

3 Relationality, Post-Newtonian International Relations, and Worldviews

Milja Kurki

The challenges presented today by climate change and ecological collapses, including the ongoing sixth mass extinction,¹ are unprecedented in scale and politically complex. They are also challenging for how International Relations (IR) scholarship and other social sciences have oriented themselves to the world, human and nonhuman. As Audra Mitchell reminds us, in the face of these challenges IR scholars are only just starting to think through how we might orient to questions of survival “as such” rather than simply the survival of individual states or communities.² And, as Rafi Youatt suggests, in a rush to “manage” the oncoming crisis, we have failed to consider how interspecies and not just “human” politics is deeply embedded in our responses.³

In a way, in the face of the different scale, nature, and temporality of uncertainty implicated in ecological and climate changes, IR, alongside many political and social sciences, has struggled to break free from the conceptual bounds within which we have imagined the world: primarily Newtonian, substantialist, and also often anthropocentric in Katzenstein’s terms (see Introduction), and as such also rather narrow in terms of the political imaginations available to think through how we might negotiate the challenges ahead.

So how might we address climate change and ecological collapse differently? How are productive political conversations enabled when human and nonhuman communities adjust to changing ecological and climate conditions on the planet? And how are such questions implicated with the “relational revolution” – the rise of new forms of relational thinking and practice – in the natural and social sciences?

In this chapter I seek to tackle such questions by introducing a set of reflections arising out of “relational cosmology,” a reorientation to thought and practice around IR that I have been exploring in recent years.⁴ This perspective is aligned closely to the Post-Newtonian, relational, and hyperhumanist ends of the spectra that Katzenstein sets out in

¹ Leakey and Lewin 1996. ² Mitchell 2017. ³ Youatt 2020: 4. ⁴ Kurki 2020.

the introduction to this work. As a result, as we will see, the perspective here interrogates puzzles around “worldviews,” both in scholarly practices and in the “world” at large, in quite a distinct manner vis-à-vis classical paradigms of IR.

The relational perspective explored here suggests that the sciences – natural and social – are undergoing a “relational revolution,” moving from Cartesian, Newtonian, and empiricist ways of knowing toward more relational ontologies and epistemologies in line with not only quantum science and relativity theory but also with ecological thought and decolonization of the sciences. Relational cosmology, and Post-Newtonian perspectives more widely, argue that we can and should explore new or different ways of thinking and practicing science, politics, and also questions around agency. These perspectives encourage us to rethink the conceptual parameters and “affective” commitments that structure IR’s ways of putting the world together to manage its challenges.

The challenge of the relational perspectives, which are many, is that they do not come with easy answers or straightforward paradigmatic commitments, and they do not often even address the same questions of concern to classical paradigms of liberalism, socialism, or realism: they do not search for a rational individual to ground politics, there is no abstract ethics to justify actions on universal grounds, and there are no clear cut answers to the socialists’ favorite question: “What is to be done?”

As such, relational thinking may seem strange, frustrating, and even dangerous perhaps, to some scholars in the field (see, e.g., Nau, Chapter 6, this volume). For example, from this perspective, agents – human and nonhuman – are seen as porous, hybrid, and “distributed,” much to the displeasure of many classically Newtonian and humanist emancipatory ideologies, whether liberal or socialist. Relational perspectives – and partially related perspectives such as quantum perspectives⁵ – challenge many core conceptions of classical western humanism, its (Newtonian and secular) orientations to science, its habit of separating nature and society, and the

⁵ Relationalism and quantum perspectives are not subsumable within each other. As I understand relational thought, quantum perspectives contribute to or coalesce in some ways with relational traditions. However, sources of relational thinking can be many and a quantum mechanical base is not required for relational thinking. Also, it is important to note that there are many different answers to questions of agency and politics, for example, that can be derived from different traditions of relational and/or quantum theorising. While here my inclination is to move away from agency as a notion, Wendt’s important work on the quantum mind and related works could be seen as steps toward reconstituting agency for a post-Newtonian age. I do not wish to speak for all these perspectives as “one,” but simply to introduce one relational perspective which speaks to others in hopefully productive ways while also demonstrating for the purposes of this volume the differential avenues of interrogation that emerge vis-à-vis classical perspectives from a relational viewpoint.

tendency to seek to “manage” people and things. However, in answer, the relational perspectives as explored here also do *not* put forward a single, totalistic “worldview” or an “agent of salvation” (leader, class, rational individual, species), but rather provoke us to find new ways of thinking and feeling the world(s) around us and, through this, also representing the varied agents at stake in IR scholarship of a Post-Newtonian kind.

Relational perspectives, then, encourage a lot of new “theoretical” thinking on agency, politics, international relations, science and religion, and affect. Yet, it is important to note that they are not “theoretical” or “abstract” exercises even as it is tempting to treat them as such. They seek to be intensely practical and put forward new ways of practicing engagement, representation, and, thus, (planetary) politics (see also Duara, Chapter 7, this volume). Indeed, the most significant aspect of the relational perspectives is not (at least in my view) how they “theorize” the world as such, but rather the ways in which they ask us to view, experience, be, and “become” differently in our immediate experiences as well as through our “planetary entanglements.”

What this all means for IR scholarship or for climate change is not straightforward to work out – the implications for politics or action are contested (as rebuttals of relational work in this book show; see, for example, Nau, Chapter 6). Yet, the challenge is that, instead of turning back to political ideologies that we have turned to for centuries, political ideologies implicated in the creation of the problems we are faced with in our relationship with the “natural world”⁶ as well as in cross-cultural dialogue,⁷ we can and should explore the difficult questions emerging from the relational revolution – in the natural and social sciences – in order to develop ways of engaging the “trouble” in the current order and with our conceptions of it.

This relational “end of the spectrum” has in the context of this project been described as “the jungle,” and, as such, has been contrasted to the “gardens” or “parks” of more traditional ways of thinking and doing International Relations (Katzenstein, Chapter 10, this volume). There is something seemingly unruly, wild, and “unmanaged” about relational thinking and political practice. And, for others, this perspective appears “cuddly” and “naïve” in somehow assuming that we should love all others around us. Both conclusions, I hope to show, are too easy a response to the difficult questions raised by relational thinking. The relational

⁶ This notion is used with great caution as it is precisely the notion of a “natural” and “social” world which relational perspectives call into question.

⁷ Querejazu 2016; Qin 2018; Ling 2017.

perspectives are many and do not seek a uniform, singular truth. And they have multiple different challenges and questions to navigate themselves. They offer no panacea.

Yet, my belief, in line with Katzenstein's intuition, is that these kinds of perspectives should be explored and debated more in our field precisely because the alternative – to turn back to realism, liberalism, or socialism unreconstructed – also comes with problems in the condition we inhabit. Our ways of conceiving the international and what the focus of IR should be are implicated in a particular ecological and cosmological ordering of the world.⁸ The relational perspectives then call on us instead to reimagine how we have historically come to constitute our conception of the world and to shift these imaginations to forms of politics which may seem “new,” “radical,” and “strange” to some western scholars. Yet, arguably relational qualities, practices, and thoughts, while more present in non-Western traditions, pervade the lives of “western” “individuals” too. As Grove puts it in Chapter 4, if we are all relationally processing in the world, relational thinking and negotiation is of relevance to all. Relational traditions pry open seemingly well-sealed liberal individuals or national communities, and reveal the “other aspects of ourselves,” the porosity and comaking, the overlaps, the complex constitution of individuals and communities and species.⁹

In this chapter, I start by reviewing the ways in which authors in and around IR often frame climate and ecological challenges, including the increasing number of critics of IR's way of framing coexistence challenges on the planet. I then explicate what the so-called relational cosmology brings to the table, how it reorients our thinking and being, and, crucially, what introducing it does (in my view) to our orientation to the world (and, indeed, the idea of worldviews as an analytical category). In other words, I seek to explicate what operations of mind (and body!) are required to link relational cosmology to worldviews analysis. This (as Byrnes [Chapter 9] and Allan [Chapter 8] might also lead us to expect) includes reflection on big questions around secularism and religion, the nature of science, and the nature–society dichotomy, as well as the nature of politics and political community. Finally, I seek to show that moving to the conceptual register of relational cosmology entails a shift in how we do politics. While the political implications of relational thinking are not necessarily akin to the usual “policy implications” sought in the study of international politics, they are nevertheless of some import to how

⁸ Kurki 2020; Burke et al. 2016.

⁹ I sense this relational tone also in Barnett's humanist relationalist contribution to this book (Chapter 5).

political praxis can be reoriented in and around IR and in relation to questions of climate and environment.

3.1 Climate Change, Ecological Destruction, and the Problem of International Relations

In the last twenty years, environmental challenges have arisen from the sidelines of the social and natural sciences to present some of the central challenges for theoretical and practical sciences today. This has been precipitated by the materialization of a changing climate and environmental patterns, the communication of a new scientific consensus around challenges presented for human and nonhuman life within the next decades and centuries, and also certain shifts in power relations between human communities and also arguably between key human and nonhuman communities (e.g. farmers and bees). What Timothy Morton calls “hyperobjects” – climatic regimes, planetary circulations, ecosystems (“massively distributed in time and space relative to humans”)¹⁰ – are appearing on our horizons, but we do not know what to “do with them”: while somehow implicated in our ability to act, and indeed our past actions, they are also not subject to human control but exceed them. They seem to challenge our very conceptions of how to “understand” and “control” the planet and processes on it. As Morton nicely reminds us, they are “*hyper* [in the sense of ‘over’, ‘beyond’, in excess] relative to worms, lemons, and ultraviolet rays, as well as humans.”¹¹

In this section I explore IR ways of attending to these challenges, first within traditional paradigms, and second amongst a series of critical scholars.

3.1.1 Responses to Climate and Environment

While the environment and its use has always stood at the heart of geopolitical origins of IR,¹² and while environmental concerns feature in realist as well as liberal frames in IR theory, the way in which these concerns are addressed reveals crucial aspects of the epistemic, ontological, and thus also political assumptions of these theories.

In realist theory, for example, the “environment” is treated primarily as a resource to be strategized about and utilized to ensure that a state meets its interests (or the interests of its human community). Classically, the realist school would focus on immediate security threats and thus dismiss

¹⁰ Morton 2013: 1. ¹¹ Morton 2013: 2. ¹² Corry 2017.

climate and ecological change as secondary to the more immediate existential crises human communities face. Yet, this does not mean realists cannot take action on environmental and climate crises: as Sofer argues, “even a hard-nosed realist should support international cooperation on climate change. Due to climate change’s impact as a “threat multiplier,” the benefits of cooperation now outweigh the potential gap in relative gains between cooperating countries.”¹³ It is how this action is to be taken that is paramount: key actors on the environment are the state and the international (human communities) and politics involves their human interaction “on” the environment. The sphere of action is the “international.” In other words the environment is seen as external to “human” communities’ interests, strategies, and intentions. State survival, while dependent on resources, is an abstract problem of human decision-making. States, as human communities, are “lifted off” the planetary negotiations as they determine their own relations to each other and to the “environment.”

A classical liberal perspective on environmental change works with similar assumptions, while being more encouraging of “international” negotiation between states and other human communities. Liberal concerns revolve around interdependence and the ways in which environmental risks travel across states (as human communities) necessitating cooperation. To address climate and environmental concerns, then, we must assess how institutional structures could work in creating more sustainable outcomes. Some say liberal democracies can do the work, others call for cosmopolitan arrangements: either way, states have a key role in responding to the moment of crisis presented by climate change – “our political moment,” as Beardsworth calls it.¹⁴

At the heart of liberal approaches is an acceptance of not only states as a key institutional reference point, but also, fundamentally, the *separation of human institutions from the “environment” as a background to be controlled and managed*. To come through the climate challenge, “we” have to manage the environment correctly by redirecting human intentionality and incentive structures. This by and large means working with, but revising, current domestic and global institutional structures. Climate crisis is then ultimately a “human coordination problem,” and in dealing with it is essential that we learn from what we have achieved in terms of institutional (re)structuring of global life so far. Rather than challenging the international order, climate change emphasizes the importance of maintaining it and working through it.

¹³ Sofer 2015. ¹⁴ See Beardsworth 2018; see also Ward 2008.

But what about the constructivists and critical theorists? Do they not give us useful new ways of thinking on the environment?

For sure. Constructivists call for more detailed engagement with the way in which we construct environmental problems and the discursive parameters of how we can shift how states or communities relate to the problem; on the other hand, critical theorists of various persuasions point to the limits of the underlying assumptions of such perspectives.¹⁵ Governmentality scholars, for example, highlight the environment as a site of creation of liberal governmentality and state power,¹⁶ while feminist political ecologists would call for greater attention to be paid to the ways in which we relate to the environment, via specific conceptions of the human and of the environment.¹⁷ Environmental concerns are constructed, and “we” and our political communities (including their security interests) are constructed with them.

While interesting, here too arguably deeply humanist assumptions often play a key role: it is the discursive and normative construction by humans of the environment which concerns these thinkers. “Our” ideological and normative framings are key in how we come to and act toward the “environment,” and new ways of doing politics on it depend on new social constructions among human actors. This is why normative entrepreneurship around environmental sustainability for example matters – domestically and in the international sphere.

This range of perspectives is interesting. Yet, there is arguably an implicit set of “worldviews” – if not a singular, clearly bounded “worldview” – reflected in many of these perspectives. Core assumptions of such could be described as follows.

First, at the heart of this broad worldview stands the idea of the “human,” standing over the “environment.” A distinction between culture and nature is foundational to much of the social sciences, including IR. As Latour puts it, there is a House of Humans/Politics and a House of Nature that stands at the heart of the modern Western scientific endeavor and political thought.¹⁸ Even political ecologists have reproduced this division of human and nature: “if political ecology poses a problem it is not because it *finally* introduces nature into political preoccupations that had earlier been too exclusively oriented toward humans, it is because it *continues, alas, to use nature to abort politics.*”¹⁹ How we think the human and the natural or the social and the environmental present deep challenges.

¹⁵ See e.g. Litfin 1999. ¹⁶ See e.g. Rutherford 2017. ¹⁷ See e.g. Rocheleau 1996.

¹⁸ Latour 2004 (emphasis original). ¹⁹ Latour 2004: 19.

These assumptions are underpinned by even deeper assumptions about there being distinct “things” in the world which work against “backgrounds.” Such Newtonian assumptions are fundamental to modern liberalism and realism, which perceive the world as constructed by “things” moving, self-willed and autonomous, but also arguably to many other schools of thought and our everyday language. Indeed, try and think about the world without things and language barriers soon force your mind back to habits of thought with a long legacy in western religious, cosmological, and scientific thought. Yet these assumptions too are particular: that is, framings of basic ontologies of the worlds of Buddhist, Andean, and South Pacific peoples²⁰ are not in line with these assumptions, but point to different, more relational, ways of framing the very basic orientations to the world and thus our “views on the world.” There are not just different worldviews; there are families of worldviews with quite different orientations to substances and relations, the human and the nonhuman, nature and society.

But this is not all: at the heart of how we think the environment also arise deep questions around whose experiences frame the “international” and “global” challenges of environmental or climate change. Indeed, the international is a curious ontological notion in its wedding onto the world of a very particular humanist frame: politics on the planet involves the politics between human communities (“states”).

Even the framing of the “global” reproduces this: when we address “global challenges,” such as climate change, we are in need of a “universal” human response across political communities. The challenge of how to think the climate, then, is not just how to think common responses but how to think critically about how the international and the global, how human division and commonality, have been imagined. These ways of thinking have not only worked to deprive some human communities of land, rights, and response-ability, but also have embedded into the world a very particular framing of humans and nonhumans. Many of the apocalyptic narratives which drive “global” policy discourses even now have embedded within them racialized and racist assumptions ignorant of experiences of indigenous populations, for example.²¹

It is worth noting the role of these foundational “cosmological” understandings of the world that is at the heart of how we orient to environmental and climate politics (see also Allan, Chapter 8 in this volume, for discussion of cosmology and worldviews). These are sometimes hard to discern but are increasingly unpacked not only in IR²² but also in the

²⁰ See e.g. Ling, 2017; Querejazu, 2016; Shilliam 2015.

²¹ Mitchell and Chaudhury 2020.

²² Allen 2018; Bain 2020; Kurki 2020; Zanotti 2018.

social and natural sciences more widely. They have also been pointed to by a series of important interventions around the Anthropocene, planet politics, and decolonial thought.

3.1.2 *Anthropocene, Planet Politics, and Decoloniality*

Although little has shifted in traditional IR vocabularies – or the worldview assumptions underpinning them – as a result of the rise of climate and ecological challenges, this is not the case in the social and natural sciences more widely. Indeed, the “paradoxes of the anthropocene” (arising from the increasing realization of human influence on hyperobjects while seemingly lacking direct control over them) have been discussed at length in both the natural and social sciences and also increasingly in critical IR in the last decades.²³ Indeed, in recent years there have been many calls in the field for a radical reorientation of the conceptual premises and empirical foci of “International Relations.”

Thus, for example, in 2016 a collective of IR scholars released a paper that called for a new turn in IR: a turn toward so-called “planet politics.”²⁴ This manifesto, first, reflected the wider calls in the humanities and social and natural sciences for scientific disciplines to “deal with” the Anthropocene: the increasing realization of humans’ role in structuring planetary relations, which also has precipitated calls for overcoming classical notions of “humanhood” as well as the “environment.”

Second, this manifesto specifically challenged IR for its fundamental inability to deal with the “social nature” it is implicated in: the embeddedness of our patterns of international politics, our conceptions of the world and its key actors and all aspects of human life in what used to look to us like an external nonhuman “nature” must be reckoned with, both in policy and in “consciousness” of humans facing ecological disasters around them.

The planet politics manifesto has been critiqued from various angles: for being too conservative and liberal cosmopolitan,²⁵ for being unclear in meaning,²⁶ and for how debate around it has been conducted.²⁷ Yet, nevertheless it indicates an important challenge in IR: that we are coming to the limits of the classical political imaginations on which we have built our ways of dealing with “coexistence challenges” in IR.

Thus, whether it is attempts to build new kinds of democratic orders – a geopolitican democracy,²⁸ for example – or imaginations of posthuman

²³ For a summary of debates on the Anthropocene in IR, see e.g. Harrington 2016.

²⁴ Burke et al. 2016. ²⁵ Chandler et al, 2017. ²⁶ Corry 2020. ²⁷ Conway 2020.

²⁸ Eckersley 2017.

politics in complex systems,²⁹ change is afoot in the study of IR to realign the discipline's conceptual systems and political responses with "planetary realities," as Burke et al would have it.³⁰ These critics argue that we must look "elsewhere" than the state and the international system to rethink the current order, potential politics, and communities that matter in negotiating the "planetary real."

It follows that not only realism and liberalism but also classical (humanist) traditions of constructivism and critical theory have been left far behind as new types of relationalism have been suggested for IR. At the center of the concern of relational thinkers has been rethinking, as Fishel puts it, "the ways in which we create ourselves, both as individuals and as humans, beyond how the state predefines our identities as citizens."³¹ Drawing on critical humanism and posthumanism, analysts have sought to develop ways to think about the human as a historical construction, thus also developing a concern for the way in which the nonhuman has been relegated to a background to "human action" conceived as the center-ground of politics and international relations.³² Rafi Youatt's important book shows to us how interspecies politics functions in world politics as we know it: just because we have delimited our capacity to understand how politics works does not mean interspecies politics do not already shape our world order and states. We must take on the bias that "species should be a central barrier to who can be part of global politics."³³

On the other hand, relatedly, building on alternative cosmologies, some relational thinkers have called for a simultaneous turn toward non-Western ideological and cultural sources of rethinking capitalism, communities, and the international.³⁴ They have argued for engagement with new and old forms of relationalism often not seen from within Western ideological and cultural assumptions wedded to rationalism and individualism.³⁵

These kinds of interventions have been termed a "relational turn" in the field.³⁶ The oncoming ecological changes, alongside attempts to decolonize the social and natural sciences, have brought about a need to think through, far more carefully, how IR scholars have related to the world through very specific conceptual categories. IR has inherited its conceptual bases from specific (often European) cosmologies and

²⁹ Cudworth and Hobden 2011, 2017. ³⁰ Burke et al. 2016. ³¹ Fishel 2017: 11.

³² Cudworth and Hobden 2011, 2013, 2017; Cudworth, Hobden, and Kavalski, 2018.

³³ Youatt 2020: 4.

³⁴ Querejazu 2016; Kavalski 2018; Duara 2015; Qin 2018; Shilliam 2015.

³⁵ Qin 2018. ³⁶ Kavalski 2018, 2

theological notions, notions later embedded in seemingly secular conceptual order and also disseminated around the world through colonialism.³⁷

Relational approaches are of great significance as we tackle the current human and nonhuman predicaments. They challenge more classical ways of conceiving of ecological negotiations in the field of IR, but also crucially start to open up important questions around geopolitical power in knowledge constructions, the nature of science, the relationship between sciences and secularism, and also questions around who make up the “political communities” or “negotiations” that matter. I find them persuasive also because they tap into and question a whole range of underlying assumptions, cosmologies, and worldviews, reflected in the more classical paradigms of IR.

With this in mind, I explore one particular relational frame implicated in the wider relational turn to discern its impacts for reflections on worldviews in IR and ultimately (in Section 3.3) for reorientation of how we might engage questions around environmental and climate politics.

3.2 Relations in a Relational Universe

Instead of trying to reflect the full scope of relational thought in a short chapter, I focus on the implications of relational cosmology, a perspective which I have been working with for some five years now and which (to my mind) expresses relational principles and what is at stake in them rather clearly and also converses with other relational perspectives in interesting way.³⁸ My focus here is to bring out the core assumptions of relational cosmology and to relate them to the discussion of worldviews and IR theory.

3.2.1 Relational Cosmology

Relational cosmology is developed by Lee Smolin, in conjunction with other physicists such as Carlo Rovelli but also recently, interestingly, in cooperation with social theorists such as Roberto Mangabeira Unger. The core principles of relational cosmology as developed by Smolin come through in texts such as *The Life of the Cosmos* (1997), *Three Roads to Quantum Gravity* (2000), *The Trouble with Physics* (2008), *Time Reborn* (2013), and the coauthored *The Singular Universe* (2015).

³⁷ Bain 2020; Allan 2018; Mitchell 2014; Kurki 2020; Kurki, 2021.

³⁸ This is developed elsewhere in more detail in Kurki 2020.

Relational cosmology's basic claim is that sciences are telling us to shift our background assumptions, if you like our foundational worldviews or conceptual bases, in some fundamental ways. We must give up on "God's eye views" on the world and get to grips with the thoroughly relational nature of the universe and of us as "situated" knowers within its relationalities. Crucially, this shift is precipitated by experimental and empirical findings of the natural sciences. In the first instance, this arises from relational cosmologists' interest in the theory of general relativity and their development of a specific theory of quantum gravity: Loop Quantum Gravity (LQG). These physical theories, which Smolin and Rovelli are both involved in developing, require, for them, certain shifts in our conceptual universes. The physical theories call on us to "think differently" about "what there is" in the universe.

Crucially, for them, scientific findings are "screaming" for us to realize, and to work through, the fact that there really are no such things as things or backgrounds in the universe. Indeed, space itself is not a background in which things move, but part of the network of relationships in the universe. The loops that make space are "linked to each other, forming a network of relations which weaves the texture of space, like rings of a finely woven immense chain mail."³⁹ Crucially, these loops are not "anywhere" in space: "they are themselves the space . . . the world seems to be less about objects than about interactive relationships."⁴⁰

It follows that what we need to grapple with in the sciences is the need for a thoroughgoing relational, processual understanding of the universe. All "things" and "backgrounds," as we would have it in our everyday discourse derived from Newtonian conceptions of space, are in fact relational processes in the process of relating.⁴¹ Relational cosmology is an extension of what it means to think relationally and has important implications also for the social sciences, for "one of the things that cannot exist outside the universe [and its relations] is ourselves."⁴² As Smolin puts it:

relativity and quantum theory each tell us this is not how the world is. They tell us – no, scream at us – that our world is a history of processes. Motion and change are primary. Nothing *is*, except in a very approximate and temporary sense. How something is, or what its state is, is an illusion.⁴³

The challenge, then, is how do we think relationally, and how do we follow through with the implications of thoroughgoing relationality? How

³⁹ Rovelli 2014: 41. ⁴⁰ Rovelli 2014: 41. ⁴¹ See ch. 4 and 5 in Kurki 2020.

⁴² Smolin 2000: 26. ⁴³ Smolin 2000: 53 (emphasis in original).

do we think without Newtonian configuration space populated by things moving against backgrounds?

With some difficulty. How do we know when the world around us can only be known in ways that are inevitably situated in relations? If nothing in the universe is outside of relational unfolding of the universe – not even the scientists or the laws of the universe, which are also made relationally – how do we think the sciences or the social sciences? This is a challenging situation. As Smolin puts it, “[i]t is not easy to find the right language to use to talk about the world if one really believes that the notion of reality depends on the context of the person who does the talking.”⁴⁴

The relational revolution in the sciences extends across the social and natural sciences, and all the sciences, for Smolin, are engaged in a shift of worldview, from a substantialist, Newtonian view toward a processual, relational relative view. A lot is implicated in such a shift. And such a shift has many important implications because a lot is implicated in the shift. Indeed, inhabiting this worldview takes on all kinds of other categories, divisions, and dichotomies that we often work with.

There are at least five key things implicated in such a shift. We need to consider issues with: 1) secularism and religion and their complex relationships in defining conceptual tools; 2) affect and (re)enchantment of the world and science; 3) the categories of human and nonhuman, natural and social; 4) science and democracy, and 5) our conceptions and practices of politics.

1 Science: Not Simply Secular One of the key aspects of relational cosmology and the perspectives of the relational turn more widely is that they necessarily open up questions around religion, secularism, and, indeed, reason and affect in how we engage the world (see 2: *Affect: Knowing and Becoming*).

This is because at the heart of the critique is a realization of, and, at the same time, a certain discomfort with, (Christian) religious dogmas as they are played out in much of our conceptual systems. Relational cosmology both notices the role of religious thought in science and seeks to point to how this also limits how we can think. It follows that doing science also necessitates thinking on legacies of religion. The comfortable distinction of secularism and religion, then, is not possible within this frame (see also discussions in Byrnes, Chapter 9, this volume).

These concerns come out in different ways. For Smolin, for example, the key concern is the implicit Christian commitments in physical sciences: the ways in which assumptions about Laws of Physics or Nature

⁴⁴ Smolin 2000: 46.

replay certain unthinkingly religious commitments which prevent us from following through conceptually what empirical findings are telling us. For Carlo Rovelli, the concern is about the inability of man to see itself as part of nature due to a Christian legacy of seeing humans as “lifted” above nature.⁴⁵

Interestingly, these concerns are closely tied up with the interest in political theology in the field of IR.⁴⁶ Indeed, both relational cosmology and recent literatures in the field of political theology point to a concern with the hidden religiosity attached to secular humanism and its conceptual basis. Secularism itself is being unpacked for its religious commitments and its particular versions of humanism.⁴⁷ The implication is that IR and our own ways of conceiving the world must be probed for their religious undertones, whether in our conceptions of autonomous humans, cosmological origins of notions of anarchy, or improvement or the commitments to the ideas of “laws of nature.”

2 Affect: Knowing and Becoming The foregoing discussion has important implications also for how we try to know, or indeed for the constitution of, “reason.” Reason is not disenchanted within this frame, and, strangely, at stake in how we know is not just how we know: it is also how we “are.” That is, to know is also to be, to become, in a particular way in and of the world. Indeed, knowing through reason is a particular way of materializing the world, not a universal manifestation of some abstract principles.

As such, to “know” is affective, as well as materially productive of the world’s unfolding. That is, we do not simply know through reason, but are materially embodied in the world, which also “cuts” on us.

We are in a very uncomfortable sense not just on the world, trying to know it, but also of it and cutting into it with our concepts and acts. This means that we are never engaged in just knowing about others or their worldviews “in abstract”; we are also ourselves implicated in the world(s) analyzed, and these worlds are dynamic and multiple, partially made up of how we “cut” the world, how we materialize it through our thoughts or actions.

This also pertains to the ways of being of scientists or IR scholars: they are also made of the world’s materializations and produce them; they are not “above” them. And scientific knowledges and practices also produce or “cut” the relationalities of the world in specific ways.⁴⁸

⁴⁵ Rovelli 2014. ⁴⁶ Bain 2020; Pasha 2018. ⁴⁷ See e.g. Taylor 2008; Mitchell 2014.

⁴⁸ See e.g. Barad 2007.

3 *The Human and the Nonhuman Agency: Porosity* In the same sense that complexity theorists and posthumanists argue that the modern human is a kind of an invention or a production of relatively recent history with its origins in theological notions of man as well as particular colonial inventions of “humanity,” the relational cosmologists allow us to open up or keep looser the idea of the human and its conceptual counterpart, the nonhuman.⁴⁹ The idea of the human as “lifted” from its environment, as a manager of its ecology, is a very particular production of life, coincidental with certain religious traditions but also of the rise of agricultural and industrial societies.

From a relational point of view this is not the essence of “the” “human”: the human is a processual creation made in relations to and by creating “others,” human and nonhuman. When we realize this we come to see that the human is not autonomous but part of a rich set of voices and lifeforms. In the relational universe live, then, not only humans but also the nonhumans which they are entangled with.

Crucially, in this mesh we, “the humans” and others are “strange” in Morton’s sense⁵⁰ – that is, never fully capturable, partly because “we” are never fully “autonomous”; we are made relationally and know situatedly from relations. That is, the notions of sovereignty of the individual and the state, and indeed of *any* object, is in question in this perspective. There are no beings, there are only relational processes: symbionts relationally processing “across” each other.

In a relational universe, then, we must embrace the “strangeness” required to think and to be, and we see the limits of the Cartesian need to control (and discipline) the human and the nonhuman. And we see the many dialogues which shoot across the “levels of analysis” (natural and social sciences) and dichotomies (nature, society) that structure modern conceptions of the human, of agency, and of the political.

As such, agency, or even prioritization of questions of agency, is not a central concern of this perspective; rather, it is to think through distributed and shared agencies (if that is what one still wishes to call them).

4 *Science as Community in Cosmos* The foregoing assumptions also have implications for how we think about science. For Smolin, much like for many posthumanists, science is not abstracted from the world. It is part of becoming, of affective being in the world. What this means is that we do not have clear-cut criteria for good or bad knowledge, much as postpositivists always suspected but now embrace as a key cornerstone of scientific approach itself.

⁴⁹ Developed in Kurki 2020, ch 5. ⁵⁰ Morton 2010.

In this view, knowledge itself is not just knowledge. Instead, curiously, science is more like democracy: it is about openness to and openness about what we assume, think, explore, and interact with. And it is about making relations, cutting the world.

Science is, as Smolin puts it, about a kind of “democratic” being and becoming in the cosmos. It is about probing and thus relating, and rethinking relations and communities that matter. Science is part of the making of a community of relational being becoming the relational cosmos. Science in this perspective, then, is not defined by a “method.” As Unger and Smolin put it, “There is no scientific method, science is fundamentally defined as a collection of ethical communities.”⁵¹

5 Conceptions of Politics Crucially, what is shifted here too are views on politics and what and who count as political agents. There is no classical distinction here between human polities and those polities that do not matter. Communities cross boundaries of “human.” This means that in a very real sense we can also think about representing and coexisting in communities with nonhumans, animals, vegetables, and minerals. Or, as Youatt so powerfully puts it, we must start to call into question the “representation of nonhuman life through human speech as a sole point of entry for nonhuman species into the sphere of the political.”⁵²

How we gather these communities together, and how we process politics without abstracted special human communities, is an intense focus of theoretical and practical research. How do we compose the universe? How do we converse? How do we do democracy when we are more than human?

This is all very well, you might say, but what has this to do with the worldviews frame of this book?

3.2.2 *Implications for “Worldviews”*

There are (at least) three key implications for the discussion in this book of worldviews – both everyday worldviews and scientific worldviews:

1. *Non-Newtonian alternatives.* There is a kind of (shifted, non-Cartesian, non-Newtonian) worldview reflected in this frame and it appears it challenges a different kind of orientation: a more substantialist orientation with things and agents. It is also a worldview that is seen as part of a much wider, and more varied, relational revolution in arts and the humanities, as well as the sciences. Indeed, Smolin explicitly sees his work as part of a wider relational revolution expressed across western

⁵¹ Unger and Smolin, 2015: 363. ⁵² Youatt 2020, 4.

culture and science and also beyond it. An interesting aspect of relational cosmology has been its ability to recognize the limits of “western” science and the legitimacy of varied ways of knowing from outside of the “rationalist” scientific frame. This is in part because of its much wider understanding of science as situated becoming in relations.

It is then interesting, as Katzenstein suggests, to point to a kind of a continuum of worldviews from this perspective. Relational cosmology does also suggest that there is a difference between this perspective and atomist Newtonian ones. And it suggests a more systematic shift from certain more substantialist orientations that still play a key role in the sciences and social sciences such as IR (as well as in everyday life) to more relational understandings of the world, with important consequences for our conceptual frames as well as our engagements with the world.

2. *However, there is a multiplicitous alternative.* It follows that from this perspective we should be attuned to worldviews and the wide (and widening?) spectra of them. And we should trace them across communities and across time.

Crucially, within this frame worldviews *can never be understood in a singular frame*. In this perspective no view, no view of the world, is ever singular or alone – because no view is lifted “above” the relations which make it. Even science is based on situated knowledge.

This is not all. All worldviews are also relationally linked. There are no uniform, autonomous worldviews; there are always just many situated, relationally connected worldviews. Thus, the world, being, and becoming within it is always polyphonic in speaking, being, and cutting into the world, and worldviews from this perspective then also thus are always smeared across each other. That is, they are not pure, or separated, but cut into each other. In Ling’s terms, even oppositional worldviews are made of each other; they are off each other relationally.⁵³ It is recording this dance, being attentive to the relationalities, which is the challenge of engaging with worldviews in a relational frame. And this is in part why they are so interesting to study.

3. *Worlds and Worldviews.* There is another sense in which worldviews’ frames are challenged or pushed by this perspective. As is emphasized by the so-called ontological-turn authors,⁵⁴ worldviews here emerge less as “views on the world” and more like what we might call “lifeways” or “worlds.” That is, since the world does not exist “out there” to be viewed from the point of view of the special human, and since the nonhuman makes the human, worldviews too are more like relational

⁵³ Ling 2017. ⁵⁴ See e.g. Blaney and Tickner 2017.

paths in the world. They are not “of us” humans but made in relational assemblages with nonhumans. And nonhumans also make of us, our thoughts, frames, relations. Even when we narrate them as others they are in fact in and of relations with us.

Thus, I think we also come to be critical of the “worldviews” frame, for possibly itself embodying certain humanist predilections which may deny some of the ways of thinking through and being “relationally.” In this context, exploring the arguments of pluriverse theorists is interesting. They ask us to get beyond thinking about the world as consisting of multiple viewpoints, or perspectives, and to start thinking in terms of multiple worlds, literally: multiple sometimes related worlds of being. As Viveiros de Castro emphasizes, we are not just concerned with multiple “imaginary ways of seeing the world, but real worlds that are being seen.”⁵⁵ This also implicates our affect, bodies, in knowing – for, literally, how we know is also implicated in our bodily ways of traversing and experiencing.

The challenge, then, is how to deal with multiple worlds without erasing worlds – in thought and action. How do plural lifeways negotiate and collaborate on the planet? While I leave a full explication of this line of thought for another occasion, I think is interesting, potentially, in shifting questions around how we come to questions around worldviews, which may be productive for a project such as this to explore. But what, the reader may ask (and some of the authors in this book have pointedly asked me throughout this project!), are the supposedly concrete, practical implications of this kind of an orientation for where we started: concern around climate and environmental politics?

3.3 Politically Practical, But in a “Strange Way”

How can we best use our research to stem the tide of ruination? . . . Our hope is that [paying better attention] to overlaid arrangements of human and non-human living spaces . . . will allow us to stand up to the constant barrage of messages asking us to forget – that is, to allow a few private owners and public officials with their eyes focused on short-term gains to pretend that environmental devastation does not exist . . . To survive we need to re-learn multiple forms of curiosity. Curiosity is an attunement to multispecies entanglement, complexity and the shimmer all around us.⁵⁶

First encounters in IR circles with the kind of relational perspectives explored herein often generate responses such as: What does this

⁵⁵ Viveiros de Castro 2004: 11. ⁵⁶ Tsing, Swanson, Gan, and Bubandt 2017: G1, G11.

contribute to *real* resolution of interstate conflict around climate change contributions (requiring, ultimately, state cooperation internationally and human action domestically)? In ignoring basic building blocks of “how we do politics” (between individuals, in states, and on the international stage), does it not in fact undermine our ability to address climate catastrophe? How can we have practice “policy response” in a relational mesh?

The relational perspective examined here, and relational perspectives more widely,⁵⁷ do not come to IR or practical politics with disinterest. They come to it with a sense of deep disappointment and a certain level of anger and frustration about how our ways of doing and knowing international politics reproduce ways of “allowing” us to forget about how we must and could shift ways of doing politics. Relational perspectives, then, do not come to IR with a hope for an “invitation” into the IR parlor-game, but with a call for different kinds of dances altogether.

These new dances are not uninterested in the world, nor are they “theoretical,” “utopian,” or “impractical”; yet, they pull on our sensibilities, ways of being, and lifeways in some strange and uncomfortable ways. If you like, they pull us into the world differently; and encourage us to “commit” to world(s) around us differently. Crucially, within this (set of) worldview(s) who the communities are that matter are shifted, quite fundamentally, and, as a result, so are negotiating sites and modalities of politics. Instead of doing global governance of the humans and for the humans, engagement with politics might *also* entail immersion into marine communities or thinking with trees. And engagement with “humans” here too becomes less about modeling negotiations between abstract, autonomous humans and more about exploring various ways in which “humans” are made and cut the world around them, and not only as (abstract, universal) humans but also as “more-than-humans” (porously processing in mesh).

A couple of points, then, could be noted about “politics” in such a context.

- There is, for sure, interest in *politics beyond states, the international, and the global*, but for somewhat different reasons from classical liberal scholars, say. In this frame, all states, individuals, and communities are porous and worldviews are porous too. Because every “thing” is made in relational processes, they are to be understood as part of relational processes shaped far and wide. Crucially, then, to do “politics” in such a context is not to represent “oneself” or one’s “state” – these constructs are just one way to cut the world politically. Rather, the

⁵⁷ See e.g. Grove 2019; Kavalski 2018.

aim is to “loosen” actors (at the boundaries) to understand cobeing, entanglement, and conegotiation across “beings,” actors, and species. In terms of climate and environment politics this means, for example, that state politics and global responses are not the be-all and end-all of “political” negotiation. Rather, attempts to understand and conduct diplomacy with more-than-human humans and, crucially, plants, animals, and ecosystems becomes a central aspect of politics. Politics is not “only-human.” One way of describing this is as a form of *planetary politics*: a process of making kin and doing diplomacy in more-than-human worlds. Or we can understand it as Youatt calls it: as interspecies politics.⁵⁸ In this frame we recognize that we must and do negotiate with, on a daily basis, bacteria, fish, and trees as well as humans. They “think” and they “act”; and we represent them even at present, but often badly: we can learn to represent them and ourselves and our symbiotic relations better. As Dutch activists engaged in the Embassy of the North Sea point out, it is difficult but not impossible to learn to represent algae, water, and fish communities.

- Yet, this planetary or interspecies politics – also of interest in different ways for Duara and Grove (Chapters 7 and 4, this volume) – is not “one” and is engaged from different traditions of thought, culturally and in terms of experiences of natural world. Such politics, then, comes with critical sensibility about “crisis environmentalism”⁵⁹ or the “planet talking” for us – the environment “dictating” matters⁶⁰. This is in part because the politics of how the “environment” is created, and how the “human” (only) also emerges from this, are key to work through and become animated about in this view. *There is an intense interest in the politics of the human and the nonhuman*. How some migrant populations are made as “less than human,” and how mass slaughter of animals is facilitated by constructions of “lifted” humanity, are intense focal points of negotiation politically. These constructions work at the international level, but they are also at play in our daily negotiations.
- As such, there is also a wariness of “*politics*” of control, panic, and management. Relational perspectives point out that much of western political imaginations – including climate change politics – is tied up with forms of control and, simultaneously, many apocalyptic visions of “threats” to humanity (or some humans) and their preferred notions of autonomy and agency. From this perspective, the need to control and manage “the earth” as part of climate change politics is seen as part of the problem, rather than a solution. This does not mean we should not

⁵⁸ Youatt 2020. ⁵⁹ Youatt 2020.

⁶⁰ See critique of Burke et al. by Chandler et al. 2017.

take political action on climate change, but it does mean that this action cannot be taken simply to reproduce, in a panic, the same politics of control which are in part to blame for where we have ended up (a deeply hierarchical order of [some humans'] control). These perspectives agree with decolonial and critical perspectives in recognizing that “modern politics” and “international politics” have been not just about representation or coordination only but also, deeply, about discipline, control, and order for some over others. We must therefore watch out for what forms of politics we encourage – politics of negotiation or politics of control – and pay attention to when the one starts to bleed into the other. Implicated in these questions are also questions of colonialism, racism, and species-solipsism.

These kinds of reorientations to politics, and there may be others, may mean different things to different communities in different relational perspectives. For me, “personally” they have provoked important changes in concrete political practice. For example, I have ceased to look to the international order for the “solutions” and have redirected my political action to alternative forms of local and global attempts to understand and represent humans and nonhumans. My academic politics too today revolves around teaching how we might think, “feel,” and act differently, thinking carefully with toads, spiders, and plants. Yes, we read “plant theory” in my MA class on the future of IR! And I am pleased my students going into the practice of “classical” politics have written their essays on political leadership of matriarch elephants or how to re-relate to nonhuman life through music. I think their engagement with the world, experientially and politically, has shifted, as has mine, through exposure to relational ways of “loosening” ourselves into the world – even if these political negotiations do not at once overturn the international order and all the cosmological baggage (of classical humanism) it comes with.

Will such politics “save us”? Perhaps not. Indeed, these kinds of perspectives also throw up many difficult questions on which much more reflection is needed. Thus, is relationalism necessarily a good thing, or does relationality mean that “machines,” “structures,” and “ecologies” can structure our fate to such an extent as to destroy any hope for emancipatory politics?⁶¹ Is there an ethics of relational thinking, and what does it consist of?⁶² And how do we assess political action if it is situated and context specific? What happens to structural or collective responses? Are we driven to some sort of weird individualism? What is it

⁶¹ Grove implies many important challenges in this regard.

⁶² These have been interestingly developed by Zanotti 2018 and Barad 2007, for example.

to represent beyond the human voice? Who are communities if there are no “I”s or “we”s?

These and many other important questions remain unanswered, or different responses to them are being developed. But they are being asked, seriously, and being explored, seriously. This, if nothing else, is evidence of the significant kind of shift in worldviews that is ongoing in the field of IR, along with many others in the context of the relational revolution.

3.4 Conclusion: Of Jungles, Parks, and Cities?

Those who exist in a Newtonian world of things and their patterns and look for order – in the gardens of IR – may not see this kind of intervention as productive. And yet, within the “ruins” of ecological and human chaos we are facing, it is probably best not to pretend that IR or global power management has succeeded in managing these issues. Perhaps we should, as Grove argues, call out the “old white men [who] still strut around the halls of America’s best institutions as if they saved us from the Cold War, even as the planet crumbles under the weight of their failed imperial dreams.”⁶³ In the real world there is trouble, much trouble, and we need to stay with the trouble, as Haraway would have it.⁶⁴ In a relational universe, perhaps more productive than anything that reproduces the failing orderly IR, with its American hegemony, its colonial impulses, its stubborn state-centrism, its inherent liberal individualism, its alliance with capitalism, is to learn to let go of the special discipline, of the failed paradigms for politics, of the insistent humanism of the social sciences and IR. And we should let go of the measures of success and relevance of those working to a providential plan for human redemption, eventually.

I’m persuaded by the call that we need to get more real. And getting real means also getting real about which kinds of worldviews, or orientations to being in the world, we work with. Relational revolution is here, global ecological collapse is here; “humanity” (as an imagined whole) was never saved and has not saved the world. How do we reckon with this?

The aim of relational thinking is to try to process in and coexist with the world and its rich, real participants, and figure out less brutal ways of living, for more actors. It does not aim to be policy relevant for the “killing machines”⁶⁵ of lifeways, cosmologies, and politics that many of our states, democracies, and economic orders are. What we need to “get with” in a relational perspective, then, is a sense of “letting go” of these

⁶³ Grove 2019: 21. ⁶⁴ Haraway 2016. ⁶⁵ Grove 2019.

orientation points. This letting go is not to give up on politics or community or diplomacy, but it is to give up on imagining political or social orders as a park, carefully managed, ordered, and eradicating of ecologies of relationalities.

The spatial metaphor Smolin prefers for a relational form of life in the universe is a “city.”⁶⁶ For him, a city is a perfect example of a relational unfolding of multiplicities of relations. It is not one “thing”; we don’t know where its “borders” are; it is smeared across humans, nonhumans, and technology and has roots in the rural and the global all at the same time. States are also smeared, and so are we. To think like this is to let go of ontological categories that are fixed – a notion of relations with definitions, but it is to gain a way of knowing and being in the world which is interesting and embedded in the world. In this world, you are made and you are cutting across others as we speak. And you explore, curiously, the relations which make you, but which you can never fully capture. Political being and intra-action is not between defined beings with interests, but “collaboration across difference”⁶⁷ in relations.

It follows that climate change is so many other things than a climate change problem to be solved by humans in the international politics of the humans. In a relational worldview it is a process of negotiation of many actors and relations. It is of the “mesh,” and not to be easily tamed or tackled in a “park” or a “garden.” It is a mess of diverse beings cohabiting, battling for space, transforming and taking over, never uniform, never singular, never nondynamic or nonlinear. Thus is also world politics. Relational IR then too is “doubtlessly messy,” as Kavalski would have it.⁶⁸ That’s not a “problem” if the world is also a mess.

What is required in this mess/mesh is constant wariness of the habits of thought that simplify too much: simplify what it is to think and act politically, simplify what it is to think and act globally, simplify what it is to think and act scientifically. And from this perspective what is needed is fewer new total single global visions – a worldview; rather, what is needed is “multiplying viewpoints so as to complicate all “provincial” or “closed” views with new variants.”⁶⁹

Thinking carefully on worldviews, then, surely is key in this process. But we also perhaps need to think on limitations of how we perceive worldviews. Whose views? Whose worlds? How do worldviews collaborate, conflict, and cohabit? In a relational universe, the key challenge of the social sciences, and of IR, is to adjust to this inherent and constant difficulty and also to the limitations of our thought and practice. Engaging in politics in a relational universe does, then, involve

⁶⁶ Smolin 1997. ⁶⁷ Tsing 2015. ⁶⁸ Kavalski 2018: 101. ⁶⁹ Latour 2018: 13.

a different way of engaging uncertainty, as Katzenstein proposes in the introduction. Paraphrasing Morton, engaging politics in a relational universe is “like knowing, but more like letting be known. It is something like coexisting. It is like becoming accustomed to something strange, yet it is also becoming accustomed to strangeness that doesn’t become less strange through acclimation.”⁷⁰

Bibliography

- Allan, Bentley. 2018. *Scientific Cosmology and International Orders*. Cambridge: Cambridge University Press.
- Bain, William. 2020. *Political Theology of International Order*. Oxford: Oxford University Press.
- Beardsworth, Richard. 2018. “Our Political Moment: Political Responsibility and Leadership in a Globalized, Fragmented Age,” *International Relations* 32, 4: 391–40.
- Blaney, D. L. and A. B. Tickner. 2017. “Worlding, Ontological Politics and the Possibility of a Decolonial IR,” *Millennium* 45, 3: 293–311.
- Burke, Anthony, Stefanie Fishel, Audra Mitchell, Simon Dalby, and Daniel Levine. 2016. “Planet Politics: a Manifesto from the end of IR,” *Millennium: Journal of International Studies* 44, 3: 499–523.
- Chandler, David, Erika Cudworth, and Stephen Hobden. 2017. “Anthropocene, Capitalocene and Liberal Cosmopolitan IR: A Response to Burke et al.’s ‘Planet Politics,’” *Millennium: Journal of International Studies* 46, 2: 190–208.
- Conway, Philip. 2020. “On the Way to Planet Politics: From Disciplinary Demise to Cosmopolitical Coordination,” *International Relations* 34, 2: 157–179.
- Corry, Olaf. 2017. “The ‘Nature’ of International Relations: From Geopolitics to the Anthropocene.” In *Reflections on the Posthuman in International Relations*. E-International Relations Publishing. Available at: www.e-ir.info/publication/reflections-on-the-posthuman-in-international-relations/.
- Corry, Olaf. 2020. “Nature and the International: Towards a Materialist Understanding of Multiplicity,” *Globalizations* 17, 3: 419–35.
- Cudworth, Erika and Stephen Hobden. 2011. *Posthuman International Relations: Complexity, Ecologism and Global Politics*. London: Zed.
- Cudworth, Erika and Stephen Hobden. 2013. “Complexity, Ecologism, and Posthuman Politics,” *Review of International Studies* 39, 3: 643–64.
- Cudworth, Erika and Stephen Hobden. 2017. *The Emancipatory Project of Posthumanism*. London: Routledge.
- Cudworth, Erika, Stephen Hobden, and Emilian Kavalski, eds. 2018. *Posthuman Dialogues in International Relations*. London: Routledge.
- Duara, Prasenjit. 2015. *The Crisis of Global Modernity: Asian Traditions and Sustainable Future*. Cambridge: Cambridge University Press.

⁷⁰ Morton 2010: 5.

- Eckersley, Robyn. 2017. "Geopolitical Democracy in the Anthropocene," *Political Studies* 65, 4: 983–99.
- Fishel, Stefanie. 2017. *The Microbial State: Global Thriving and the Body Politic*. Minneapolis: University of Minnesota Press.
- Grove, Jairus. 2019. *Savage Ecology: War and Geopolitics at the End of the World*. Durham, NC: Duke University Press.
- Haraway, Donna. 2016. *Staying with Trouble: Making Kin in the Chthulucene*. London: Duke University Press.
- Harrington, Cameron. 2016. "Ends of the World: International Relations and the Anthropocene," *Millennium* 44, 3: 478–98
- Kavalski, Emilian. 2012. "Waking IR up from its 'Deep Newtonian Slumber'," *Millennium* 41, 1: 137–50
- Kavalski, Emilian. 2018. *The Guangxi of International Theory*. London: Routledge.
- Kurki, Milja. 2020. *International Relations in a Relational Universe*. Oxford: Oxford University Press.
- Kurki, Milja. 2021. "Relational Revolution and Relationality in IR: New Conversations," *Review of International Studies*. E-pub ahead of print. Available at: <https://doi.org/10.1017/S0260210521000127>.
- Latour, Bruno. 2004. *The Politics of Nature*. Cambridge, MA: Harvard University Press.
- Latour, Bruno. 2018. *Down to Earth: Politics in the New Climatic Regime*. Cambridge: Polity.
- Leakey, Richard and Roger Lewin. 1996. *The Sixth Extinction: Biodiversity and its Survival*. London: Weidenfeld and Nicholson.
- Ling, L.H.M. 2013. *The Dao of World Politics. Towards a Post-Westphalian, Wordlist International Relations*. London: Routledge.
- Ling, Lily. 2017. "Don't Flatter Yourself: World Politics as We Know It is Changing and So Must Disciplinary IR," in Synne Dyvik, Jan Selby, and Rorden Wilkinson (eds). *What's the Point of International Relations?* London: Routledge, pp. 135–46.
- Litfin, Karen. 1999. "Constructing Environmental Security and Ecological Interdependence," *Global Governance* 5: 359–77.
- Mitchell, Audra. 2014. *International Intervention in a Secular Age: Re-enchanting Humanity?* London: Routledge.
- Mitchell, Audra. 2017. "Is IR Going Extinct?" *European Journal of International Relations* 23, 1: 2–35.
- Mitchell, Audra and Aadita Chaudhury. 2020. "Worlding Beyond the 'End of the World': White Apocalyptic Visions and BIPOC Futurisms," *International Relations* 34, 3: 309–32.
- Morton, Timothy. 2010. *The Ecological Thought*. Boston, MA: Harvard University Press.
- Morton, Timothy. 2013. *Hyperobjects: Philosophy and Ecology after the End of the World*. London: University of Minnesota Press.
- Pasha, Mustapha Kamal. 2018. "Beyond the 'Religious Turn': International Relations as Political Theology," in A. Gofas, I. Hamati-Ataya, and N. Onuf, eds., *The Sage Handbook of the History, Philosophy and Sociology of International Relations*. New York: SAGE Publishing, pp. 106–21.

- Qin, Yaqing. 2016. "A Relational Theory of World Politics," *International Studies Perspectives* 18, 1: 22–47.
- Qin, Yaqing. 2018. *A Relational Theory of World Politics*. Cambridge: Cambridge University Press.
- Querejazu, Amaya. 2016. "Encountering the Pluriverse: Looking for Alternatives in Other Worlds" *Revista Brasileira de Política Internacional* 59, 2: <https://doi.org/10.1590/0034-7329201600207>.
- Rocheleau, Dianne. 1996. *Feminist Political Ecology: Global Issues and Local Experiences*. Abingdon: Routledge.
- Rovelli, Carlo. 2014. *Seven Brief Lessons on Physics*. London: Penguin.
- Rovelli, Carlo. 2016. *Reality is Not What It Seems. The Journey to Quantum Gravity*. Trans. by S. Carnell and E. Segre. London: Allen Lane.
- Rutherford, Stephanie. 2017. "Environmentality and Green Governmentality," in D. Richardson, N. Castree, M.F. Goodchild, A. Kobayashi, W. Liu, and R.A. Marston, eds., *International Encyclopedia of Geography: People, the Earth, Environment and Technology*: <https://doi.org/10.1002/9781118786352.wbieg0111>
- Shilliam, Robbie. 2015. *The Black Pacific: Anti-Colonial Struggles and Oceanic Connections*. London: Bloomsbury Press.
- Smolin, Lee. 1997. *The Life of the Cosmos*. London: Phoenix
- Smolin, Lee. 2000. *Three Roads to Quantum Gravity*. London: Phoenix.
- Smolin, Lee. 2008. *The Trouble with Physics: The Rise of String Theory, The Fall of a Science and What Comes Next*. London: Penguin.
- Smolin, Lee. 2013. *Time Reborn: From the Crisis in Physics to the Future of the Universe*. Boston, MA: Mariner Books.
- Sofer, Ken. 2015. "The Realist Case for Climate Change Cooperation, Centre for American Progress." Available at www.americanprogress.org/issues/security/news/2015/11/30/126356/the-realist-case-for-climate-change-cooperation/
- Taylor, Charles. 2008. *A Secular Age*. Boston, MA: Harvard University Press.
- Tsing, Anna Lowenhaupt. 2005, *Friction: An Ethnography of global connection*. Princeton, NJ: Princeton University Press.
- Tsing, Anna Lowenhaupt. 2015. *Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton, NJ: Princeton University Press.
- Tsing, Anna, Heather Swanson, Elaine Gan, and Nils Bubandt, eds., 2017. *Arts of Living on a Damaged Planet (Ghosts)*. Minneapolis: University of Minnesota Press.
- Unger, Roberto Mangabeira and Lee Smolin. 2015. *The Singular Universe and the Reality of Time: A Proposal in Natural Philosophy*. Cambridge: Cambridge University Press.
- Viveiros de Catsro, Eduardo. 2004. "Perspectival Anthropology and the Method of Controlled Equivocation. Tipiti," *Journal of the Society for the Anthropology of Lowland South America* 2, 1: 3–22.

- Ward, Hugh. 2008. "Liberal Democracy and Sustainability," *Environmental Politics* 17, 3: 386–409.
- Youatt, Rafi. 2020. *Interspecies Politics: Nature, Borders, States*. Ann Arbor, MI: University of Michigan Press.
- Zanotti, Laura. 2018. *Ontological Entanglements, Agency and Ethics in International Relations*. London: Routledge.