions between legal institutions and ecosystems through a nonexhaustive theoretical lens, helping us to perceive the contradictory tendencies that often coalesce between legal and ecological thought in Part III.

B. *Juridical Ontology*

To reiterate, embedded in many traditionalist and novel approaches to the legal protection of ecosystems is a perception of the law as an impartial vessel through which policy decisions may be enacted by state bodies at will (Adams 2020, 1–20). From this perspective, juridical concepts like “right,” “obligation,” “property,” and so on are instruments that can be adapted to whatever purposes a judge or legislator sees fit (Deakin 2015). Let us consider this proposal through the lens of one legal relation between human actors and their “environment.” For instance, the state may determine that a water body has been polluted by a local company. To counter that pollution, the state might adopt an approach wherein the water body is treated as publicly owned, and therefore infringed on by the company’s activities, or it could introduce regulatory constraints on the exploitation of riparian rights (du Bois 1994). In the latter example, the legislature might impose a duty on corporate actors to refrain from using harmful herbicides in proximity to a watercourse, adapting (and constraining) the legal concept of water use rights and the private freedoms those rights engender.

We can call this the “instrumental” view of legal institutions. The instrumental view rests on the assumption that legal norms lack “essential” properties: A given rule can be shaped or replaced as the lawmaker sees fit without conceptual friction. The only properties juridical norms possess on this view are those that legal decision-makers “choose” to give them; legal rules thereby have no irreducible form that constrains their substance or evolution (Deakin 2011). When seeking to mediate human interactions with ecosystems, this perspective might understand the content of legal norms like riparian rights as open to redefinition as lawmakers wish. On this framing, any legal instrument or institution—private, public, criminal, international, and so on—is free to embrace “ecocentric” legal reforms tomorrow if sufficient political impetus emerges.

But when legal concepts are put under scrutiny, we can see that many norms express essential properties without which they would generally cease to be recognizable as “themselves” (Sayer 1992, 89–92). Continuing with the example of a (private) water use right, this rule archetypically posits that an owner of land over which surface water flows holds a “right” to its exploitation. Referring to such a right specifically as a *right* engenders certain private freedoms with which a regulator must grapple when protecting the water body. For instance, the riparian right’s status *qua* a right axiomatically puts the right-holder in a relationship with other legal actors mediated by landownership wherein the latter are beset with correlative duties not to intrude on the right-holder’s property (Hohfeld 1913). The owner can, for example, exclude the use of that surface water by other agents; the right will generally not be identified as such if it lacks some version of this effect, as it is essential to the notion of a right that it can be enforced against others.

In terms of its form, then, this right-relation assumes several conditions of possibility that extend beyond the context of water bodies. First, the riparian right-relation assumes that actors can accrue legal rights a priori—that there is a concept of a legal subject capable of forming jural relations who “assumes the significance of a mathematical point, a centre in which a certain sum of rights is concentrated” (Pashukanis [1924] 2003, 39). Second, it presupposes a fundamental concept of private property, along with the bundle of rights that ownership implies: the right to exploit, to exclude, and so on (Honoré 1961). Third, and relatedly, it assumes a division between persons and things wherein the surface water does not hold independent “rights” of its own, but rather is a *res*

capable of being exploited. Fourth, it assumes the existence of impartial, third-party legal institutions that create and enforce legal rights, and refrain from intervening in the exercise of those rights outside preordained exceptions. Finally, it may assume a law of contract that enabled the riparian right to be transferred to the right-holder.

These elements constitute the essential properties of the riparian right. Such properties are not essential in any transhistorical sense, but rather because those properties are a corollary of the concept's positioning within the "web of relations" that extends beyond that concept and encodes its meaning (Bhaskar 1979, 52; Bhaskar 2007). While the substance of the concept may be variable, the web of relations is necessary for giving the concept its basic form (Sayer 1992). The properties of these concepts, and their constitutive webs, can change, and often do over history; yet changes to one concept generally presuppose or induce changes in other concepts, and this conceptual entanglement means that legal evolution unfolds with significant path dependence (Deakin and Markou 2021). In this sense, the empirical specificities of the content of norms may be dictated by legislatures, but we can nevertheless identify formal constraints that tend to characterize Western-descended, especially Anglo-American, systems (La Porta et al. 2008). As a result, the vessel into which that content tends to be put is structurally limited, though not overdetermined, by this broader conceptual web.

The web is relational on two levels. First, the web is relational in the sense of creating relations *between persons*. The web establishes abstract positions that concrete individuals may occupy (Lawson 2022). These positions are not "produced" by those individuals, but rather are already "made" for them, and in occupying them, the individuals reproduce those positions for future use by other agents. For instance, the abstract positions of landowner and state body must already exist for specific agents to assume those positions in more concrete circumstances such as where the state wishes to expropriate land owned by a private actor, just as the social positions of employer and employee must exist before specific agents can assume those roles within an employment contract (Adams 2022a, 450-452). In the private water use example, holding a riparian right is meaningless without at least two individuals standing in relation with one another: the right-holder and at least one other party whom they may exclude from accessing the object of the right.

On a second level, the web is relational in a cognitive sense. Certain elements of the web are produced directly, though nonexhaustively, through the mechanisms of human thought; these elements are "cognitive" in that their emergence is conditional on human conceptualization (Lawson 2016). Individual concepts function as "storage units" for information: They abstract complex information into a single package (Deakin 2015, 171-72). Nevertheless, concepts cannot be understood as isolated, dehistoricized units (Deakin 2002). Rather, legal concepts are self-referential, or autopoietic: Concepts come together to produce a discursive system of meaning—the "language" those concepts "speak"—making them intelligible to legal actors (Teubner 1993). Crucially, the web is hierarchical: The paradigm of more concrete, lower-level concepts is established by more abstract, high-level concepts, which form the substrate from which those lower-level concepts necessarily draw. For instance, the *riparian right* presupposes the existence of the higher-level concept of a *right*, and so on.

Thus, the conglomeration of legal concepts coagulates into a historically specific structure that both constitutes and is constituted by individual legal concepts without being reducible to them. Law maintains internal stability by erecting institutional boundaries that grant it formal, relative autonomy from other social structures, which makes legal practices appear, and operate, as if they were distinctly "legal," differentiated from other structures like the market (Luhmann 2004). To make this possible, judicial decisions are legitimated by their ostensible independence from political

and economic institutions. As such, law is structured such that, in abstraction, its contents *appear* to be autonomous and malleable. Nevertheless, individual norms can never be perfectly “neutral” because the legal form, the highest-level parameter of the web of concepts, prescribes noncontingent boundaries that shape the content of most if not all juridical concepts to make those concepts cognizable within the legal system (Adams 2021, 444–48).

This brings us to the legal form and the conditions it establishes. As Pashukanis writes, the archetypal legal relation is one of formal freedom and equality between legal subjects to own and alienate property, a relation that abstracts those subjects from the structural conditions in which they operate (Pashukanis [1924] 2003). For Pashukanis, the property-holding subject constitutes the “cell-form” of juridical construction (*ibid.* at 85). Because this form constitutes the core of the legal-conceptual web, the relations of private property must be implicated in many, if not most, legal concepts, providing the formal conditions within which the substance of legal discourse is produced. Since the concept of the legal subject interpenetrates all juridical disciplines, it is rare that a legal norm is enacted that is not inscribed, in some fashion, by a proprietary logic—including regimes often thought of as exempt from private property’s strictures, like criminal, family, and public law (Kivotidis 2017).

In other words, if high-level legal concepts are used to construct lower-level ones like building blocks, the property-holding subject is a keystone. Thus, law is constituted by a constellation of proprietary norms that tend to be expressed, implicitly, throughout legal reasoning, without which law would lose cohesion in its current incarnation. That constellation does not determine the behavior of legal actors but rather conditions it by providing the menu of choices from which an agent may select when constructing apparently novel legal principles (Bhaskar 1979, 27–37).

Further, a web of legal concepts collectively expresses an implicit social and natural ontology. Just as a theorist can hold, and communicate, a theory of reality, so too can the aggregate of decisions and concepts made within a social structure imply its own endemic ontology. Any concept—legal or otherwise—carries presuppositions regarding the nature of the object it is describing and the context in which that object exists. Likewise, a legal concept can only be interpreted intelligibly if it can be fit into a wider view of how law “understands” the social *and natural* worlds to work, a view that must be relatively consistent across legal concepts if they are to cohere within the same conceptual web.

Thus, law has descriptive and normative components, irreducible to any external epistemology. The process by which law’s unique ontology develops can be understood through the concept of emergence. Individual concepts, when interconnected, produce a coherent meaning irreducible to any one concept alone (Lawson 2022). A juridical ontology represents, through its mutually constitutive relationship with specific legal norms, both the bedrock and emergent product of that meaning: the foundation upon which many legal concepts build, largely structured around the property-holding legal subject. These juridical axioms take effect beyond private law, conditioning the logic and limits of public environmental law norms in two principal ways.

First, private law implicitly constitutes myriad interactions between juridical subjects and ecosystems through the mechanisms of property ownership and legal personality. As Grear writes, “legal subjectivity is a, if not *the*, decisively important legal mediator of relations between law, humanity and environment” (Grear 2015, 79). Public environmental regulations and international instruments do not exhaust the legal relations between humans and nonhumans, but rather shape, or constrain, those interactions through various mechanisms (Bosselmann 2024a). Consider the central apparatus through which private law mediates interactions between private actors and ecosystems: as land to be owned, alienated, and exploited. To prevent ecologically destructive

practices by private actors, public law solutions to the biodiversity crisis often involve imposing restrictions on, or effecting dispossessions of, private law land rights, and so must navigate those concepts and their essential properties.

For example, expropriation of private land to develop a nature reserve must usually be accompanied by compensation recognizing the original owner's proprietary right and its value (Meltz et al. 1998). Meanwhile, regulations may be imposed on, for instance, fracking practices, but such regulations functionally operate as "constraints" on private landownership and freedom from state action. In this way, public environmental law regulations generally operate in the space around, and by directly or indirectly shaping, private law activity. Thus, reckoning with the human destruction of ecosystems requires us to monitor the interface between public and private law; private law freedoms sculpt the requisite form of public law constraints and vice versa.

Second, public law generally reproduces a logic that is complementary with private law and that helps in adjudicating their boundary because public law often self-justifies as operating on behalf of an electorate constituted by individualized subjects capable of owning and disposing of property (Kivotidis 2017, 54–61). Further, complementing proprietary relations, the state is generally understood as having its own individuated sovereignty that reflects the self-ownership of the subject, which shapes its relations with other states and the ownership of its land. Returning to the example of water use, the assumptions underpinning the private law riparian right are reflected, rather than challenged, by the structural assumptions underpinning many public law regulations. For instance, public water management often reproduces an overarching proprietary *logic* of water—and other phenomena conceptualized as "public goods"—as a "resource" that can be owned, managed, and exploited" (Wilson and Inkster 2018, 516). This is not to say public and private ownership are "harmonious" in any sense—Bosselmann describes the relationship between the two as one of continual "antagonism" in historical practice—but rather that their underlying *logics* express similar structural forms of "ownership" (by the state vs. by the private actor), "right" (of the state to manage vs. of the private actor to exploit), "legal subjectivity" (the sovereign state vs. the individual owner), and so on (Bosselmann 2024a).

Considering these tendencies, public law can be understood as *mutually constitutive* in form (even if often politically antagonistic) with private law, producing an emergent ontological paradigm that conditions the logic underpinning many legal norms. For this reason, when striving to realize abstract concepts, like ecological concepts, through legal mechanisms, scholars, activists, and decision-makers must be mindful of the concrete vessel into which that value is poured, constructing its shape and boundaries. This includes, as we will see, novel reform proposals like ecocide and rights for nonhumans—and, perhaps, ecocentric calls to "green" or "ecologize" law more generally. For now, these conceptual bases bring us to the capitalistic dimensions of juridical ontology.

C. *Law and Capitalism*

This section elaborates the axioms of juridical ontology in view of law's role in sustaining capitalist social relations. As mentioned, law's conceptual web is saturated with the atomic concept of the legal subject. While legal subjects can form interpersonal and corporate relations, law nevertheless treats those subjects as if they were, in principle, essentially independent. This assumption abstracts legal actors from their social positioning and formally conceptualizes them through an individuating lens, obscuring the web of interpersonal relations by which law, and social reality in general, is constituted. Nevertheless, this ontological axiom produces an internally consistent logic, reducing the social world to the actions of independent agents making decisions in their own proprietary interest, which are then complemented by the public activities of the sovereign state.

That, then, must be a component of juridical ontology: It is methodologically individualist (Pashukanis [1924] 2003, 178).

Further, law synthesizes a worldview in which humans, and institutions constituted by humans, are positioned as the primary agents acting within social and natural reality; in that sense, juridical ontology tends to be anthropocentric (Kotzé and French 2018). The fundamental norm cementing this ontological precept is the division of persons and things, the significance of which is articulated in Part III-A. In addition, a third legal-ontological axiom emerges from the proprietary ownership of nonhumans: Law presupposes that natural reality can be fragmented and made available for proprietary exploitation, as Part III-C elaborates.

This juridical ontology emerged through nonlinear coevolution with capitalist relations, and cannot be grasped without historicizing the dynamics of that relationship. In brief, capitalism is seen here as a social formation in which resources are both produced and distributed according to market forces (Fraser and Jaeggi 2018). Productive inputs include labor power, money, and land, organized through generalized exchange (Polanyi [1944] 2001). This arrangement was made historically possible through the exclusion of labor from direct access to the means of subsistence and production: Workers, or producers, must therefore sell their labor power to capital in exchange for wages (Sraffa [1960] 1975). Productive outputs are also allocated according to market processes, and so competitive pressures exert a coercive effect on both capital and workers who need wages to buy food, pay rent, and so forth (Wood 2017).

The capitalist social form is necessarily an institutionalized order in that it relies on conditions of possibility that appear to exist “outside” the market as extrinsic social structures (Fraser 2022). For example, law operates as an impersonal, formally autonomous power structure that shapes and facilitates capitalist relations through mechanisms like private property and contractual exchange (Adams 2022b, 4–8). In this context, Pistor speaks of law as standing in a constitutive relationship with capitalism owing to how law “codes” assets and makes them available for market transactions (Pistor 2019). That is, law uses norms of private property to impose boundaries on goods and services, rendering their contents identifiable for economic exchange, in a manner that is neither prior nor subsequent to the emergence of markets but rather is coevolutionary with, or endogenous to, capitalist exchange (Aoki 2007).

As a reciprocal component of private property, legal institutions make possible the voluntary formation of contracts, which stabilize expectations between market actors, mitigating uncertainty and facilitating transactive relations (Deakin et al. 2015). Thereby, law has historically functioned to entrench the relations of private property undergirding the market practices of production, exchange, and consumption that constitute capitalist social reality. This has significant consequences not only for private law—as the logic that underpins private property is mutually constitutive with other spheres of legal decision-making, including public law, as mentioned earlier—but also for international and criminal law, as discussed in later sections, through cross-pollinating legal norms like the legal subject (Bosselmann 2024b).

This brings us to a related condition of possibility for capitalism, which is the hierarchical power relation between human and nonhuman entities (Fraser and Jaeggi 2018). Empowered by this relationship, capital is driven by the engine of competition to extract resources from nonhuman phenomena. Profitable extraction incentivizes repeated extraction: Capitalist extraction of, for instance, fossil fuel resources on an unprecedented scale was essential for fueling the industrial expansion of the nineteenth and twentieth centuries (Malm 2015). Indeed, the inbuilt social imperatives within capitalism drive firms toward short-term profit maximization regardless of long-term threats to sustainability (Wood 2017). For this reason, Marx writes that the extractive

motors of capitalist markets create the conditions for a “metabolic rift” between humanity and environmental conditions, one in which the practices of the former destabilize, and yet depend on, the latter (Foster 1999).

Law is a constitutive element in this unstable circuitry, continually reproducing the boundary identifying that which is “human” and that which is “nonhuman” through mechanisms like the division of persons and things. Law engineers the conditions for environmental and animal exploitation by constituting the power relation whereby individuated human subjects are assigned the *right* to exploit and dominate *rightless* nonhuman nonsubjects, obscuring the ecological interconnections between the latter (and former). Reflecting Pistor’s observations regarding law’s asset-coding function, legal systems use technologies like private property to impose contours on nonhuman phenomena, allowing capital to “map” natural reality and fragment it into assets for exchange and exploitation, necessitating our engagement with the concepts of private law when seeking to protect biodiversity (Moore 2017).

In this respect, through practices like the land enclosures, swathes of the natural world were historically fractured and privatized (Wood 2017). The legal designation of areas as juridical “land” was possible because “natural” spaces became “inextricably interwoven with man’s institutions” (Polanyi [1944] 2001, 187). By assigning private property rights to land, minerals, and water, law presupposes that abiotic phenomena can be isolated, codified, and thus commodified for contractual transactions and private ownership. This provides the conditions of possibility for the extractive dynamic, and drive for capital accumulation, that destabilizes ecosystem functioning. Western-descended law thereby abstracts nonhumans from their ecosystems and commutes them into relations of equivalence with other commodities, facilitating and incentivizing their extraction. As such, this process is not composed solely by ideology or political contingency, but rather is coconstituted by the legal form itself.

The tendency of law to constitute the human species as the sole owner of property while dividing and subordinating nonhumans to the proprietary regime sets us on the path to observing the contradictions between juridical ontology and the ontology underlying ecological thought, and their significance for “ecocentric” approaches to law. But to perceive these contradictions, we must first outline the ontology of ecological science, which Part II-D explores.

D. *Ecological Ontology*

Ecology is the study of how organisms live and relate to other organisms and their environment (Chapman and Reiss 1999). The focus of ecological inquiry is the variation in living organisms, or biodiversity (DeLong 1996). This variation can exist between different species (interspecies diversity) and between individuals within a species (intraspecies diversity). Ecology aims to understand the *frequency* and *distribution* of biodiversity at varying levels of organization. One level is ecosystem ecology, examining the interactions of emergent networks of organisms called ecosystems, including the relationships between their biotic (living) and abiotic (nonliving) components (Brooks et al. 2017).

Ecosystems emerge from matrixes of interspecies dependencies, including mutualistic interactions like pollination and seed dispersal, antagonistic relationships like predation and parasitism, and competitive interactions over limited resources such as nutrients and territory. Another constitutive element of an ecosystem lies in the dependencies of those species on abiotic factors like the hydrologic cycle, air quality, temperature, and so on, which in turn often indirectly “depend” on living species—air quality, for instance, “relies” on oxygen-producing, CO₂-consuming plant biota. Natural selection drives the emergence of species and their

interdependencies over successive generations, constituting a process that develops in three “phases”: variation, selection, and retention.

When an organism reproduces, its offspring may inherit genetic mutations that alter some trait. This trait may improve the organism’s probability of reproducing, contingent on limiting factors exerted by the ecosystem in which the species lives (Gregory 2009). If that organism reproduces, it will pass on the fitness-improving mutation to its offspring. That mutation may only improve fitness contingently, and could become redundant or even “detrimental” under later conditions. Crucially, the process of natural selection is nonteleological, and so a species is endogenous to an ecosystem only in the sense that it has adapted to, and reciprocally influences, that system’s conditions (Gould and Lewontin 1979).

Based on these foundations, ecologists identify five nonexhaustive causes of mass extinction (Jaureguiberry et al. 2022). The first relates to global climate change, whereby human activity induces shifts in the abiotic factors that support ecosystem functioning including global air temperatures, sea levels, and weather patterns (Malhi et al. 2020). Species that have adapted to certain abiotic conditions struggle to survive when those conditions are disrupted, especially since anthropogenic climate shifts often happen at rates faster than natural selection.

The second factor in the global loss of biodiversity is the direct exploitation of organisms (Jaureguiberry et al. 2022). Direct exploitation refers to situations where nonhuman populations are used by human actors in, for example, farming, hunting, or logging, reducing the viability of those populations. Consider overfishing. If the number of individuals caught consistently exceeds the number of offspring in the subsequent generation, the population size and thus diversity will decline, producing commensurate changes to other populations of predators and/or prey and abiotic resources in the same ecosystem (IPBES 2019).

A third driver of the functional collapse of ecosystems is transformative land and sea use by human and corporate actors. This includes extraction of minerals from the seabed, the expansion of urban settlements, and the clearing of forests to make land available for agricultural use (Nobre et al. 2016). These practices devastate local ecosystems through habitat degradation and fragmentation, disrupting the myriad ways through which native species navigate and rely on the transformed space (Fletcher et al. 2024).

A fourth factor contributing to declining global biodiversity is the spread of invasive species, wherein populations of organisms migrate to new ecosystems that struggle to “accommodate” their incursion (Middleton 2000). For example, consider an herbivorous insect pest introduced to a new ecosystem. Because of the lack of coevolution between native and nonnative species, native plants may not have evolved mechanisms to resist herbivory, and local predators or parasites may be ill-equipped to target the nonnative insect, resulting in explosive population growth. As such, native species risk being decimated by the rampant spread of the insect pest. While the introduction of nonnative species can happen without human intervention, the increasing spread of invasive species is correlated with intensifying international trade, with countless invasions being facilitated via air and sea freight at a rate of several orders of magnitude greater than preanthropogenic comparators (Hulme 2009).

A fifth factor driving mass extinction is the pollution of ecosystems, such as the dumping of plastics, which may be consumed by marine life and seabirds, into ocean bodies (Savoca et al. 2021). Even organisms that do not consume plastic directly can be affected. For instance, a predator that feeds on a population affected by plastic consumption will see a reduction in prey numbers, increasing intraspecies competition for food and limiting population growth.

These five dynamics help illustrate the ontology underpinning ecological thought with respect to anthropogenic change. Ecosystems are seen as irreducible to the “actions” of individual organisms within a species, and the destruction of biodiversity can be linked to the collapse of their host ecosystems. As mentioned, ecology adopts a nonteleological perspective, understanding ecosystems as dialectical: Ecological processes must be contextualized within the totality of dynamic interactions that comprises the ecosystem, and its species’ evolutionary history, without assigning a priori objectives to, say, animal, plant, or fungal adaptations. In this way, an ecosystem is constituted *by*, and constitutive *of*, its network of biotic and abiotic components, onto which ecologists do not impose normative framing. With this in mind, we can approach the problem of integrating legal and ecological ontologies, and how the limits of the legal form may constrain even radical proposals to “ecologize” law.

III. Law and Ecology: Points of Contradiction

This section argues that law often struggles to provide the conceptual building blocks needed for “translating” ecological principles into juridical frameworks by exploring three points of contradiction between the ontologies endemic to ecology and law. It shows how those contradictions continue to be expressed even in “green” or “biocentric” approaches that purport to disrupt law’s ontological limits. The term “contradictions” here refers to when a set of concepts collides with “forms of discourse and practice which run counter” to the “ruling logic” of the former; these are loci where opposing “forces” tend to clash (Eagleton 1991, 171). The contradictions discussed hereafter are neither exhaustive nor deterministic; rather, they connote tendencies within legal reasoning that compromise the reconciliation of Western-descended law and ecology.

The goal is to emphasize how and why certain legal concepts, even when radically repurposed, struggle to operate as a medium for theorizing the dynamics of ecosystems through three cumulative contradictions produced by the property-holding legal subject, which this section reasserts as: (1) anthropocentric; (2) methodologically individualist; and (3) fragmentary.

A. *Anthropocentricity*

The first contradiction concerns the anthropocentricity of the legal subject and its tension with ecology’s nonteleological perspective (Kortenkamp and Moore 2000). To reiterate, under the juridical division between persons and things, humans and their corporations are constructed as the subjects who own and exchange private property. Nonhuman organisms and abiotic phenomena are positioned as objects that are owned and exchanged. Through the division, law reifies species boundaries between humans and nonhuman biota in its constitution of the subject. This assumption permeates legal norms that take the subject as their nucleus, infusing them with an anthropocentric structure. Thus, while the division is primarily endemic to private law, it shapes how nonhumans are conceptualized throughout legal institutions, since other norms—including many public law norms, like human rights—often draw on the subject as a conceptual building block.

In this sense, law habitually expresses an anthropocentric ontology that “has long functioned as a mechanism that ‘naturalizes’ and/or renders ‘neutral’ the law’s mediation of hierarchy and dominance” and thus “de-politicizes dominance precisely by making it seem part of the given order of things” (Gear 2015, 82). This division is integral to, and entrenched by, the legal form as it delineates property from nonproperty, owner from nonowner, abstract right-holder from abstract right-object, stabilizing the legal form by eradicating uncertainty in what can and cannot

be owned, exchanged, and exploited (Page and Pelizzon 2024). Accordingly, an anthropocentric juridical ontology is not contingent, but structurally engineered by the formal presuppositions of a system premised on relations of private property, and carries throughout nonprivate fields of law.

Further, this conception of legal personality is specific to the Western-descended legal form. To sketch a brief genealogy, the legal person as conceived within capitalistic juridical institutions coalesced alongside relations of private property and contract around the eighteenth to nineteenth centuries. The distinction between persons and things may have been first articulated in Gaius's *Institutes* in the second century, but "it is less than entirely clear of what he considered this difference to consist" (Trahan 2008, 10), with the terms given a "common sense" meaning related to an individual's persona rather than one connoting persons free and equal in their capacity to assume legal responsibilities and rights good against the world. Subsequent jurists like Bracton restated the division without significant gloss, until Grotius in the sixteenth century elaborated persons as agents specifically with rights *over* things (ibid. at 12). Even so, it was not until the seventeenth century onward that legal history witnessed a series of legislative and judicial developments representing "a decisive break from the past, sweeping away many of the features associated with the aristocratic, *status*-based land system, in favour of capitalist, *contract*-based free trade" (Walsh and O'Mahony 2018, 19).

Amid these shifts was an evolution "towards the idea of abstract, subjective rights—conceptually separate from legal remedies and from 'right' (*ius*) in the objective sense," accompanied by the crystallization of the legal subject as a "right-holding and duty-bearing" individual, explicable "in terms of the *capacity* to hold rights and/or duties, or as participation in legal relations" (Kurki 2019, 35, 39). This formulation of legal personality crystallized in the nineteenth century, especially in the writings of continental jurists, who began conceptualizing the division as a formally entrenched divide between that which has jural power and that which is subjected to jural power (Trahan 2008; Kurki 2019). Thus, the legal person coemerged with relations of private property, not least because proprietary rights required a subject who could bear and enforce them against other formally equal persons.

In contrast to this normative differentiation between persons and things, ecology avoids teleological thinking at the ontological level, examining interactions between and within species while rejecting suggestions that ecosystems express idealistic metaobjectives like "balance" or "success," or a fortiori a species hierarchy (Ayala 1998). A given study might focus on how a species navigates its ecosystem—its habitat, diet, and so on—but there is no a priori "precedence" afforded to one species over others, with ecosystems conceptualized as networks of interspecies dependencies that are continually in flux (Chapman and Reiss 1999). Further, the observation of an organism exhibiting "goal-oriented" behavior with respect to its ecological niche does not necessarily yield a normative claim regarding the behavior's "legitimacy"; the orthodox ecologist's goal is to explicate, not valorize, the behavior with respect to its evolutionary and ecological conditions. Recognizing that ecology is a human-constructed model prone to such anthropocentric fallacies, orthodox ecologists generally utilize a methodology in which the human is epistemically decentered to facilitate analysis of the complex life systems that coconstitute ecological networks (Morton 2011). Ecological ontology thereby conflicts with the "naturalized" quality of the power relation to which Gear refers, wherein humans are positioned as rights-holding entities that are ontologically separate from, rather than interdependent with, nonhuman phenomena.

The question, then, is how to encode a "biocentric" ontology into legal concepts despite it contradicting, *inter alia*, the division of persons and things. As a practical starting point, realizing the protection of ecosystems requires us to find some means of counterposing the legally

fabricated “interests” of nonhuman biotic and abiotic communities against human proprietary rights. Yet, the anthropocentricity of the division between persons and things makes this difficult because personality generally serves as the atomic constituent of most, if not all, rights, and thereby as the lens through which law conducts its calculi of harm. Since most nonhumans are excluded from legal personality, law offers fewer conceptual materials to equip nonhuman phenomena with protections that could activate if their “interests” were compromised.

Traditionalist approaches often attempt to work *with* the ontological division between persons and things to recognize, and protect, nonhuman “interests.” For instance, juridical institutions have historically articulated welfarist arguments for protecting nonhuman biota, and the “interests” of those biota have functioned as legal constraints on private action. As one example, legal subjects may own some animals as pets or livestock, but such proprietary ownership is often subject to anti-cruelty restrictions in the form of obligations to avoid or reduce the suffering of the animal without necessarily confronting the division of persons and things. In this respect, while the legal protection of nonhumans may be possible, it is consistent with an anthropocentric ontology to assert the relative “value” of nonhumans while leaving unchallenged the structural assumption that nonhumans may be treated as exploitable objects. When legal systems deploy protective mechanisms of this form for nonhumans, their interests are generally recognized as “exceptions” to, or “constraints” on, private freedoms rather than as an abolition of their statuses as *res*. Even an injunction against, for instance, inflicting suffering on animals may be realized through welfarist legal provisions while preserving the right of legal actors to own, and even kill, animals. In this way, *exceptions* to a power relation ultimately recapitulate that relation’s legitimacy, since any exceptions remain structurally subordinated to the assumption of a qualified but nonetheless extant right to exploit nonhumans as private property.

As such, critiquing the failure of traditionalist legal norms to challenge the ontological status of nonhumans *qua* things, some scholars have contended that the continued treatment of animals as *res* and not subjects constitutes an obstruction to the juridical realization of their interests, as they remain subjugated to power relations of dominance and exploitation (Kurki 2017, 79–80). This raises the question of whether legal personality, and thus legal rights, could be granted to nonhumans like animals, plants, or abiotic phenomena to disrupt law’s anthropocentric assumptions and embrace biocentric or posthumanist methodologies that “destabilize the problematic anthropocentrism of the law” and thereby “re-think the onto-epistemological basis” of environmental law in general (Jones 2021, 77).

In 1972, Christopher Stone proposed that a powerful legal tool for recognizing nonhuman interests would be to extend legal personality to facets of nature, such as trees (Stone 1972). By treating nonhumans as not mere “objects” but as ends in themselves, our approach to “natural” phenomena might shift to a legal framework in which they are repositioned onto the same ontological plane as human agents. Posthumanist, New Materialist, and Earth-Jurisprudential theorists like Cullinan would later endorse this approach, contending that “we cannot claim that humans have human rights without conceding that other members of the Earth Community also have rights . . . the discussion about the legal rights of ‘non-human’ members of the Community is about whether or not the legal system chooses to recognise these inherent rights” (Cullinan 2011).

As Stilt writes, an ecologically sensitive reformulation of juridical institutions that challenges the anthropocentric, hierarchical qualities of law through the grant of rights to nonhumans could potentially empower legal actors to “categorically reject” the idea “that the inherent purpose of an animal is to serve human interests and uses” (Stilt 2021, 284). Until such a reformulation, those nonhumans could only be recognized as objects, computable within the legal system’s conceptual

web through the lens of private legal technologies like animal ownership or public legal technologies like water management or sanctioned pest culling that nevertheless compute those phenomena as resources to be owned and controlled. Under this framework, granting legal personality to nonhumans could thereby enable the legal system to counterpose their interests against the interests of human actors on an equal plane, in principle replacing law's human-centered assumptions with an epistemology more alert to humanity's interdependence with species and abiotic phenomena.

From the late 2000s, legal developments in several postcolonial states began reflecting Stone's proposal, often mobilized by campaigns for Indigenous justice, seeking *inter alia* juridical recognition of Indigenous cosmologies. In 2008, Ecuador's electorate voted for a constitutional change recognizing the rights of nature to "exist, flourish and evolve" (Charman 2008). In 2010, the Bolivian legislature enshrined the Mother Earth Rights Law, ascribing rights to water and biodiversity to "Mother Earth." A few years later, Aotearoa New Zealand recognized the legal personality of the national park Te Urewera in the Te Urewera Act 2014. Moreover, toward the latter half of the 2010s, some states and judiciaries sought to recognize the legal personality of water bodies (O'Donnell and Talbot-Jones 2018). For instance, in 2017, New Zealand gave personality to the Whanganui River with the Te Awa Tupua Act (Kramm 2020).

To use the latter as an example, some scholars posit that the "pioneering guardianship model" produced by the Te Awa Tupua Act "greatly strengthens the ability of the guardians to understand complex issues, to withstand pressure to compromise the river's interests, or reach resolution in the case of disputes" (Kauffman and Martin 2018, 6). Though this article principally concerns the relationship between Western-descended legal and ecological ontologies, these developments must be understood within the political context in which they were enacted. The Crown and the New Zealand Department of Conservation faced criticism for failing to recognize the spiritual and material interests of Indigenous Māori in the Whanganui River and its surrounding land. After refusing to cede ownership of the land to local Māori communities, the grant of legal personality to the river served as a compromise to break the "deadlock between the Crown and some Iwi" (Geddis and Reru 2020, 257).

While the Te Awa Tupua Act is therefore inextricable from the political relations between the Crown and local Māori iwi, many theorists have looked to the legislative grant of personality to the river as a possible foundation of a global, ecocentric project of granting rights to nonhumans (Rodgers 2017). Supporting this approach, the Whanganui River is described in Section 12 of the statute as an "indivisible whole . . . incorporating all its physical and metaphysical elements," including the river's waters, banks, and ecosystems. This framework potentially provides a model according to which other legal orders could begin reconceptualizing rivers as expansive entities comprising interconnections on a multiplicity of planes: geological, ecological, social, cosmological, and so on (Geddis and Reru 2020, 263–65). Such legislation may thereby establish the "enabling conditions" for future developments, inculcating "ontological mixing" within Western-descended legal systems that may disrupt "environmental colonialistic approaches to the protection and management of rivers" (Clark et al. 2024, 21). These reforms thus may create "space for Iwi authority, Indigenous rights, and ontological shifts," demonstrating "a vibrancy and plurality of thinking in relation to new models of law in settler-colonial contexts" (*ibid.* at 2).

Perhaps the Te Awa Tupua Act does represent the first steps toward a structural transformation of juridical ontology. Yet it is vital to remain cognizant of the conceptual tools with which the statute, and others like it, endeavor to effect these ontological shifts and thereby "ecologize" the legal form (Tănăsescu 2022). As Burdon argues, any rights the Whanganui River obtained through the Te Awa Tupua Act "must be interpreted and enforced within existing power relations"

(Burdon 2020, 317). Positioning the river on the same ontological plane as humans may help integrate Māori cosmological conceptions of the river into the legal system in principle, but it remains the case that “the granting of legal personality does not represent a dramatic change in the previous purpose or form of legal regulation applied to” it (Geddis and Reru 2020, 265). The Whanganui River remains subject to discretionary control by local authorities, while some sections are still held under private ownership, calling into question the “indivisibility” the Act purports to acknowledge. More fundamentally, Mills cautions against law’s recurrent tendency to subject Indigenous ontologies to “constitutional capture,” analyzing the legal translation of those ontologies as one of persistent *mis*translation (Mills 2019). An analogous framing will be applied to the juridical “capture” of ecological terms below, where it will be contended that attempts to translate ecological concepts into legal institutions and discourse often distort their meaning according to a structurally entrenched juridical ontology.

For now, empirical successes with respect to animal rights have also been limited. For instance, the US activist group the Nonhuman Rights Project has repeatedly attempted to use the writ of habeas corpus to affirm the legal personality of animals like elephants and chimpanzees, and thus secure their freedom from captivity. However, in *Nonhuman Rights Project v. Lavery* and other decisions, the New York Supreme Court held that animals cannot be legal persons because they cannot bear legal duties and, thus, cannot hold legal rights. 152 A.D.3d 73, 79 (N.Y. App. Div. 2017). Nonetheless, Stucki notes that animal rights have been successfully encoded in some statutes and case law worldwide (Stucki 2020). Thereby, other scholars have characterized the grant of personality to animals as a “gradual road” toward the emancipation of animals from the anthropocentric power relations that have proven disastrous for biodiversity (Kempers 2022).

That said, while these practical examples of nonhumans attracting rights may have experienced some successes and obstacles, two theoretical questions persist. First, are these limitations contingent outcomes, or a corollary of the legal form and the form of juridical ontology discussed in Part II? Second, and relatedly, if these legal reforms did achieve wider success, would personality (and rights) serve as an effective vessel for “ecologizing” law a priori? In other words, would a legal system that recognizes the rights of nonhumans be meaningfully “posthuman” or “biocentric”?

With respect to the former, early opposition to the Rights of Nature movement contended that nonhumans lack the capacity to attract rights because they do not, and cannot, reciprocally hold duties. Kramer rejects this position, noting that incapacity to hold duties is no obstruction to right-holding on a Hohfeldian analysis; the correlative to party A holding a specific right is that party B holds a reciprocal duty, not that party A must, elsewhere, hold a duty bound to party B (or any other party’s) right (Kramer 2001). Further, as Fasel and Butler posit, the nonhuman bearing a right—for instance, to bodily integrity—may do so as a “passive” agent, with an analogy to be drawn with “human infants and humans with severe cognitive disabilities,” whose rights can nonetheless be vindicated by legal agents (Fasel and Butler 2023). Kurki contends, following Kramer, that personality can be conceptualized as a “cluster property” that allows *incidents* of personality to be granted without the totality (Kurki 2021). Thus, the element of personality that empowers agents to attract (some) rights could be granted to nonhumans without necessitating the crystallization of all components of personality.

Notwithstanding the conceptual *possibility* of granting legal personality to nonhuman animals, plants, and abiotic phenomena, the question remains as to whether legal personality serves as an effective tool for “translating” ecological concepts into legal reasoning in order to shear the anthropocentric assumptions of the latter. That is, would granting rights to nature make law “posthuman” or “biocentric” insofar as it integrates ecological concepts into legal thought? As

mentioned, in minimizing an anthropocentric worldview insofar as possible, orthodox ecological methodologies tend to avoid teleological framings when examining the ontological aspects of the systems they study (Trommler and Hammann 2020). Ecologists may employ teleological metaphors when explaining, say, animal territoriality or the tendency of many plants to grow “towards” light in quasi-intentionalist terms (“The flower bends towards the sun *so that* it can maximize light absorption”). However, this heuristic shorthand is typically for explanatory or epistemological purposes, rather than to impose tacitly anthropocentric notions of intentionality and agency onto nonhuman living systems in an ontological—or liberal—sense. Such terminology is an “expedient convention, generally used to help avoid convoluted phraseology,” which becomes “acutely problematic” when “teleological claims go beyond mere causal *explanation* to become a form of normative *justification*” (Werth and Allchin 2020, 5, 7).

While some ecologists discuss “organismal agency,” especially in the context of “niche construction” (Laland et al. 2000), the orthodox view is that “agency” in ecological discourse draws specific meaning from, and is readily accommodated by, conventional evolutionary biology (Laland et al. 2014) rather than from any liberal notion of agency, or a fortiori juridical conceptions of liberty, intentionality, and so on.¹ To conflate the two would not only be an overreach of teleology, but also a subversion of ecology’s descriptive foundations. Ecology may speak of an individual organism’s “agency” and capacity to transform its surrounding ecosystem; Darwin himself wrote of the role of earthworms in modifying their soil environment (Darwin 1881). Yet, ecologists and evolutionary biologists usually embed “niche construction” and “organismal agency” within a matrix of dialectical interactions between the gene, the organism, and its environment, framing these behaviors as evolutionary adaptations; this is a model of the organism not as an atomized, free and equal “agent” in a jural sense but rather as a locus through which ecological processes are mediated (Lewontin 2002).

Ecological recognition of an organism’s capacity to modify its environment, then, should not be conflated with “agency” or “intention” as those terms might be employed within legal discourse when discussing juridical capacity, contractual intent, voluntary acquisition of a property right, the violation of a right to liberty, and so on. A beaver might alter its river ecosystem by constructing a dam, but to contort this behavior to fit formal, legal conceptions of “agency,” “liberty,” or even “property” would be to extract the beaver, and its behavior, from its ecological context and to insert it into a paradigm with historically specific ontological and normative axioms, logics, and so forth. Such an analysis is equally true for, say, plants and rivers: It is possible to observe the ecological changes those phenomena can “induce”—what a New Materialist might treat as evidence of their “agency”—but the decision to *treat* that capacity for change as the basis of legal personality and rights is fundamentally normative and thereby teleological, and indeed anthropocentric.

This is not to say that law would be “wrong” to frame biodiversity protection in teleological terms, but rather that it would be fallacious and inadvertently anthropocentric to treat teleological constructions of the nonhuman world as if they were directly legitimated by orthodox ecological science. Ecology is crucial to the analyses of environmental law scholars by evidencing how human activity disrupts ecosystems, but it would be inappropriate to “ecologize” law by stating, as some Rights of Nature scholars do, that “rights originate where existence originates,” treating rights not as the historically specific legal constructions that they are but rather as some reflection of “inherent” or “natural” qualities that metaphysically predate juridical institutions (Berry 2006, 149). Thus, perhaps most crucially, the Rights of Nature movement risks using ecological concepts and language to *reify* legal concepts like legal personality—to treat them as if justified by reference to

¹ On the social construction of agency, see Danermark et al. (2019, 15–16).

“natural,” ecological observations. This makes it more difficult to appropriately historicize those legal concepts, abstracting and mystifying their contingent basis within capitalist society and the legal form while treating them as if they were derived from scientific knowledge—or, as problematically, from “nature” itself.

As such, Rights of Nature proposals arguably risk *limiting* the scope of what is possible with reform, rather than meaningfully expanding it. In this sense, framing organismal agency and niche construction as ecological “proof” of the “intrinsic” rights of nature, far from disrupting juridical anthropocentricity, would be an anthropocentric translation error—one that is not without violence to the content of ecological concepts, as Part III-B will explore. Thereby, to interpolate ecological concepts like organismal agency into a rights-based analysis *in the name of* “ecologizing” law would be to ironically “project concepts onto nature” (Burdon 2020, 311), while also projecting nature into legal concepts. These are premises that orthodox ecological science does not, and methodologically cannot, support; a preferable formulation would be that rights originate where *the legal form* originates, and that the former cannot be disentangled from the latter without dehistoricizing and occluding its structural features. Accordingly, if the objective is to cultivate a New Materialist, ecocentric, or Posthumanist legal ontology wherein the capacity of nonhumans to “act” and the ongoing entanglements between humans and nonhumans are recognized, legal concepts like personality and rights seem ineffective tools to do so, and risk recapitulating the anthropocentricity those approaches seek to disrupt (Siraganian 2026).

Of course, these framings—legal and ecological—may not hold cross-culturally (Kohn 2013). There may be forms of legality and of interacting with the natural world outside the confines of Western-descended legal systems and scientific knowledge that could accommodate alternative ways of understanding how ecosystems unfold. The point here, however, is that if one seeks to integrate Western-descended law and ecological science, there will be interrelated risks of distortion of ecological concepts and dehistoricization of legal terms that arise as a result not from contingent political outcomes, but from the abstractive tendencies of the legal form.

Thus, returning to Stone’s proposal for extending personality to nonhumans, he writes, embodying this teleological fallacy, “I can judge with more certainty and meaningfulness whether and when my lawn wants (needs) water, than the Attorney General can judge whether and when the United States wants (needs) to take an appeal from an adverse judgment by a lower court” (Stone 1972, 471). But from a strict ecological perspective, a lawn does not “want” anything in this legalistic sense; to impute some jural notion of “want” is to impose a human system of meaning and understanding onto a nonhuman organism. One can observe, for instance, that water availability limits the distribution of grass and thus that water is a limiting factor for the growth of grass species. But to go further is to anthropomorphize grass, or indeed any plant, or indeed any ecosystem, to say nothing of the serious empirical difficulties for ecologists in identifying the “needs” of ecological networks that Stone’s comment overlooks.

Indeed, the problem becomes more acute when we consider ecosystems more complex than a lawn. For instance, consider the density of life in a rainforest—the complexity of the relationships, dependencies, and interactions that constitute its ecosystem. The contradictory “needs” and “wants” of those constituent elements would be flattened by something like granting a “right to life” to the rainforest itself, as explored in Part III-B. Thus, anthropomorphism of this kind cannot serve as a corrective to anthropocentricity because it is itself an anthropocentric Trojan horse, pointing to an irreducible anthropocentricity of a legal concept composed of subjects and rights. Again, this indicates a problematic aspect of approaches seeking to “ecologize” law that obscure the *meaning* and *function* of rights by implying that the structure of rights-based relations is located in “nature” rather than being specific to the last few hundred years of legal and political thought.

While this may appear a quibble with the Rights of Nature movement, it speaks to a methodological error that permeates many novel approaches to environmental law reform that attempt to implement the proposals of “green,” “Posthumanist,” or “ecocentric” juridical perspectives by adapting (even radically) preexisting legal concepts. That is, their tendency to remove rights from their social context while overlooking their structural constitution, treating such historically specific forms as “transhistorical” or politically inevitable when they are specific to the institutionalized social formation of capitalism. In this sense, the anthropocentricity of the division between persons and things would not be ameliorated by simply increasing the number of phenomena counted as “persons,” as anthropocentricity is woven into the form of the division itself. Indeed, the anthropocentricity of the legal form becomes particularly pernicious when it leads legal actors and scholars to reproduce its methodological individualism, as discussed in Part III-B.

B. *Methodological Individualism*

The second contradiction concerns the methodological individualism of the property-holding legal subject and its tensions with ecological modeling of interspecies dependencies. A rights calculus presupposes the existence of interests within an individuating paradigm. Capitalistic legal systems often abstract social conflicts and conceptualize them through a logic of right against right, or subject versus subject. This is true of private law conflicts but also of public law, say, where rights (for example, human rights) are invoked as a shield against state action (Kolakowski 1983). Extending rights analyses to nonhumans recapitulates this methodology.

Returning to approaches inspired by Earth Jurisprudence, Cullinan suggests that “from an Earth-centred perspective, the myopia of a philosophy that cannot recognize the ‘right’ of a river to flow, of a species to remain free of genetic pollution or even of the Earth to maintain its climate, beggars belief” (Cullinan 2011, 91). Comments like these exemplify the anthropocentric translation error discussed above, while pointing us to an additional error. As alluded to in Part III-A, theorists like Cullinan implicitly conceptualize the *form* of “rights” in depoliticized terms, rather than as a deeply specific mode of human governance, leaving the *content* of, and access to, rights as the arena of debate. Legal personality being extended to nonhumans might change the category of what forms of life (and nonlife) can access legal personality, but not the functionality and structure of personality itself. In other words, such a grant of personality might yield a change in content of, or access to, rights, but not ultimately form. Yet it is the legal form, and its atomizing structure, which has played a demonstrable role in facilitating capitalistic extraction of resources from ecosystems, calling into question how that form could “emancipate” the ecosystems that such an institutional structure helped to destabilize.

By contrast, ecology understands the emergence of ecosystems as being constituted by interdependent biotic and abiotic processes, and genetically diverse populations irreducible to the “needs” or actions of individual organisms. To reductively construct ecosystems otherwise “ignores properties of complex wholes . . . and makes it more difficult to study the nature of interconnectedness” (Levins and Lewontin 1980, 76–77). Utilizing legal personality as the conceptual basis for confronting biodiversity loss risks perpetuating, rather than disrupting, this juridical myopia.

As such, realizing the rights engendered by legal personality as a means of “ecologizing” law involves a tension between the individualistic qualities of legal personality and the dialectical qualities of ecological networks. Putting aside concerns regarding teleology, the “interests” of a *rabbit* are not the “interests” of *rabbits* as a population, or indeed species; the “interests” of *rabbits*

are not the “interests” of their ecosystem. To consider the rights of the ecosystem otherwise would involve leveling the constructed “interests” of its components, and an erroneous assumption that ecosystems are continually “harmonious” or “in balance” rather than undergirded by a continual flux of disturbance and succession. The problem, then, is the atomizing methodology embedded within legal personality and the structure this imposes on a rights-based conception of ecological “interests.”

Indeed, while legal personality might improve law’s capacity to protect *individuals* from suffering caused by other legal subjects, it works less effectively as a proxy for an ecosystem at large. On the one hand, granting legal personality to an ecosystem as a single, “blanket” legal person to protect it from anthropogenic disruption—for example, in the form of deforestation or hunting—risks flattening or obscuring the diverse “interests” or “needs” of its constituent species, as alluded to in Part III-A. On the other, we might assign a claim to *individual* personality to all the *organisms* of the ecosystem, but this risks a reductive fragmentation of that ecosystem into its atomic components, occluding the ecological significance of their interactions.

Consider conservation efforts made to protect the greater bilby (*Macrotis lagotis*) in Australia. The greater bilby is threatened inter alia by predation by red foxes (*Vulpes vulpes*). The red fox is an invasive species in Australia, introduced by sea freight in the 1800s for recreational hunting. Imagine that a court is trying to determine how an individual greater bilby’s right to life ought to be realized, with a view to using that greater bilby as a proxy for protecting the greater bilby species, and/or its wider grassland ecosystem, which “relies” on the bilby as a “soil engineer” (Eldridge et al. 2017).

One technique for protecting greater bilbies from red foxes is *ex situ* conservation, which can involve relocating bilbies to a walled, predator-free section of grassland or into captive breeding programs. From a rights-based perspective, one concern here would be the prima facie violation of the greater bilby’s right to liberty by human actors; the legally manufactured interest of the individual greater bilby in “liberty” contradicts the species’ constructed “interest” in long-term survival and the alleged “interest” of the grassland ecosystem in retaining the greater bilby as a local “ecosystem engineer” (Jones et al. 1997). The individual bilby, in other words, “owes” both its species and its ecosystem very little under a rights-based paradigm. Alternatively, one solution might be to cull the red fox population through pest control measures, but this would be a violation of the *red fox’s* right to life and thus likely impermissible (unless red foxes were denied legal personality, which could invite criticisms of arbitrary “speciesism”). As such, a rights-based approach can risk foreclosing vital conservationist techniques aimed at protecting greater bilbies and their ecosystem, ironically resulting in the bilbies’ extirpation.

This constrains the utility of nonhuman rights, and legal personality, as a medium for “ecologizing” law as it risks distorting, and obscuring, the ecological notion of ecosystems as webs of interspecies dependencies within legal institutions. A similar problem lies in the reductive, individuated analysis embedded in legal doctrines of causation, which will bring us to proposals for a crime of “ecocide.” Following law’s focus on the relations between individuated subjects, juridical conceptions of causality tend to be atomizing. Causation will often impute responsibility for an outcome to a distinct defendant, characterized by an “abstract individualism” that “identifies the individual responsibility of the agent only by refusing properly to take into account the social context without which any agency is in fact inconceivable, that is, by decontextualising it” (Norrie 1991, 688).

This etiology is structurally conditioned by the web of concepts that constitutes juridical ontology; it is a necessary means of making the concept of fault “work” in a system characterized by a subject’s rights being infringed on by other subjects. That is, legal doctrines of causation generally

emerge from the legal system's broader, abstractive methodological individualism, making it challenging for juridical ontology to accommodate other etiological forms when determining responsibility for an outcome. Ecologists also invoke conceptions of causality that are probabilistic and linear, but differentiate between proximate and ultimate causes. The former comes closer to legal doctrines of causation and concerns the immediate forces directly "responsible" for a given ecological outcome (Landweber and Dobson 1999). Meanwhile, notions of ultimate cause enable ecologists to recognize the cumulative effect of complex, interpenetrating forces on ecological processes. Lewontin and Levins capture this dialectical flux, writing that "every species, not only the human species, is at every moment constructing and destroying the world it inhabits" in cycles of disturbance and succession (Levins and Lewontin 1980, 98).

Yet such processual "uncertainty . . . is antithetical to the rule of law," and so legal institutions must often compress ecological complexity into juridically legible form (Green et al. 2015, 332). This issue is visible throughout public environmental law, wherein administrative decision-makers often must interpret ecological models reductively to provide certainty and "the problems created by open ended, holistic ecosystems thus need to be downplayed" (Fisher et al. 2010, 276). But these limitations become particularly pernicious when legal institutions attempt to address large-scale ecological harm through doctrines that presuppose identifiable actors and discrete causal events.

Consider proposals for a crime of "ecocide." Proponents of introducing this offense across jurisdictions suggest that large-scale degradations of ecosystems should face state-backed sanctions (Lindgren 2018). This might include cases like the 2010 explosion of the Deepwater Horizon oil drill off the Gulf of Mexico that devastated local ecosystems (Girard and Fisher 2018). One proposal formulates ecocide as "unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts" (Independent Expert Panel for the Legal Definition of Ecocide 2021). A limitation of this definition, however, is that it seems to target only "extreme" cases, which it treats as aberrations, rather than corporate practices like excessive carbon emissions that cause damage over a long period but do not involve specific, egregious incidents. Such definitions treat "ecocidal" practices as anomalous outliers, relying on abstractions that obscure the structural processes of exploitation and control that in fact continually destabilize ecosystems (Knox 2023).

Indeed, the damage caused by many corporate actors may be generally too low to be "felt" by legal doctrines of causation in isolation. It is the aggregate product of capitalist social relations that is "ecocidal," yet law—at least rights-based law—is not ontologically predisposed to recognize criminal harms of this kind. This is not to say that a crime of ecocide should not be implemented, but rather that legal actors should be aware that its scope, and the scope of similar legal technologies, may be structurally limited by the methodological individualism of the legal form. Indeed, the resultant doctrines of causation that law tends to produce may occlude, rather than reify or reconstruct, the ecological processes that in fact contribute to the biodiversity crisis. Thus, beyond Rights of Nature, we can see how many novel legal concepts reproduce older legal forms like juridical doctrines of causation, and thereby embedded within those novel concepts is an abstractive etiological methodology that, once again, distorts ecological understandings of the dialectical emergence and collapse of ecosystems.

C. Proprietary Fragmentation

A third ontological tension between law and ecology relates to the fragmentary logic of the juridical concept of property, and how it contradicts the ecological view of ecosystems as biotically and abiotically interconnected. Juridical ontology presupposes that ecosystems can be artificially

segmented into parcels through the legal concept of land, allowing the system to code, and impose boundaries on, natural reality for ownership and exchange (Moore 2017). Thereby, property serves as the self-referential lens through which law internally “computes” the topography of the empirical world. This mapping of natural reality through proprietary disintegration, however, may obscure the ecological conception of ecosystems as comprising interdependent processes, demarcated by porous and ever-shifting biogeographical boundaries. Organisms migrate and disperse across those boundaries, with some species changing their spatial distribution and resource selection across seasons, while others require heterogenous habitats across a landscape. Similarly, abiotic conditions can be affected by processes occurring beyond the local ecosystem; for instance, carbon emissions in one area may cause spikes in temperatures and ocean acidification levels elsewhere. Thus, conservation work generally takes a holistic, landscape-level approach when conceptualizing the processes constitutive of a given ecosystem (Belote and Wilson 2020).

However, the legal form abstracts land from its ecological context and maps reality *as if* it were constituted by proprietary relations, hampering law’s ability to reconstruct biogeographical delineations and interpenetrating ecological dynamics. As such, law’s proprietary logic disrupts its ability to form a “complete” image of ecosystems, whether that logic manifests in private or public law conceptions of land; as Bosselmann notes, “like a private owner of land, the state has the undisturbed right to exploit its territory” (Bosselmann 2020, 49). Thus, this section explores not the power land rights confer onto humans to exploit and dominate ecological phenomena *per se*—as many scholars have discussed—but rather the *condition of possibility* that enables such exploitation: the juridical fracturing of interlinked ecosystems according to ownership by distinct legal subjects.

Theorists of “ecocentric” traditions like Earth Jurisprudence have taken up the question of how property rights might be reformed to implement an ecological approach to legal reasoning. As Bosselmann posits, “if environmental law has been shaped around, and limited by, private property, then the obvious alternative is to shape private property around *inherent* responsibilities based on sustainability” (Bosselmann 2024a, 10007). To reflect the tenets of Wild Law, Howe suggests that private land rights could be reframed according to a “relational” rather than individualistic paradigm, one that encodes into property rights “a baseline obligation to respect the ecological integrity of all land” (Howe 2017, 27). This would see owners “subject to legal obligations, intrinsic to the idea of property, to use the land in accordance with the fundamental principle of the common good of the Earth community” (*ibid.* at 27). Likewise, under this rubric, Burdon suggests that “property rights would be shaped, restricted and given formal content by reference to the common good” of a wider “Earth community” (Burdon 2020, 118).

Problematically, however, these postulated solutions to the atomized model of property rights in which human owners are posited as “stewards” of land may insert obligations into the *content* of those rights without adequately contesting those rights’ *form*. This implies that duties related to preserving ecological integrity would be functionally subordinated to the regime of private property, leaving the proprietary fragmentation of the natural world fundamentally unchallenged. Thus, a “relational” reframing of property rights may strive to acknowledge our relationality with land without acknowledging how property itself ruptures the system’s capacity to recognize ecological processes across land boundaries. In other words, the problem of proprietary fragmentation would not be solved simply because owners of fragmented land were obligated to act in environmentally conscious ways.

This problem is visible in biodiversity offsetting mechanisms that have been deployed in numerous jurisdictions worldwide, which enable property developers to “compensate” for biodiversity loss caused by construction projects (Apostolopoulou, Greco, and Adams 2019). For instance, Section

98 of the UK's Environment Act 2021 requires developers to demonstrate that a project will deliver a 10% increase in biodiversity (termed "biodiversity net gain," or BNG), on- or off-site, before planning permission will be granted (Department for Environment, Food & Rural Affairs 2024). The BNG duty operates as a condition on the private exploitation of land rights, and as such reifies boundaries not of ecosystems but of proprietary exchange. Such a fragmented approach risks contradicting or mystifying the ecological reality that the appropriate stratum of conservation management for many threatened ecosystems is set at the landscape- and population-levels, rather than the arbitrary stratum of a landholding; thus, there is a practical mismatch between the two that reflects a deeper, ontological mismatch between the epistemic prisms of ecology and private property.

The potential problems of this mismatch are manifold (zu Ermgassen et al. 2023). For instance, by locking the legal system's perspective into a property-eye view, processes like fragmentation and metapopulation stability may go entirely overlooked by the law (Fletcher et al. 2024). Moreover, because planning decisions are made on an atomized, case-by-case basis, as sought by property developers ad hoc, offsetting assessments remain institutionally disaggregated, with little requirement for coordination between adjacent developments or for the pooling of ecological information. This, again, can obscure cumulative effects across a wider landscape, as each project is evaluated in isolation rather than as part of an interconnected ecological network. In turn, conservation outcomes become contingent on the aggregate of individual decisions that are neither designed nor required to cohere, undermining the capacity of offsetting mechanisms to respond to ecological processes that unfold across multiple sites and over extended temporal scales.

Such fragmentation is reproduced on the international plane. Norms promulgated by legal institutions take effect within the confines of their nation-state, and do not extend beyond the contours of that regime. Yet ecological biogeographies show no "respect" for state lines; ecosystems and drivers of biodiversity loss often range across jurisdictional territories. However, ecosystem management requires coordinated interventions that state boundaries may disrupt where political responses are unaligned.² This issue appears politically contingent, but is partially conditioned by the proprietarian logic of international legal institutions.

First, jurisdictional boundaries are intrinsic to the concepts of the nation-state *and* private property. The legal concept of the state refers to a sociopolitical institution that holds sovereignty over internal affairs, essential to law and upholding property rights. This is because relations of private property and contract are contingent on enforcement by a third party, and the state draws boundaries allowing it to appear formally differentiated from other social structures, thus operating as if it were such a third party (Christodoulidis 2023). Property relations can therefore be enshrined to stabilize the expectations of market actors by underwriting them with the threat of force. As in Weber's formulation, the state safeguards property rights by monopolizing the legitimate use of violence within its territory (Weber [1919] 1946). Meanwhile, no "single" nation-state is sovereign over all others, and thus states necessarily relate to one another through treaties and other agreements (Miéville 2006).

Yet, as mentioned, ecosystems often transgress the jurisdictional limits of statehood: Animals migrate and plants pollinate over state lines; rivers and other water bodies flow across countries; and atmospheric conditions in one nation can be affected by pollution in another. Indeed, the contradictory relationship between ecosystems and state boundaries has produced myriad legal responses. Ensuring the sustainability of fisheries, for instance, forms a cardinal example of the collective action problem referred to as the tragedy of the commons (Ostrom 1990). The resulting

² For practical responses to these complexities, see Defries and Nagendra (2017).

patchwork of differential legal approaches to control over oceans has led to what Craig calls “regulatory chaos” (Craig 2012, 93). One marine ecosystem can range over state boundaries, yet those states may hold conflicting interests and modes of governance that produce divergent regulatory approaches (Soares de Oliveira 2023).

To address these situations, some environmental-legal actors have identified the capacity of international agreements to harmonize domestic arrangements (Falkner 2016). On this view, setting international standards regulating the protection of biodiversity can coordinate domestic laws to circumvent the structural limits of jurisdictional boundaries, ranging from the Ramsar Convention on Wetlands, to the Convention on Biological Diversity, to the International Convention for the Regulation of Whaling, and so on. International agreements strive to make the preservation of transnational ecosystems at least synergistic and harmonized if not identical. The use of international law as a solution to the incompatibility of ecosystems and jurisdictional boundaries, however, tends to yield an imperfect integration of law and ecology. The above view, analogous to the instrumental view of domestic legal systems, downplays the formal constraints on the substantive content of international legal agreements. Yet, international law is not immune to the ontological contradictions between ecology and property, which can be seen through China Miéville’s critical observations (Miéville 2006).

Miéville draws on Koskenniemi’s seminal analysis of a continual tension in international law between recognizing the nation-state’s sovereignty and the authority of norms established by the international community (Koskenniemi 2006). In the absence of a supranational entity producing and enforcing those norms, neither the nation-state nor the international community holds a position of formal primacy. Further, those norms are indeterminate given that there is no formal mechanism adjudicating which legal claims ought to be prioritized when those claims are equally “valid”; thus, “between equal rights, force decides” (Marx [1867] 1990, 344).

To explain this structure of international norms, Miéville observes that international law does not represent a body of rules that are extrinsic to the processes by which states relate to one another politically, but rather a body of rules that are constitutive of those processes (Miéville 2006, 23–24). Applying Pashukanis’s framework at the international level, Miéville contends that international law is not merely a collection of “ideas” that appeared *ex nihilo*. Rather, the norms of international law emerged historically through coevolution with the material conditions integral to capitalist society (ibid. at 214–24, 289–94). As such, international legal rules constitute the relations between states analogously to those between formally free and equal private subjects participating in property exchange. Thereby, the state in international law appears “as the bearer of subjective rights, that is to say with every attribute of substantiality and of egoistic self-interest” as the domestic legal subject (Pashukanis [1924] 2003, 163).

International agreements remain reliant on the exercise of national sovereignty and domestic implementation; fragmentation is not, then, a problem of political contingency, but of international legal form. As Knox explains, “in international law each state is conceptualized as ‘owning’ their territory, with the concomitant rights and duties attaching to this ownership” (Knox 2009, 416). Thus, the state operates as an individuated subject acting on behalf of legal actors whose interests are assumed to be primarily proprietary (Knox 2016, 306). Thereby, while international law can offer states pragmatic instruments to navigate jurisdictional boundaries ad hoc, its contingency on state sovereignty conditions those instruments to reproduce the fragmentation underpinning domestic juridical ontologies. As Bosselmann posits, “state sovereignty is about excluding ‘the other’ and cooperation between states is hampered by a counterproductive me-over-you attitude called national interest” (Bosselmann 2020, 51). For instance, the Convention on Biological Diversity 1992 restricts the scope of its provisions, in Article 4, to “areas within the limits of its

national jurisdiction,” while Article 5 imposes an obligation for nation-states to “co-operate” in matters with a transnational dimension—an obligation that remains dependent on domestic ratification and the autonomous expression of state sovereignty (Chandler 1993). Thus, the Convention’s regulations over biodiversity exploitation are framed, and materialized, explicitly in terms of the state’s self-ownership, recapitulating a fragmentary paradigm and embedding the individuated nation-state in its jurisprudence.

In this sense, international environmental agreements do not displace the concept of the nation-state; they entrench it. This brings us to an overview of a final proposal for overcoming environmental law’s structural limits insofar as they relate to jurisdictional fragmentation. Transnational environmental law encompasses myriad methodologies proposed as workarounds to the fragmentary nature of international environmental law (Webster and Mai 2020). It remains difficult to establish a single definition or taxonomy of the transnational legal form, which Jessup describes as including “all law which regulates actions or events that transcend national frontiers,” covering “both public and private international law,” though he nonetheless suggests that scholars “avoid further classification of transnational problems and further definitions of transnational law” (Jessup 1956, 2, 3, 7). Specifically, transnational *environmental* law draws on norms that “cut across jurisdictional boundaries” and often “are generated by non-state actors,” ultimately “held together by the fact that they address specific issue areas, such as environmental degradation” (Mai 2020, 119). Transnational environmental law contests boundaries between international and national norms, as well as the divide between public and private law, representing a “non-state-centric system of law that does not solely depend on sovereignty or the state and its authority for its legitimacy” (Kotzé and Kim 2019, 7).

These descriptions of transnational law are definitionally capacious. On the one hand, transnational environmental law could consist of supranational environmental regulations such as those passed and enforced by the EU (Webster 2022). Another form of transnational environmental law could involve cooperative networks constituted by state bodies and international organizations, such as the International Union for the Conservation of Nature, which was constituted by “both national governments and independent scientific and conservation organisations” (Hale 2020, 205). Another form of transnational environmental law consists of self-regulation by private actors across state boundaries, such as the development of the “Equator Principles,” a “set of statements of social and environmental principles that have been agreed and adopted by an increasingly large group of like-minded commercial banks . . . first adopted in 2003” (Ong 2010, 36). Such principles may develop legal force when private actors embed them as covenants, for example, in loan agreements and other forms of contract. They could manifest as, say, an obligation on a borrower to disclose the details of their investments, allowing environmentally unsound investments to be scrutinized by the lender, or requiring borrowers to perform “social and environmental assessments,” and so forth (ibid. at 62, 66).

An advantage of transnational environmental law is that, in principle, it offers a pluralistic workaround to the fragmentation of international law, enabling actors to help confront transnational environmental issues like the biodiversity crisis with expediency. The challenge transnational law presents to conventional legal forms thereby lies in the fact that “it is difficult to locate transnational actors in a particular jurisdiction; they do not have a ‘seat’ of authority in the way that state regulators do” (Heyvaert 2016). Transnational law ostensibly opens the path to acknowledging the “responsibilities” of nonstate actors for environmental protection, and provides a potential set of legal and quasi-legal mechanisms for coordinating cross-state protection of ecosystems beyond conventional international law parameters (Lin 2017).

However, problems emerge when we consider the various species of transnational environmental law and how they are materialized, especially in view of their legal enforceability. For instance, a problematic element of self-regulatory forms of transnational environmental “law” is that participation is predicated on the consent of private actors, and in some situations, the self-regulatory nature of many transnational agreements may lead those agreements to lack the formality required to give them legal force. As in the case of the Equator Principles, many transnational agreements between private actors have “uncertain legal status” given how they are characterized by voluntary participation, permitting participants to defect from those principles in the absence of legal mechanisms to incentivize cooperation (Ong 2010, 69).

That said, transnational agreements with clearer legal bases are not necessarily panaceas to ontological fragmentation either. Dilling and Markus note that “transnational rules and decisions often exert no direct effect, but do so mainly after they have been adopted by and integrated into national and international environmental law” (Dilling and Markus 2018, 180). While these rules are sometimes characterized as a “post-Westphalian constellation” that transcends jurisdictional boundaries, they remain contingent on conventional state recognition to take legal effect, and thus reproduce an ontology of international fragmentation (*ibid.* at 201). Likewise, transnational law that arises from private contracts depends on domestic or international private law enforcement. As such, whether transnational law can overcome the structural limitations associated with international jurisdictional fragmentation remains to be seen.

Rather than viewing transnational lawmaking as a replacement for conventional international legal institutions, the stronger corollary is perhaps to see transnational environmental law as a “complement” to traditionalist techniques, although “the complementarity of transnational environmental governance to state-based forms of authority ultimately depends on state preferences” (Hale 2020, 210). While a broader analysis of the complexities of transnational environmental law is beyond the scope of this article, the above discussion does point to one possible conclusion to be discussed in the final section with respect to a methodology of skepticism toward the limited parameters of the legal form.

IV. Conclusion

This article has contended that legal scholars and Western-descended legal systems often commit translation errors when seeking to integrate ecological concepts into legal reasoning. These distortions can occur because of a projection of normative or teleological thinking into ecological concepts, or due to structurally entrenched contradictions between the capitalistic legal form and the epistemology underpinning ecology: contradictions related to anthropocentricity, methodological individualism, and proprietary fragmentation. A paradox of legal experimentation therefore lies in the fact that even “ecocentric” legal scholars attempting to construct novel proposals for reform often rely on concepts and ontologies borne from a path-dependent history of proprietary ownership and exploitation. By neglecting the constraints embedded within, and imposed by, older legal concepts, legal actors risk subverting ecological science when attempting to theorize the root causes of the biodiversity crisis. Engaging in structural analysis empowers us to identify these ontological difficulties, and their historical basis within capitalist society, rather than overemphasizing the role of political failures in constituting our flawed responses to species loss.

That said, many scholars have canvassed the ontological limits of law in confronting mass extinction, proposing myriad means through which those limits might be breached. These means include granting rights to nonhumans, introducing a crime of ecocide, reforming property rights, and so on. Often, these reforms are underpinned by theoretical frameworks aiming to “green” or

“ecologize” law, as in the Wild Law and Posthumanist traditions. However, this article has called into question the possibility of “ecologizing” law through legal reforms, because to “ecologize” the juridical form would necessitate a structural transformation largely unachievable with the concepts available within the architecture of Western-descended legal systems, and would require jettisoning foundational concepts of private and public law. In this sense, the idea of “ecocentric law” may itself be a contradiction.

Scholars who acknowledge these structural issues often nonetheless envisage the possibility of transforming the content of currently existing norms, without engaging with how the legal form establishes the essential properties of those norms—properties that coconstitute the translation errors that this article has elaborated. The problem here is that proposals to “ecologize” law identify ontological limits while perhaps overstating their contingency. By including an analysis of the legal form, this article has suggested that law’s ecological translation errors run deeper than is often acknowledged. The remaining question is what can be done to correct these errors. Indeed, it is crucial for law to draw on ecological science to inform what evidence-based conservation policies are achievable within its limits. This article thereby advocates an alternate model that increases the institutional role of ecologists and conservation biologists, rather than one that seeks to imbue the “natural” world with metaphysical qualities—or, indeed, to imbue legal concepts with “natural” qualities.

The analysis in this article implies that the legal form is not the solution to the biodiversity crisis, but the foundation of the problem. Yet, outright reconfiguration or rejection of the legal form would be strategically unfeasible so long as its structural conditions of possibility—that is, capitalistic social relations—persist. If Western-descended law is the institutional basis of power within capitalism, then contesting the power relations that give rise to mass extinction requires us to engage with legal norms. But it is vital to ask how ecosystems can be protected not only from the motors of capitalist extraction, but also from the legal form that oils those motors. The question, therefore, is not only how do we protect ecosystems from anthropogenic destruction, but how do we protect them from *law*, if indeed “law cannot be avoided” (Adams 2022a, 458)?

One approach might be for environmental law to adopt a role explicitly aimed at managing law’s ontological limits, infused with a methodology of *legal skepticism*—meaning skepticism toward the legal form. This could operate on at least two dimensions, seeking to reconcile the urgency of using legal norms to address ecological collapse and the tendency of the legal form to cement and legitimize the practices driving the biodiversity crisis.

First, as a strategic measure, an “instrumental or political deployment” of liberal norms like rights could be used pragmatically to secure short-term conservation victories and combat particularly reprehensible ecological destruction (Burdon and Williams 2016). Nonhuman rights, ecocide, and so on could be harnessed as legal concepts where their utility is demonstrably nonconflictual with conservation work, assuming legal actors remain cognizant of the limitations of those concepts in reifying an ecological perspective and how they are unlikely to induce meaningful transformation of the legal form. Rights have powerful political influence and (some) material force, and may help hold to account governments pursuing environmentally destructive policies while engineering a foundation of protection that successive governments would struggle to undermine.

In this sense, skepticism toward the legal form should not be confused for legal *apathy*. But while making use of these norms, scholars and decision-makers must differentiate between contingent, or political, limits and legal limits that are more structurally entrenched. As a matter of reform strategy, contingent successes may be possible, but the risk here is that change remains, at best, superficial, and, at worst, directly obstructive to evidence-based conservation work. Indeed, while

rights do offer potent political force, the anthropocentric and individualistic structure of rights-based interventions renders them “extremely risky as part of a strategy for structural transformation” (Adams 2023, 56–57).

Thus, a second dimension of a legally skeptical approach might be to establish a juridical methodology in which legal institutions are used to carve out space for evidence-based conservation work before withdrawing. By exercising reflexive caution about law and its ontological limits, environmental lawyers might best serve ecosystems by knowing when law should and should not be deployed. This might involve inoculating evidence-based conservation efforts, and the ecosystems they concern, against the legal form insofar as possible, granting conservation organizations relative institutional autonomy from the legal order. Legal tools like establishing nature reserves, national parks, and so forth may be useful starting points in inculcating the basic conditions within which evidence-based conservation work may be effected without substantial juridical impediments. These interventions could not work in isolation; there would still be issues of proprietary fragmentation, not least because the cumulative effect of, say, carbon emissions beyond those nature reserves would remain problematic. To confront those issues, the pragmatic use of regulations on carbon emissions and more novel interventions like the crime of ecocide would be crucial, and an increased voice for ecologists and conservation biologists within legal and political institutions would be desirable.

Perhaps most importantly, this aspect of legal skepticism would be accompanied by a broader approach that positions environmental law against the deleterious effects of the legal form writ large, one that directly confronts fundamental legal norms like contract and private property insofar as they impact ecological stability. This could mean empowering conservation organizations to request state expropriation of private property where necessary to protect a given species or ecosystem, or to call for constraints on freedom of contract where a party is seeking to exchange a threatened organism or habitat, and so on. Confronting these legal abstractions, how they depoliticize ecological destruction, and how environmental law discourse may inadvertently help to entrench them by dehistoricizing rights-based approaches would also be crucial elements of legal skepticism.

Thus, legal skepticism could operate on two dimensions: first, a short-term, reflexive recognition of the tendency of juridical ontology to introduce a fragmentary, anthropocentric approach to lawmaking while making use of those norms to achieve whatever is possible in confronting the biodiversity crisis; and second, a long-term movement toward limiting the deployment of the legal form, confining that deployment to whatever is needed to empower and facilitate evidence-based conservation activities. Such skepticism would involve law being used no more and no less than is necessary to resist species loss. That said, the suggestions canvassed in this concluding section are starting points meant to underscore the observation that the legal form itself does not only facilitate the practices driving the biodiversity crisis, but also distorts ecological concepts and risks obstructing conservation efforts aimed at confronting it.

Legal skepticism alone would be insufficient to protect threatened ecosystems. Nevertheless, embracing such an analysis can empower scholars to adopt a self-examining, critical approach when conceptualizing what law can and cannot achieve, especially when deploying concepts premised on conventional juridical ontology for novel ends. In turn, this could enable scholars and legal actors to confront the structural constraints implicit across a plethora of juridical fields. This confrontation is crucial if we wish to appraise the capacity of legal institutions to safeguard the crumbling systems on which life depends, particularly by illustrating the (limited) possibility of aligning legal thought with ecological scientific principles. To do otherwise risks perpetuating a

legal form that facilitates the destructive practices driving the biodiversity crisis that law is now charged with helping to solve.

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