Nature and the international: towards a materialist understanding of societal multiplicity

Olaf Corry

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Olaf Corry

Department of Political Science, University of Copenhagen, Copenhagen, Denmark

ABSTRACT

The global environmental crisis requires a grasp of how human society interacts with nature, but also, simultaneously, how the world is divided into multiple societies. International Relations has a weak grasp of nature treating it as external to the international – an 'environment' to be managed – while environmentalism has a planetary epistemology that occludes the significance of the international. How to break this impasse? While neither Geopolitics nor 'new materialism' capture the complex conjuncture of socio-natural and inter-societal dynamics, I argue that Justin Rosenberg's theorization of the international as 'the consequences of societal multiplicity' provides a theoretical opening. If a materialist notion of societal is adopted, 'societal multiplicity' allows human-natural *and* international dynamics to be grasped together. Thus, climate change is not a problem arising exogenously to the international, but something emerging through international dynamics, reciprocally affecting the units, structure and processes of the international system itself.

1. Introduction

Features and properties of the natural world have always played a role in world politics. The arrival in Europe in the fourteenth century of a new microorganism – the Black Death – shrank the rural labour supply sowing the seeds of social transformations that contributed to the end of feudalism in Europe (Anievas & Nisancioglu, 2015). The eruption of the *Tambora* volcano in Indonesia in 1815 resulted in a 'year without summer' causing famine, and, it has been said, a global wave of protectionism and authoritarian government (Wood, 2015). Endemic pollution under Eastern Block regimes helped undermine their legitimacy and played a role in precipitating the end the Cold War (Corry, 2014). Today, disappearing Arctic sea-ice due to global warming is opening up new sea routes creating a whole new strategic arena for Arctic states and great powers.

Despite this, virtually all currently leading theories and approaches in International Relations (IR) are reticent on the role of 'the natural' (variously conceived) in the international itself. For most of the life of the modern discipline of IR, 'the environment' has been ignored or treated as just another 'issue' (Smith, 1993, p. 32). Realists may refer to the 'stopping power of water' (Mearsheimer, 2001, p. 84) but when IR theories point out the basic elements and mechanisms of the international system

itself, in most versions the natural world barely exists. This goes for much existing rationalist as well as critical IR, between them preoccupied instead with interests, strategies, institutions, win-sets, discourses, identities or – most recently – social practices (Corry, 2017a).

It was not ever so. International Relations as a discipline has some of its strongest roots in the tradition of *Geopolitik* that developed in nineteenth century in Europe. This focused on the importance of geography, drawing also on demography, agricultural economics, technology, and at times race, and blended these with the European *Machtpolitik* tradition. Yet after the Second World War as IR was shaped as a distinct social science, natural factors were very deliberately excluded. Hans Morgenthau rejected geopolitics as 'a pseudoscience erecting the factor of geography into an absolute that is supposed to determine the power, and hence the fate, of nations' (1948/1985, p. 174). The part of nature the realists initially kept as endogenous to IR theory was *human* nature ('politics is governed by objective laws that have their roots in human nature' (Morgenthau 1948/1985, p. 4)), although structural realism later excluded this element too leaving international politics defined by a social structure of competing and functionally like units (Waltz, 1979).

Meanwhile precursors to neorealism's rival, neoliberal institutionalism, e.g. the likes of Karl Deutsch, emphasized communication and cybernetic interaction as the driver of modern hyperconnected world politics. 'Pluralists' saw IR firmly within a social science framework, where incentives, rules, conventions and norms induced disembodied 'actors' (state or non-state) to strategize and/or cooperate. This was a world even further removed from things such as soil, populations, races, mountain ranges, climates or even economic accumulation and military hardware. As Marxism weakened from an already marginal position, constructivism became the new challenger, but this hardly helped to reintroduce materiality, let alone nature.

However, excluded from theorizations of the international itself, nature then reappeared in the 1980s in the form of the 'the environment' – a category of political challenges linked to human-centric notions of pollution or resource depletion. Most recently the Earth Systems Governance literature (e.g. Biermann, 2014) explores the urgent question of how multiple interlinking planetary systems might be governed by a global architecture of institutions and actors. But as before, nature remains exogenous to the social processes and institutions that would govern it. In IR, social outcomes are deemed to have only social causes (Deudney, 1999).

From the other side, popular and scientific framings of nature and climate tend to display a feeble grasp of the international. They offer instead a globalist focus on Earth Systems, 'planetary boundaries' (Wijkman & Rockström, 2013), the species as a singular agent/collective victim of existential risks (Malm & Hornborg, 2014) in the age of the 'Anthropocene' – the geological epoch in which human activity is said to have pushed the planet into a new and perilous state of Earth systems instability (Steffen, Grinevald, Crutzen, & McNeill, 2011). By invoking homogenizing 'global objects' (Hamilton, 2016) these tend to obscure the obvious 'but surprisingly consequential' (Rosenberg, 2006, p. 316) fact that the world is divided into multiple polities. Calls have even been heard to deliberately dispense with IR and the international: 'traditional geopolitical thinking is now outdated, and working within its premises perpetuates habits of mind and modes of policy making that simply don't fit' the 'new artificial circumstances of the Anthropocene' (Dalby, 2014, p. 2). The latter are said to undermine the basic tenets of Westphalian politics (Cudworth & Hobden, 2017; Young, 2016) requiring us to effectively ditch IR, perhaps in favour of 'Planet Politics' (Burke, Fishel, Mitchell, Dalby, & Levine, 2016). Outside some World Ecology literatures (e.g. Hornborg & Crumley, 2016), this mutual set of blinkers leaves popular approaches to global ecological issues and international politics limited effectively to inter-state negotiations about governing environmental issues as a collective action problem.

In this article I attempt to 'bring nature back in', not because it was ever absent from the international itself, but because IR as a field, like other social sciences, has abstracted too much from it. I argue that various forms of new materialism have recently been engaged to rethink the supposedly sharp boundaries between human and non-human worlds. But collapsing the distinction through notions of hybridity does not always facilitate understanding the relation between them. Nor does it help tackle the problem of the international. Justin Rosenberg's project to define 'the international' in positive terms as the set of consequences that arise from the coexistence of multiple societies (2006, 2016, 2017) provides a way forward, but stops short of thinking through the role of nature in the international. I first draw on recent reinterpretations of historical materialism arguing that human societies are necessarily and always in a 'metabolism' with the natural world. Nature is understood neither as something pristine or in a Cartesian distinction from society (Nature), nor as wholly constructed, humanized or hybrid (nature). Rather societies exist in a dialectic with material processes that condition, but remain relatively autonomous from, human society; nature is able to propel itself and makes a difference – but can be disrupted and does not 'act' (Malm, 2018, p. 199). At the same time – crucially – this dialectic is simultaneously intertwined with international dynamics arising from the coexistence of multiple societies.

The first section assesses existing attempts to re-think nature and IR arguing that new materialist and post-human approaches, unlike traditional geopolitics, engage with human-nature enmeshment and legitimately aim to counter humanist exceptionalism. Ultimately, however, they lack tools for grasping the importance of the international for the politics of nature (and *vice versa*). Secondly, I argue Rosenberg's re-theorization of the international as societal multiplicity fails to acknowledge the inherent metabolism between societies and nature that inflect such inter-societal interaction. Third, the implications for IR of a socio-ecological international theory are probed first by reconsidering the five 'consequences of societal multiplicity' that Rosenberg sets forward (2016) and then via observations on how climate change is more than a collective action issue requiring international regimes and global governance. Rather, it originates from – and deeply affects – the agents, structure and strategies of the international system itself.

2. The matter of the international

In IR, as in other social sciences, the dramatic human imprint on natural systems has unavoidably highlighted links between nature and society. Such links are obscured by a Cartesian dualism that supposes the two are ontologically and functionally separate. Those reviving the Geopolitics tradition emphasize that physical distance, for example, still matters (Porter, 2015) or more broadly posit that 'geography is the backdrop to human history itself' (Kaplan, 2013, p. 28) – but remain largely silent on the converse importance of human history for geography. Their 'nature' is a 'relatively stable foundation' on which 'the pyramid of national power arises' as Morgenthau had it (1948/1985, p. 165). Famously, for Spykman, 'Ministers come and go, even dictators die, but mountain ranges stand unperturbed' (1938, p. 29). The 'human' of Geopolitics is similarly ahistorical. Human nature harbours desires and instincts (Solomon, 2012) seemingly untouched by different historical social formations. Technology such as ships, bridges or airplanes modify geographical constraints, but there is no attempt in the new Geopolitics to grasp how human groups and natures are *mutually* entangled.

In contrast, diverse ideas subsumed under the label 'new materialism' (Connolly, 2013) have been taken up by IR scholars with the purpose of recognizing precisely the interconnections of human and non-human elements and the fungibility of 'nature'. Giant infrastructures and other assembled or

hybrid human/non-human entities are recognized as significant or even as 'agents' in international affairs (Acuto & Curtis, 2013; Mayer & Acuto, 2015; Voelkner, 2011). Other efforts to avoid humanist exceptionalism and anthropocentrism adopt a 'posthuman' stance, exploring how non-human life and non-life have real impacts and/or moral value (Cudworth & Hobden, 2017; Walters, 2014). Some extend rights and properties normally considered only to apply to humans to animals (e.g. wolves) and other organisms (microbes) on the basis of either their similarity to humans in terms of creating borders or territories (Du Plessis, 2018; Youatt, 2014) or mutual vulnerability between humans and those life-forms (Kavalski & Zolkos, 2016). Audra Mitchell advances the idea of 'worlds' as the objects of struggles over security, encompassing animal, geographical, technical, cultural as well as human elements (2014).

To transcend the human/non-human divide, notions such as 'hybridity' and 'assemblage' cast nature and society as functionally merged and/or as indistinguishable in terms of both ontology and properties. A key thinker such as Jane Bennett (2010) aims to 'minimise' the differences between subjects and objects (Cudworth & Hobden, 2017, p. 66) while another inspiration, Bruno Latour, draws on the Deleuzian term 'assemblage' to capture how technological, human and non-human elements are contingently formed and reformed into objects. These can even become 'actants': '(u)nder the principle of "generalised ontological symmetry" different kinds of entities (humans and nonhumans) are involved in relational productive activities' (Balzacq & Cavelty, 2016, p. 183).

Such approaches recognize in ethically appealing ways that humans are immersed in wider networks of life and non-life. However, if in the Anthropocene human-nonhuman hybrids are all there is, and assemblages of diverse types of ontology combine to 'act', this distributes power and responsibility correspondingly widely. At times agency is seemingly *equated* with causal effect (making a difference): 'any thing that modifies a state of affairs by making a difference is an actor' (Latour, 2005, p. 71). Latour speaks of kettles as 'actants', because they can cause water to be boiled, for example (leading Andreas Malm to ask whether fossil fuels are to blame for burning (see Malm, 2018, p. 81)). If assemblages of human and non-human matter are the agents of history, how do notions such as 'anthropogenic climate change', and 'environmental destruction' remain meaningful? If there is no (longer) a distinction between human and natural, can one be said to encroach upon the other? The overwhelming power (and responsibility) held by 'humans', at the very moment when their impact is greatest, becomes harder to identify, as does the unleashed power of natural systems with their own dynamics. Hybridism leaves scholars 'pursuing an ontological flatland of entanglements' (Hamilton, 2017, p. 96).

An alternative is to maintain a distinction, albeit a dialectical rather than a Cartesian one (Saito, 2017). This zooms in on their interaction while not collapsing society and nature into one notion such as '*Oikos*' (Moore, 2015). A Cartesian division supposed that nature and society were made of wholly different stuff: 'substance dualism'. Materialists of all stripes subscribe to 'substance monism' (the belief that the social world also rests on the physical world), but dialectical materialists deny that this necessarily implies 'property monism': that the social and physical world are cut from 'one cloth' as hybridism supposes (see Malm, 2018, pp. 53–57). Social phenomena are ultimately based on the same matter *but* have emergent properties that make them operate according to different logics and processes. This in turn requires different types of disciplinary knowledge. Psychology may emerge from chemical interactions but cannot be reduced to chemistry. Malm argues that historical materialism has always insisted that human social relations are 'unthinkable outside of nature [substance monism], but they also evince *emergent properties different from that nature* […] absolute monism [of the new materialist type] rules out dialectics. Only property dualism can capture a dialectics of society and nature' (Malm, 2018, pp. 58–59). 'Property monism' would make figuring out

the *relation* between them harder, not easier. All that can then be done is to identify contingent hybrid assemblages.

In addition, the hybridism of new materialists works against recognizing the significance of the international. Privileging connections, linkages and entanglements between systems and across borders and substances sits awkwardly with identifying inter-societal relations; that requires distinctions between societies to be recognized and foregrounded. New materialists can countenance the assembling of political spaces ('territorialisation') but these are by definition ephemeral: 'assemblages establish territories as they emerge and hold together but also constantly mutate, transform and break up' (Müller, 2015, p. 29). Gilles Deleuze theorized assemblages as multiplicities themselves – ones that 'close themselves off from others, but this is never an absolute cut' thanks to the 'energies and flows that ultimately show them to be an uninterrupted cloth' (Harman, 2014, p. 124). Latour's 'assemblages last for only an instant, perishing in favour of a closer successor that is not, strictly speaking, the *same assemblage*' (Harman, 2014, p. 125). With Latour's approach 'all the well-known structures of society are suddenly nowhere to be found; instead, we now find concrete relations of humans and non-humans acting together' (Krarup & Blok, 2011, p. 43) in laboratories, offices, hospitals, etc. If they 'act together', always locally, how can consequences of different societies being apart be spotted? Latour appears stumped and disinterested in the international ('I don't know what a "nation" is, or "international". I'm not sure what they mean' (quoted in Salter & Walters, 2016, pp. 252–253)) preferring other units of analysis such as critical zones – 'sort of water catchments, basically' (quoted in Salter & Walters, 2016, pp. 252–253). Latour also rejects the notion of sovereignty, something he understands to mean 'impenetrability' (2016, p. 311), which would make the idea of interaction between units nigh impossible.

Others recognize some of these problems and deploy complexity theory instead, arguing that the international system and natural systems comprise a 'panarchy' of co-evolving systems and sub-systems (Hobden, 2015, p. 178). Erika Cudworth and Steve Hobden stress 'the bodied nature of the human and our bedding in vital networks with other beings and things' (2017, p. 137) and have suggested a 'complex ecologism' as a remedy. Unlike the hybridists, they maintain 'analytical separation between social and natural systems' (2013, p. 7) but advance a complexity-based critique of anthropocentrism and linear models of change in existing IR theorists such as Waltz, Wendt and Wallerstein. What remains less clear is what the international specifically contributes to analysis of such complex human-nonhuman relations. At times, 'the international' is scarcely considered a system in its own right: 'What we call the international is a complex interweave of numerous systems nested, intersected and embedded in each other' (Cudworth & Hobden, 2013, p. 75). The aim is to understand this 'complex interweave' by 'developing an understanding of social, political economic relations as impacting beyond the human' (Cudworth & Hobden, 2013, p. 68) – but seemingly without specifying how the international affects that complexity. Complexity theory challenges the 'traditional IR' assumption of there being one single reality, we are told, suggesting instead 'multiple realities' (Kavalski, 2007, p. 446), but then the existence of a multiplicity of societal entities becomes a difficult notion to sustain. Other post-humanist efforts to alert International Relations to dynamics beyond human entities, to microbes or packs of wolves for example, highlight usefully that borders and territories, and interaction between groups, are not processes unique to humans (Du Plessis, 2018; Youatt, 2014). Some similar dynamics may even play out between distinct groups of non-humans (and between them and human groups), but this surely presupposes a theory of the consequences of multiplicity. If IR is jettisoned, where will such theories come from?

To illustrate this critique, it may be instructive to briefly examine *The Planet Politics Manifesto* (Burke et al., 2016; see also Harrington & Shearing, 2017) which appeals to posthuman and new

materialist ideas, attempting to replace 'the international' with 'the planet' as the primary ontology of the discipline of IR. Placing the 'collective human interaction with the biosphere' front and centre, Planet Politics authors lampoon IR's state-based and 'anthropocentric ontology' (Burke et al., 2016, p. 513). For them, hybrid 'social-nature' in the Anthropocene has acquired quasi-agency: the planet is 'a power' forcing 'us' to think again and take action (Burke et al., 2016, p. 513). A planetary ontology is advanced that does not seek to set IR on a new footing but, in their own words, *undoes* 'International Relations, as both a system of knowledge and institutional practice' (Burke et al., 2016, p. 501). Their aim is to *dissolve* the paradigm of the international, replacing it with the Anthropocene worldview of planetary crisis. In the Manifesto, the planet is the 'real' that presses itself upon us, while the international is an outdated and dangerously illusory paradigm:

> the global ecological crisis 'has torn a giant hole in the fabric of our understanding'; […] it is a vast 'tear in the real'. Now our paradigms fail the real. International Relations, as both a system of knowledge and institutional practice, is undone by the reality of the planet […] International Relations has failed because the planet does not match and cannot be clearly seen by its institutional and disciplinary frameworks. Institutionally and legally, it is organised around a managed anarchy of nation-states, not the collective human interaction with the biosphere. (Burke et al., 2016, p. 501)

Critics of the *Manifesto* have been quick to point out that, despite the anti-IR proclamations it inadvertently resurrects global liberal IR, falling back on solutions in which states, experts, institutions and international law enact a global governance regime (Chandler, Cudworth, & Hobden, 2018, p. 195). However, the *Manifesto* is nonetheless typical of planetary governance approaches in that it inserts a singular 'we' into the context of the largest biophysical system ('the planet') (Burke et al., 2016, p. 507) and replaces IR's paradigm with Earth Systems Science's physical and globalist concepts, e.g. 'the atmosphere', 'global greenhouse emissions' or 'a world of melted ice caps' (Burke et al., 2016, p. 500). This planetary and post-human framing allows the *Manifesto* to dismiss the international as 'unreal', clearing the way for imagined globalist governance. It is also telling that critics of the Manifesto do not generally challenge the hybridist idea that the human and non-human are indistinct (Chandler et al., 2018, p. 205). Also citing Latour, they concur that IR as a discipline will 'have little if anything to do with [saving the planet]' (Chandler et al., 2018, p. 207). Chandler et al. point to the 'need to re-enact the relationship between economy and ecology' and to construct 'posthuman communities' (2018, p. 206), but, again, do not address how the international might inflect that relationship nor such communities. IR is abandoned in favour of the planetary.

The unhappy outcome of all this is that while IR remains essentially limited to the reductive Geopolitics view concerning the role of the non-human world as a stage for human group conflict, the new materialists, drawing *ad hoc* from Earth Systems Science, embrace hybridism and process monism, occluding the importance of the international.

3. Re-grounding IR for the Anthropocene

Rather than looking to natural sciences or Science and Technology Studies (STS) to find a new 'real' outside itself, IR requires a theory of the international that includes non-human nature without collapsing the societal into it. Justin Rosenberg argues that IR has been hobbled as a discipline by never positively articulating what its unique subject matter is, effectively becoming a sub-discipline of Political Science focused on the residual category of 'political power (operating in the absence of central authority) rather than an ontology of the international per se' (Rosenberg, 2016, p. 131). IR

theorists 'have asked "what is international politics as a subset of politics in general?" rather than "what is the international as a dimension of the social world?"' (Rosenberg, 2017, p. 92). This has led to widespread 'internalism' in social analysis (the assumption that development in a society can be explained by factors internal to that society), confusion as to whether IR covers more than international politics, and the bizarre idea that domestic and international should be treated as distinct and separate spheres. The latter became almost discipline-defining despite being obviously empirically false (Waltz, 1979). Ambitiously, Rosenberg takes up Kenneth Waltz' challenge to devise a unified theory of international and domestic politics – a 'social theory of the international' (2006) – bringing all the implications of the international to light, including those that play out and originate inside societies and beyond.

The key concept charged with doing all this is, as mentioned, *societal multiplicity*. Just as all social life has a temporal aspect (the subject-matter of History) and a spatial aspect (studied by Geography), the social has always had an international dimension since the arrival of co-existing multiple societies (and this should be the subject matter of IR):

> multiplicity entails the existence of a many-sided inter-societal domain which cannot be fully comprehended by theories drawn from the analysis of 'society' in the singular; and, on the other hand, this same universal fact plays a deep and continuous role in the *internal* constitution of domestic societies themselves, extending the significance of the international into the subject matter of the other social sciences and humanities. (Rosenberg, 2017, pp. 90–91)

This theorization of the international has been met with a host of probing questions concerning grand theory, coloniality, disciplinarity and the political (Blaney & Tickner, 2017; Brooks, 2017; Davenport, 2013; Jackson, 2017). But what, if anything, is expressed or implied concerning the natural world (Corry, 2018)? Rosenberg is explicit that it is about the organization of *humans* in distinct groups and its many consequences: 'we know from history that <u>human</u> societies have always been multiple' (2016, p. 137, emphasis added).

This is perfectly in line with most IR and social science in general in which a Cartesian division renders the relations between human and non-human both invisible and unproblematic. Despite notable exceptions (Deudney, 1999, 2000), Stephen Hobden is right to argue that IR has been 'a deeply anthropocentric discipline' and has, at best, 'viewed environmental questions through a pre-existing framework' (2015, p. 169). Rosenberg's 'societal multiplicity' understood as multiple human groups does little to disturb such anthropocentric slumbers. However, it could yet facilitate a way forward.

While not concerned with anthropocentrism, Rosenberg's theory of multiplicity is not devoid of reference to the natural world. As a historical materialist, Rosenberg has explained the emergence of unevenness and multiplicity in the world in terms of geographical variation that provided different ecological niches. When early humans left Africa and spread out across the continents in the Pleistocene, they inhabited radically different climates and had to adapt differently, creating basic conditions for different rates and directions of development (Rosenberg, 2010, p. 180): 'multiple societies must vary in their geographical location. And they are therefore differently influenced both by the physical variation of the earth itself, and by the unique relational position that each occupies with respect to all the others' (Rosenberg, 2016, p. 137). Unevenness not only descriptively characterizes

> the overall process of human social development at every point in historical time; but also the *socio-ecological* bases of human subsistence are such (grounded as they are in creative adaptation to a varied natural world) that it necessarily does so. (Rosenberg, 2006, p. 318, emphasis added)

But Rosenberg's ecological niche-argument (like classical Geopolitics) stops short. His arrow of causality goes only from geography to societies. In addition, only the local ecology immediately surrounding each society is deemed to matter. Today societies not only react to and mold their local geographies but draw on, react to and transform nature in far-flung corners of the world, e.g. via conquest, trade and effluents carried in global Earth systems. This is not captured by an adaptation-to-ecological-niches argument.

However, Rosenberg's own roots in historical materialism open up a more sophisticated take that is available neither to rationalist IR nor most reflectivist IR. In a historical materialist vein 'societal' is not something separate from nature that requires materiality to be added to it. Rather, society is *inherently* bound up with nature, since human and non-human nature are envisaged to be necessarily in a dialectical relation. Long regarded as deeply anthropocentric, canonical works of the historical materialist tradition have recently been re-examined, uncovering in some cases a surprisingly deep concern with ecology and human dependence on it (Foster, 2000; Saito, 2017; Schmidt, 1971). As with new materialism, for older materialism (as set out by Marx and others) humans were sensing, living beings, who are necessarily and originally part of nature ('That man's (sic) physical and spiritual life is linked to nature means simply that nature is linked with itself, for man is part of nature' (Marx, 1958, p. 31)). Similarly to those now advocating ecological limits or planetary boundaries, Marx was concerned with soil depletion and, more generally, emphasized that, faced with the necessity to produce the means to survive by engaging practically with and modifying non-human nature, humans are forced to take the independent properties (and limitations) of nature into account. Human aims are for Marx 'not just limited by history and society but equally by the structure of matter itself' (Schmidt, 1971, p. 63). A 'metabolism' (*Stoffwechsel*) between humans and non-human nature was for Marx at the heart of the origins and shapes of different historical societal processes. Labour and the exploitation of it was, of course, central to his famous critique of political economy. But '[l]abor is […] a process between man and nature, a process by which man […] mediates, regulates and controls the metabolism between himself and nature' (Foster, Clark, & York, 2011, p. 400). Nature as well as society are in this conception *historical* and dialectically related: 'the production of life […] appears as a two-fold relation. On the one hand as a natural, and the other as a social relation' (Marx, 1949, p. 38). For Foster et al., in dialectical materialism 'Labor and production constituted the active human transformation of nature, but also of human nature, the human relation to nature and of human beings themselves' (2011, p. 228).

Although interaction between human and non-human elements is the base of historical materialist ideas about 'society', it does not collapse the two sides into each other. This allows us to see how different societal formations involve very different metabolisms, i.e. 'regulatory processes that govern the interchange of materials' (Clark & Foster, 2009, p. 313) and different constellations of technology (humanized nature). 'Metabolism' can be traced back to German physiologists' studies of respiration in the 1830s, but for Marx it captured usefully 'the complex, interdependent process linking human beings to nature through labour' (Foster, 2000, p. 158) and allowed his ecological critique of capitalism as a social order that created a 'rift' or unsustainable imbalance with non-human nature. Thus, in a vein that would not seem out of place in post-humanist discourse Marx noted that the social and natural were necessarily intertwined. Yet for him they were becoming progressively more *distinct* with the emerging rift in the metabolism: '(i)t is not the *unity* of living and active humanity with the natural, inorganic conditions of their metabolic exchange with nature […] which requires explanation […] but rather the *separation* between these inorganic conditions of human existence' (Marx, 1857/1973, p. 489).

The argument that labour provides the original intersection between nature and humans has an economistic twang to it, since human existence requires more than economic *production* for survival. But 'labour' should be understood expansively to include more than production of consumer goods. Labour as production can also be supplemented by the argument that other social modes such as that of *protection* are equally fundamental to human group existence and similarly conditioned by material factors (Deudney, 2000). Daniel Deudney suggests 'historical security materialism', asking how 'changing forces of destruction (constituted by geography and technology) condition the viability of different modes of protection (understood as clusters of security practices)' (2000, p. 80).

Thus, in a materialist tradition, societies at their very root emerge in a metabolic exchange with nature in the collective pursuit of needs including food, shelter and security. 'Metabolism' maintains a relative autonomy of both parts while emphasizing an ongoing exchange in which both are potentially maintained and changed. Saito calls this 'non-Cartesian dualism' (2017). Unlike hybrids and 'intermingling' metaphors, a metabolism occurs between distinct spheres and can break down, an example of which Marx describes in terms of the agricultural nutrient cycle in the nineteenth century. Marx followed with concern how yields fell as industrial practices meant that organic matter was not being returned to the land and instead was transported to distant cities where it amassed as waste and pollution. The 'metabolic rift' was produced. Brett Clack and Richard York likewise describe a rift in the global carbon cycle in the twentieth century (2005) the logics of economic expansion and ecological reproduction collide to produce excess carbon dioxide in the atmosphere.

Tellingly, however, this discussion is falling into the internalist traps of considering 'society' and 'nature' in the singular, 'humans' as one species agent, etc.

4. Society, nature and multiplicity

The materialist notion of a human-nature metabolism has proved useful for re-materializing the idea of 'society'. But Rosenberg points out that the classical social theorists, Marx among them, were internalists, tending 'at a deep theoretical level, to conceptualize society in the singular', and failed to systematically 'theorize the consequences of multiplicity for social reality' (2016, p. 140). Simply rematerializing a notion of society does not deal with internalism, just as restating the importance of societal multiplicity does not tackle human-nature Cartesianism. Kamran Matin notes that Marx's double relationship between nature and society becomes a *triple* relationship if the international is added, but that this requires a 'radical revision of historical materialism that Marx did not carry out but which is surely long overdue' (Matin 2013, p. 154).

I expand upon facets of a societal-natural notion of multiplicity in the following by considering Rosenberg's five consequences of societal multiplicity – coexistence, difference, interaction, combination and dialectical change (2017, pp. 135–141) – in the light of the above.

Firstly, for Rosenberg *coexistence* of multiple societies is what 'generates the international itself as a dimension of the social world' (2016, p. 136) and it is the political that generates societal multiplicity by dividing the world into multiple units. This grants 'central importance to political multiplicity' (2016, p. 135) but without limiting the *effects* of multiplicity to just politics, as every sphere of the social – from cooking to crime – is affected by it. But with an ecological-materialist theory the formation of seperate societies can be linked not just to a non-material 'political' dimension but also to certain natural factors and how groups interact with them. A classical paper argued that war, usually involved in (proto-)state formation to protect surpluses and elites' privileges, generated state-formation only under quite specific ecological conditions – ones where losing tribes could not escape and relocate (Carneiro, 1970). Where natural barriers or concentration of abundant

sources of food existed, e.g. in a valley or along a river, vanquished groups were forced or induced to stay and be subjugated by victors. Under such conditions, state-like structures arose as victors policed and controlled others in stratified social arrangements and gradually over greater areas that then had to be defended. Michael Mann (1986) and others[1] have more complex accounts of the rise of modern states, but here too a multiplicity (of states) emerges out of political processes involving also material conditions and the political economy of financing and maintaining them (Earle, 1997, p. 70). Multiplicity has, at base, a material component.

Related to this, the second consequence of societal multiplicity is that societies are not just multiple but necessarily different. Here the ecological niche argument reappears: societies are 'differently influenced both by the physical variation of the earth itself, and by the unique relational position that each occupies with respect to all the others' (Rosenberg, 2016, p. 137). With a materialist approach to multiplicity, however, domestic natures (those contained within societal boundaries) are also changed via the metabolism with those different societies. A European feudal society in the 1500s affected nature differently from how a Singaporean one does in the twenty-first century. Transformations in domestic natures may result inadvertently but also deliberately via grand infrastructure projects, landscaping and deliberate re-engineering of nature, e.g. Soviet irrigation of farmlands resulted in the disappearance of the Aral Sea. Settler colonial projects purposefully transform landscapes, flora and fauna (Crosby, 2004), and even engineer and divert underground water resources (Weizman, 2007). Coexistence of multiple such different socio-natures then affects how each develops internally. Nature is multiple and different in each society, therefore, not simply because of the original unevenness of the Earth, but because of the multiplicity of modes of production and protection. In some cases, ecological boundaries are so stark as to be visible from space; studies have shown that the 'greenness' of a territory follows country boundaries (Chen et al., 2019) (although societies are not always coterminous with territories).

A third consequence of multiplicity for Rosenberg is *interaction* because all societies 'confront the fact that the human world extends – both quantitatively and qualitatively – beyond themselves' with all the dangers and opportunities that that entails (Rosenberg, 2016, p. 137). Interaction is the staple content of IR: 'inter-societal conflict, diplomacy, organization, law and exchanges of all kinds' (Rosenberg, 2016, p. 137); but it is only 'half-known' to us under the 'negative sign' of the absence of global authority rather than the 'positive sign' of the co-presence of multiple societies (Rosenberg, 2016, p. 136). Through a materialist lens, each society emerges from and is sustained by its own particular ecological niche, but *also*, due to the international, interacts with multiple other socio-natural entities (including their natures). International trade in finished goods is at staggering levels, but trade in raw materials hides the fact that use of 'nondomestic resources is, on average, about three-fold larger than the physical quantity of traded goods' (Wiedmann et al. 2015, p. 6271). In studies of world politics, ecological imperialism (defined as 'the growth of the center of the system at unsustainable rates, through the more thoroughgoing ecological degradation of the periphery' (Foster et al., 2011, p. 371)) has 'scarcely been visible' (Clark & Foster, 2009, p. 312) compared to military, economic and cultural imperialism. A growing literature exists on unequal exchange (e.g. Hornborg, 2012) albeit often in terms of a 'world system' and an 'Earth system' (Hornborg & Crumley, 2016) rather than an international system.

The fourth effect of multiplicity is *combination* (Rosenberg, 2016, pp. 138–139). Influences and impulses from coexistence with other societies necessarily combine with existing domestic structures and '(a)ll societies must therefore be ongoing combinations of local patterns of development with external influences and pressures of all kinds' (Rosenberg, 2016, p. 138). Rosenberg points to the English spoken in Britain as a combination of Roman, Saxon, Viking and Norman languages as

an example. But also the ecological niches that societies occupy must be combinations. Domestic natures are not unchangingly pristine. They are themselves a result of a local metabolic exchange *combined* with what the international has wrought, e.g. importing of new modes of production or protection, but also natural resources and flora and fauna imported/exported directly leading to natural accumulation/depletion.

The final, fifth effect of societal multiplicity is summed up by Rosenberg as *dialectical change*: 'exchanges among social formations unlock new possibilities and departures through mechanisms that are intrinsic to the phenomenon of interaction itself' (2016, p. 139). The international imparts 'its own dialectical mechanisms and dynamics to the *structure* of world history' (2016, p. 139, emphasis added). Anarchy as a structure is claimed by realists to compel all states to be functionally alike (Waltz, 1979) but Rosenberg argues multiplicity ensures perpetually *unique* societal formations via interaction and combination that in turn generate shifting structures in the system, such as the creation and spread of regional city-states systems, European empires, the modern system of nation-states, bi-polarity, world empire, etc. In a plundered international reading of 'dialectical exchanges' humans and nature are in one metabolism, but each socio-natural entity is also in a metabolic exchange with other entities through the international. This double dialectic produces social structures in the international which have a structuring effect on natural systems – that impinge back on individual societies and their structural arrangements. Empire is heavily bound up with uneven ecological exchange and 'development' is a function of domestic politics, international pressures and a 'rift' in the metabolism with regional ecologies and, now, entire Earth systems.

A classic example of socio-ecological international dialectical change is the story of the international guano trade (Foster et al., 2011, pp. 354–359). The industrial agricultural practices deprived soils of nutrients previously routinely returned to the land, prized people from the countryside and left urban centres polluted and overcrowded. Low yields then squeezed profits incentivizing chemists to discover that guano could act as a fast-working fertilizer, instantly boosting production and profits. An international 'guano rush' ensued where European merchants (backed by states) plundered deposits that had taken thousands of years to accumulate, notably on particular Peruvian islands. These were rapidly depleted, mined by Chinese labourers working in slave-like conditions. This left local societies transformed, traders and elites enriched, migrant workers exploited (or dead) and the ecology of the rocks unrecognizable and stripped. Bird and fish populations were decimated and Spain and four South American countries went to war over control of the fertilizer trade (Foster et al., 2011, pp. 364–365). A local metabolic rift in European societies had led to metabolic rifts in distant socio-natural entities, and an international 'rift' between European and South American societies. Today's trade in artificial fertilizers, effectively converting oil sourced in the Middle East and Venezuela into agricultural production (food) for the West, is part of the global metabolic rift in the carbon cycle causing climate change.

5. Climate of the international

Climate change may be the iconic issue of the 'Anthropocene', but the social structures implicated in generating it are often glossed over, and scholarship and commentary have surprisingly rarely 'grappled with how global climate change relates to the historical era of capitalism' (Clark & York, 2005, p. 395). IR with its abstraction from material processes within and between societies has contributed to this, failing to deliver much beyond institutional perspectives to tackle the free-rider problem among self-interested states. Similarly International Political Economy analysis

of the environment 'has remained largely focused on the treaties, institutions and regimes' rather than 'the environmental implications of larger structural trends in the global political economy' (Newell & Lane, 2017, p. 137).

Looking through an international social-ecological lens changes this in two basic ways related to the origins and effects of climate change. On the one hand, while emissions accumulate globally, multiplicity was at the heart of the emergence and spread of the specific historical set of social relations that cause them. One key aspect of this has been captured by proponents of the 'Capitalo-cene' concept who argue that it was not the species as such but a 'tiny minority even in Britain' who were able via military and economic structures to establish and spread fossil-driven capitalist forms of production: 'a clique of white British men literally pointed steam-power as a weapon – on sea and land, boats and rails – against the best part of humankind, from the Niger delta to the Yangzi delta, the Levant to Latin America' (Malm & Hornborg, 2014, pp. 63–64). The proliferation of fossil capital in turn drove the spread of the modern international system, and the post-war 'Great Acceleration', often depicted as a global process pushing Earth systems (including the climate) beyond critical boundaries (Wijkman & Rockström, 2013), also involved a host of international dynamics.

Secondly, climate change in turn has wide implications for the international itself including (i) the societal *units* that make up societal-ecological multiplicity, (ii) the *structure* in which those units coexist, and (iii) the *means and processes* through which interaction occurs between the units.

(i) Climate change alters the *units* of the international. With a socio-natural conception of society, altering the climate directly (but unevenly) alters the socio-natural metabolism and hence the constitution of the multiple societies. This can be seen most baldly in terms of climate change shifting physical boundaries and individual domestic ecologies forcing societies also to change. Some countries such as Bangladesh are being inundated with salt water, while Vanuatu risks disappearing completely. Others, like Russia or Greenland, may lose permafrost or sea ice cover but gain access to sea routes and resources. This shifts power balances, but more subtly climate additionally alters what it even means for units to be powerful or secure. Just four decades ago, the idea that large 'carbon emissions' – itself a construct to emerge out of international processes and accounting practices – would be a source of leverage and influence in international bargaining forums would have seemed outlandish. A 'big emitter' such as the US during the Kyoto negotiations in 1997 would have been a big prize to bring into the deal, and serious concessions were made to try to achieve it. Conversely, climate vulnerability is today a weakness, while being highly reliant on fossil fuels and other greenhouse gas contributors is a potential vulnerability factor if international climate politics were to lead to stranded carbon assets. Ultimately, climate change mitigation casts a shadow over the future of the global fossil economy, putting a question mark at the core of the mode of production and consumption that shaped the modern international order, affecting also dynamics related to societal protection too (e.g. if previously strategic fossil fuel-rich regions lose their importance, or geoengineering technologies have dual-use properties). Simply put, if the fossil economy goes, the current international system goes with it.

(ii) Secondly, climate change is changing the *structure* of the international. This applies to changing the distribution of power and patterns of allegiance, e.g. coalitions of small-island states or EU-Chinese cooperation. Moreover, IR theory has typically theorized international structure as solely related to the arrangement and relative power of principal subjects (usually states). But, through socio-natural multiplicity optics such subjects are inherently bound up with the material world. In geophysical terms a perturbed climate effectively becomes a new

'power' itself with unpredictable, but potentially immense, destructive potential that societies have to guard against. As Clive Hamilton puts it: 'against the belief that "the world we will inhabit is the one we have made", the world we will have to live with is the Earth we have turned against us […] now, when Mother Earth opens her arms it is not to embrace but to crush us' (2017, p. 48). In addition, dynamic weather patterns have over the past 40 years or so been rendered into a distinct epistemic object of governance – 'the climate' (Corry, 2013a). A vast machine of globalist infrastructure including sensors, satellites, computer models, theories, scientists, NGOs and international institutions (see Edwards, 2010) has rendered the geophysical processes into a geohistorical governance-object that can be known, measured, predicted and, ultimately, operated on (Allan, 2016; Corry, 2013b). This process has its origins in international dynamics and cold war rivalries in particular while ideas such as 'national carbon sinks' show how the climate object has itself been marked by the international (Lövbrand & Stripple, 2006). Thus, while the climate is not an agent (understood as a conscious subject), 'the climate' as governance-object has become a major structuring force in world politics. Actors claim a stake in it, define goals for it, intervene to steer or change it – or wish to prevent others doing so. It is perhaps no coincidence that the biggest gathering of world leaders in history happened at the Paris climate negotiations in 2015. The global climate polity is a reality.

(iii) Climate change also alters how *interaction* takes place between socio-ecological units. Existing modes of interaction change: new sea routes are being opened up in the Arctic, for example, reconfiguring Arctic states and others. Human and non-human migration looks set to increase as ecologies become hostile to human life. Attempts to *deal* with climate change also change international interaction. The Clean Development Mechanism in the Kyoto protocol fostered a new form of interaction whereby rich countries invested in lower carbon technologies in poorer countries counting them instead of emissions reductions at home. Carbon governance may at some point put an end to mass aviation. Even more dramatically, if solar geoengineering technology is ever deployed to erect an artificial sun screen to lower average temperatures, this would likely change existing international climate politics and struggles over 'the global thermostat' would constitute a new form of interaction in the international (Corry, 2017b). Solar geoengineering may open up new forms of war-making, legal innovations, sabotage or counter-geoengineering.

Patterns of interaction may also change. The classical patterns include balancing, buck-passing, divide and rule, institution-building and other forms of strategizing. The basic assumption behind many of these is that there is operational independence between states, facilitating and legitimating strategic action. Climate change potentially changes this by linking societies with nature or dividing them in novel ways. The free-rider problem may continue to make global cooperation difficult but if extreme climate change does end up constituting an 'existential risk' threatening all societies or civilization in general (Bostrom & Cirkovic, 2011), this may change. Existential risks put the classical IR debate about 'relative gains' versus 'absolute gains' into question, for example: if the losses from climate are near total and cover all units, then a relative gain becomes meaningless and free-riding unviable. On the other hand, societal multiplicity guarantees differential vulnerabilities to climate change due to different socio-ecological positions in the international system. This makes an existential 'all in the same boat' scenario in practice unlikely and collective action dilemmas may be exacerbated by heightened tensions and hostilities caused by climate disruptions. In short, we may say that climate complicates strategy, pitting Kantian 'Climatic Peace Theory' against a Hobbesian 'Anthropocene Anarchy'.

6. Conclusion

The nature of the international and the international structure of nature are both underappreciated due to two sets of blinkers. IR specializes in understanding the implications of the fragmentation of the world into multiple societies, but has in line with other social sciences bought into a Cartesian view whereby its subject matter understood as social-in-kind is abstracted from entanglements with nature, reducing the latter to a resource or an 'environment' to be managed. Meanwhile globalist ecological epistemologies highlight human-nonhuman exchanges but view the world as essentially one space, obscuring societal multiplicity. Both of these mutual blinkers have been compounded by the epistemic weakness of IR as a discipline. This has allowed climate change to be viewed through a (planetary) internalist lens, as an inherently global problem caused by and affecting all humans and requiring global agreements. Despite increasingly dramatic accelerating climatic upheavals, international politics is assumed to be unaffected in its basic units and logics and processes.

Into this breach, new materialists seek to sensitize IR to material intermingling between humans, technology and nature. Historical or dialectical materialists emphasize the metabolism between natural and social processes. But neither has considered the simultaneous consequences of the international. The existence of global environmental systems that are becoming perturbed to a degree that threatens survival of some or all societies is an important and urgent truth that the Planetary Politics manifesto authors are right to highlight. Yet they are wrong to claim that this renders the international itself a mirage, superseded by the planetary 'real'. With Rosenberg's theory of the international, the idea of 'humans' as a singular force of nature can be corrected, highlighting that multiplicity fragments humanity. But with a materialist rendition of societal multiplicity we must also, while acknowledging the idea of 'global nature', point out that this too is fragmented by the existence of a multiplicity of societies, each in a metabolic exchange with its environment. A metabolic rift in the carbon cycle is partly driven by the international and through this rift, the climate itself is international.

Note

1. Other factors such as kinship have been argued to play a role in facilitating 'ethnogenesis' or the formation of units of social cohesion – ethnos – partly via endogamy – restriction of marriage within the tribe, although Francis Fukuyama recently pointed to the importance to state building of methods of *weakening* kinship allowing wider reaching allegiances to be fostered (2011).

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Notes on contributor

Olaf Corry is Associate Professor of International Relations at the Department of Political Science, University of Copenhagen, where he teaches IR, Global Environmental Politics and Security Risk Management. He has published on global theory, globalization and social movements, climate change politics, risk and security in journals such as *Review of International Studies, Millennium, Security Dialogue, Global Environmental Change, International Political Sociology, Political Studies* and *International Relations.* His book *Constructing a Global Polity: Theory, Discourse and Governance* was published in 2013. He is currently researching the international politics of climate geoengineering technologies.

ORCID

Olaf Corry 🔾 http://orcid.org/0000-0002-7249-0913

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