

'Anthropocene "Time"?'—A reflection on temporalities in the 'New Age of the Human'*

This chapter deploys Haraway's threefold characterization of the contemporary epoch as 'Anthropocene'/'Capitalocene'/'Chthulucene' as a lens through which to reflect upon the nature of the time assumed by mainstream Anthropocene discourse. The chapter argues that the mainstream Anthropocene discourse imposes a linear Eurocentric conception of time on a lively world of variegated temporalities, rhythms and movements. The chapter then reflects upon Capitalocene and Chthulucene temporalities and their respective implications for onto-epistemic in/justice and legal epistemology in an age of Anthropocene crisis.

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Keywords: Anthropocene, Time, Temporalities, Capitalocene, Chthulucene, New Materialism, Law, In/justice, Tentacular Epistemology.

Introduction

In this chapter I explore relationships between geological time, the human, the non-human—and law. I offer ways of thinking about time by reflecting on the bodies of law and of humans/non-humans entangled in the material and semiotic conditions of 'the Anthropocene'—before pointing towards the promise of a 'tentacular' epistemology responsive to complexities and dynamic relationalities.

The following reflection deploys Donna Haraway's threefold characterisation of the contemporary era as 'Anthropocene, Capitalocene, Chthulucene' (Haraway, 2014) as a lens through which to reflect upon the nature of the time assumed by mainstream Anthropocene discourse. I argue here that the mainstream account of the Anthropocene emergence reflects the imposition of an underlying Eurocentric colonial conception of time, and that this can be directly related to a fundamentally linear, market-based notion of civilizational 'progress' foundational to core injustices of the contemporary international legal order. The Eurocentric and market-based temporalities visible in the Anthropocene global present, combined with the selective nature of the *Anthropos* assumed by mainstream Anthropocene discourse, fully support Haraway's argument that the Anthropocene could more aptly be named the 'Capitalocene'. The Capitalocene present will be read here as an order of power in which neoliberal eco-governmentality disrupts a plurality of corporeal temporalities in the service of an increasingly de-materialized and temporally compressed financial-juridical order—with increasingly violent material implications. Finally, I reflect on the liveliness of

* This chapter draws on recent work by the author, in particular, A Grear, 'Anthropocene, Capitalocene, Chthulucene': Re-encountering Environmental Law and its "Subject" with Haraway and New Materialism' in L Kotze (ed.) *Re-Imagining Environmental Law and Governance for the Anthropocene* (Hart/Routledge/Elgar Publishing, 2017) (Forthcoming); and A Grear, 'Deconstructing *Anthropos*: A Critical Legal Reflection on "Anthropocentric" Law and Anthropocene "Humanity"' (2015) 26/3 *Law and Critique* 225-249.

Chthulucene temporalities in order to explore their relevance for onto-epistemic in/justice and legal epistemology in an age of Anthropocene crisis.

Haraway's Framing: Three Stories

Haraway suggests that 'Anthropocene, Capitalocene and Chthulucene' are 'three stories that are too big, and also not big enough' (Haraway, 2014 at 00:18). She offers these three stories as simultaneous alternative ways of characterising the current epoch. The current geological epoch, recently named the 'Anthropocene' (Crutzen, 2002) can, she suggests, also be named the 'Capitalocene' and the 'Chthulucene'. The present reflection uses this threefold lens to shape an analysis suggesting that all three ways of naming 'the epoch' (its very temporal identification is, of course, indeterminate and controversial) have overlapping and distinctive relationships with time and temporalities. The question animating the present reflection is how, in each naming/framing of 'the epoch', certain patterned relationships concerning the construction and deployment of 'time' reflect constructions of agency and the operation of power—including through law. My initial suspicion in relation to this question is that both the Anthropocene and Capitalocene tropes reflect oppressive deployments of abstract time as a technical horizon for linear 'human progress' conforming to historical and contemporary trajectories of Eurocentrism: In this context, the Chthulucene (Haraway's third and countervailing 'story') offers a multiplicity of temporalities—an actuality reflecting processes of materialisation. As Haraway's thought reveals, such processes radically de-centre human agency and enfold it within a multiverse of material agencies. Within the Chthulucene field of attention, temporalities operating at various scales and speeds and expressing multiple modes of lively entanglement challenge, I suggest, the monological chrono-diction that forces 'time' onto the energies of the world. In this light, it is possible that the Chthulucene also invites the development of an onto-epistemic humility radically open to multiple materio-temporalities—and that such attentiveness may even generate a life-world, 'just maybe' (to borrow Haraway's words) 'more liveable' (Haraway, 2014 at 1:05). Might the tentacularity of the Chthulucene inspire and inform legal epistemology? Is there a chance that the temporalities of the Chthulucene might direct attention towards the world's 'independent sense of humor' (Haraway, 1998 at 593) as a potential way of re-encountering new dynamics of justice-making?

Time and temporalities—an initial clarification of 'clock time' as a critical target

Before beginning our threefold journey through Haraway's stories, it seems important to trace for the purposes of the present argument the distinction between 'time' and 'temporalities' as the terms will be deployed here. Hoy draws 'a conceptual distinction' between the terms: 'The term "time" can be used to refer to universal time, clock time, or objective time. In contrast, "temporality" is time insofar as it manifests itself in human existence. . . . "lived time," or "human temporality"—hence, "the time of our lives" (Hoy,

2009, at xiii).

For present purposes, clock time will be accepted as a reference to a time thought to be universal, or objective—and the notion of temporality will be pluralised in order to refer to the multiplicity of lived times and speeds of living materiality. This pluralisation, moreover, is emphatically not limited to 'human lived time' as a referent, but seeks to entangle human lived times in living assemblages of more-than-human temporalities and agencies. It is clear also that temporalities cannot be separated from spatialities, such that temporalities are always intrinsically spatio-temporal.¹ Finally, it is also accepted that the spatio-temporal is always and everywhere simultaneously and inseparably both semiotic *and* material: matter and meaning are inter-permeated (*everything* is materio-semiotic²)—and that the materio-semiotic is thus always intrinsic to spatio-temporal assemblages.

Clock time, as Hoy's conceptual definition implies, is often thought of as being objective or abstract time, operating as a stable referent that facilitates the interchangeable uniformity of time as measure (Fuchs, 2014 at 101 citing Postone, 1993 at 200ff, on the distinction between abstract and concrete time). This notion of time, though, cannot entirely escape its political relations with a particular temporality: for all its conceptual distinguishability from 'lived time', 'clock time' inescapably takes on flesh in human experience, is materially expressed and phenomenologically present. 'Clock time', in other words, can be read critically.

For the purposes of this chapter, clock time will be deployed as a metaphor for the way in which the historical domination exercised by Eurocentric linear 'progress narratives' was facilitated precisely through the expansion of technologies, particularly steam technologies (rail and boat), *requiring* the imposition of clock time upon multiple pre-existing temporalities. Clock time, in other words, will be read here as a kind of disciplinary practice—as a kind of chrono-politics: *time-discipline* was a powerful tool (May and Thrift, 2001 at 33) in the spatio-temporal spread (and violence) of the rationalist European ontological and epistemological 'mastery' expressed through colonial law and praxis. Clock time—much like the Eurocentric figure of 'the human' (and law's archetypal person) whose very specificity is cloaked beneath the surface neutrality of the universal—can be read as a specific form of particularity promoted through a trope of objectivity. As May and Thrift note, 'Western time and space, at least in a Euclidean form, has been seen as a norm which simply does not require investigation' (ibid). Yet, until the arrival of clock time—even in Europe—time was a variable measure, responsive to the ebbs and flows of living materiality, such that 'in Europe, it was common until the 14th century that an hour had a different length depending on the season' (Fuchs, 2014 at 101).

Homogenized clock time appears to have been imposed in the cause of the routinized control of bodies in capitalist production practices—and in the context of colonialism, clock time functioned as an intrinsic aspect of the

¹ This is an important implication of Valverde's recent work on the relations between time and space: See Valverde 2015. See also, Philippopoulos-Mihalopoulos, 2015 for an important review of (and corrective to) Valverde's argument.

² This is a central insistence in Haraway's work.

European imposition of orders of time, space, knowledge and being on indigenous communities and their varied pre-existing temporalities and life-worlds: Clock time operated as a material practice of colonial expansion and of mastery and control (Nanni, 2012; Smith, 1997)—and lies, therefore, in the foundations of the current international legal order, which was built upon those self-same colonialist foundations (See the work of TWAIL (Third World Approaches to International Law) scholars, particularly Anghie, 2005).

It is against these opening observations that we turn to the reflections upon time and temporalities in the Anthropocene.

Anthropocene

Haraway opens her reflection by arguing that the contemporary revolution in the natural sciences forces two major shifts in understanding: first, that 'individualism, methodological individualism and human exceptionalism' (themselves intrinsically Eurocentric and foundational, it should be noted, to the colonial encounter) are now 'literally unthinkable' for the most pioneering work conducted across the disciplines; and secondly, that the 'tissues of being anything at all' demand a long overdue recognition 'that those who *are* have been in relationality all the way down' (Haraway, 2014 at 02:20). Against these two important assertions, Haraway sets out both to 'justify' and to 'trouble' the human centrality figured by the terminology of the Anthropocene (ibid, 03:23).

'The Anthropocene' (a term popularized by Crutzen (2002, at 415)) is an intrinsically spatio-temporal term, referencing, as it does, a collective reference to 'humankind' as a geological agent operating at the planetary scale—and simultaneously presenting the temporal shift from one epoch to another. The etymology of the term 'Anthropocene' explicitly refers to *Anthropos* ('man') and *kainos* or the 'new'. The term is designed to reflect the claim that the earth system has left the Holocene geological era by entering a new one in which the entire future temporal horizon is dominated by the 'impact of current human activities ... projected to last over very long periods' (ibid). Past, present and future are thus necessarily folded into the Anthropocene trope in thoroughly material ways. The terminology simultaneously implicates the impact of the past, the looming pressures of the present, and the long temporal arc of the imaginable future. Crutzen's formulation (though he does not characterise it in such terms) is, moreover, inherently spatio-temporal-material. Addressing the impact of past human activities, for example, he writes:

Considering these and many other major and still growing impacts of human activities on earth and atmosphere, and at all, including global scales, it is thus more than appropriate to emphasise the central role of mankind in geology and ecology by using the term 'Anthropocene' for the current geological epoch (Crutzen, 2006 at 16).

Scale (including the global), spread through space and atmosphere, action upon the materiality of the earth system, and intricate temporalities are

inseparable in this formulation: the Anthropocene, collapsing multiple traditional spatial and temporal boundaries as it does, is intrinsically a spatio-temporal-material phenomenon.

Yet, if any single exigency dominates the Anthropocene horizon, it is surely the threat of the looming climate crisis: 'the most salient and perilous transgression of Holocene parameters' (Malm and Hornborg, 2014 at 63). The threat of terminus lurking in the Anthropocene climate crisis is all-encompassing in scale and scope: Haraway points out that the Anthropocene is intrinsically connected to the scale of the 'global', including in the policy imagination of bodies such as the Intergovernmental Panel on Climate Change. Yet the global—as Haraway also rightly adds—is *highly specific* in its historical and material origins and development (Haraway, 2014 at 14:02). The 'global' can be read as a spatio-temporal order of power for which the ideological tilt of the international legal order is pivotal, and likewise, the Anthropocene itself scarcely emerges as a neutral process. The 'history' in Crutzen's account, for example, is far from universal, despite his implicit formulation of it as a species-wide story. Folded into the production of the Anthropocene crisis is the colonial past—and a neocolonial present—expressing a distinctively Eurocentric epistemology largely based on the dematerialized Cartesian rationality that has led, in Merchant's words, to 'the death of nature' (Merchant, 1980). The 'global' is indeed highly specific in its origins and development. Indeed, the foundations of the current global order rest on colonial industrial foundations expressing Eurocentric assumptions concerning civilizational hierarchy and the objectification of 'nature' (Anghie, 2005; Gonzalez, 2015). Indeed, as Chakrabarty has argued,

The phenomenon of 'political modernity', namely the rule by modern institutions of the state, bureaucracy, and capitalist enterprise—is impossible to *think* of anywhere in the world without invoking certain categories and concepts, the genealogies of which go deep into the intellectual and even theological traditions of Europe (Chakrabarty, 2007 at 4).

It is thus impossible, as Chakrabarty insists, to escape 'Europe' as 'an imaginary figure that remains deeply embedded in *clichéd and shorthand forms* in some everyday habits of thought . . .' (ibid). And while the mainstream account of the Anthropocene's emergence has been criticised by Morrison for representing 'an effort to expand (rather homogenized) European historical experiences, frameworks and chronologies onto the rest of the world ... and [for hiding] a disturbing extension of colonial discourse into a postcolonial world' (Morrison, 2015 75-6), there are nonetheless important critical gains from reading the Anthropocene crisis—particularly climate crisis—as the result of *precisely* such colonial practices. There is related a sense, moreover, in which the international legal order never really became *postcolonial* at all.

Indeed, the *Anthropos* of the Anthropocene can be read as being an intrinsically Eurocentric figuration reflecting the historical dominance of a highly particular sexed and racially specific trope of the 'human' (Gear,

2015), and the Anthropocene climate crisis itself as a crisis of hierarchies of being emerging from fundamentally European subject-object relations (Gear, 2014). Crutzen's elevation of steam technology and, in particular, his elevation of the invention of the steam engine, as the origin point of the Anthropocene presents an apt critical target in so far as this reflects, potentially, an element of Eurocentric hubris. However, in a vein sympathetic to critiques concerning the Eurocentricity of Anthropocene discourse, others point out the colonial dark side to steam technology itself.

Eurocentric logics of time and action are implicit in Crutzen's (now mainstream) account. Crutzen traces the Anthropocene's emergence to markers in data 'retrieved from glacial ice cores' revealing the intensification of greenhouse gases (especially CO₂, CH₄, and N₂O) dated from the eighteenth century. 'Such a starting date', he observes, 'coincides with James Watt's invention of the steam engine in 1782' (Crutzen, 2006 at 16). Crutzen thus installs an icon of European industrial and technical mastery at the heart of the 'standard Anthropocene narrative' (Malm and Hornborg, 2014 at 63). And he is not alone in this: the steam engine is 'often referred to as the *one artifact* that unlocked the potentials of fossil fuel energy and thereby catapulted the human species to full spectrum dominance' (ibid, emphasis added). Accordingly, Morrison's critique of the terminology and concept of the Anthropocene, noted above, readily makes a critical mark.

The Anthropocene climate crisis, however, also reflects the imposition of European frameworks and chronologies on the rest of the world through colonial praxis. The climate crisis richly suggests the centrality of the industrial capitalist fossil fuel economy to the genesis of Anthropocene crisis—an economy that reflected, from its early days, the racist colonial hierarchies imposed and legitimated under cover of law. Malm and Hornborg, for example, argue that the deployment of steam-power was a power exercised by 'an infinitesimal fraction of the population of *Homo sapiens* in the early 19th century' and was fundamentally colonial in motivation:

A scrutiny of the transition to fossil fuels in 19th-century Britain . . . reveals the extent to which the historical origins of anthropogenic climate change were predicated on highly inequitable global processes from the start. The rationale for investing in steam technology at this time was geared to the opportunities provided by the constellation of a largely depopulated New World, Afro-American slavery, the exploitation of British labour in factories and mines, and the global demand for inexpensive cotton cloth. Steam-engines were not adopted by some natural-born deputies of the human species: by the nature of the social order of things, they could only be installed by the owners of the means of production. A tiny minority even in Britain, this class of people comprised an infinitesimal fraction of the population of *Homo sapiens* in the early 19th century. Indeed, 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. Capitalists in a small

corner of the Western world invested in steam, laying the foundation stone for the fossil economy (Malm and Hornborg, 2014 at 63-4).

The Anthropocene climate crisis, is in a significant sense, precisely the material outcome of imposing 'European historical experiences, frameworks and chronologies' onto the rest of the world, and in the process, constructing and dominating the 'global'. And the 'time' of the 'global' is a spatio-temporal expansion of European dominance. Indeed, the very ideology of 'progress' in the 19th century 'made modernity or capitalism look not simply global but rather ... something that became global *over* time, by originating in one place (Europe) and then spreading outside it' (Chakrabarty, 2007 at 7). The spatio-temporality of Europe, one might say, was made global along a linear conception of time as progress for which historical time itself takes on a "'first in Europe, then elsewhere" structure' (ibid). And there has been a complex internalisation and replication of this temporal linearity as 'different non-Western nationalisms would later produce local versions of the same narrative, replacing "Europe" by some locally constructed center' (ibid). Indeed, *so specific* is the global in terms of its historical and material origins and development (Haraway, 2014 at 14:02) that, as Haraway notes, there is a sense in which the 'Anthropocene' would better be named the 'Capitalocene'.

Capitalocene

Perhaps in the light of the analysis above, it is unsurprising that at the heart of the standard Anthropocene account, masked by terminology addressing the collective impact of humanity on the earth's climate, there lurks a particularly Eurocentric subject: *Anthropos*. Haraway names *Anthropos* as 'fossil-making man burning fossils' (Haraway, 2014 at 10/02)—a term aptly reflecting the centrality of the fossil fuel economy not only to the climate crisis, but to the spatio-temporal 'development' so freighted with Eurocentric hierarchies of being—and dominated by the linear 'time' of civilizational 'progress'. As Huggan and Tiffin point out, 'Western history, in both its Marxist and capitalist incarnations, worked "to assimilate diverse cultures and spiritual traditions into a homogeneous code", at the same time as it naturalised "uneven economic development according to a linear narrative of civilization"' (Huggan and Tiffin, 2007 at 2). This narrative of civilisation, intimately imbricated with the expansion of European colonial law, assumed 'European development as the natural goal' and naturalised 'uneven development' to lock 'colonized peoples to a stage in the European past' (ibid). Critically, a linear conception of historical time was a tool of power for the establishment of Eurocentric capitalist 'progress', such that '[d]ifferent cultures, with very different notions of time, all found themselves on the lower rungs of the ladder of progress, wrenched out of a time of land and ancestry and subjected to the exigencies of Greenwich mean time or, in its modern form, "corporate time"' (ibid).

Haraway's suggestion is that the Anthropocene is more aptly named the Capitalocene (Haraway, 2014 at 16:35). A 'capitalocene' dynamic is implicated in Malm and Hornborg's critique of the Eurocentric and uneven

processes involved in the genesis of the Anthropocene climate crisis. Such critique, moreover, converges with powerful critical legal accounts pointing to the foundations of international law as a colonialist-imperialist project (Anghie, 2005). Anghie argues that the ambition of Northern states for 'natural resources' to feed their increasingly industrialised social order and the colonial suppression of 'Third World' peoples lies at the heart of nineteenth century global expansionism (ibid, at 211). The international legal foundations laid in the colonial era shape the postcolonial global order to such an extent now that it is questionable whether the global order, as noted above, ever became truly *postcolonial* at all. The persistence of the colonial dynamic, its capitalistic impulse and its juridical facilitation by law is clear in Simons' statement that

[t]he underlying purpose of international law that was developed in the context of the colonial and post-colonial eras was precisely the promotion and protection of economic interests of the North. Thus, as newly independent states emerged from colonial rule as sovereign entities and attempted to assert their sovereignty and establish control over their natural resources, Northern states responded using legal doctrines such as state succession, acquired rights, contracts and consent to protect *the interests of their corporate nationals* in these states and to resist the attempts by these new sovereign actors to establish a new international economic order which included their own sovereignty over their natural resources' (Simons, 2013 at 2001).

The locking-in of the future in capitalist terms achieved by the international legal order thus aptly corresponds with Haraway's descriptions of the Capitalocene as a set of processes characterised by 'primitive accumulations and extractions, organizations of labour and productions of technology of particular kinds for the extraction and maldistribution of profit' (Haraway, 2014 at 16:51). Both implicitly and explicitly the Eurocentric concept of a linear 'time' and 'progress over time' was imposed upon pre-existing varied life-worlds and indigenous ontologies, epistemologies and chronologies. The European construct of time as objective measure, amounts, I suggest, to a chrono-politics. Colonial 'time' emerges from such a reflection as a spatio-temporal-material assemblage characterised by the primacy of steam technology. Steam technology—and '*the time*' it essentialised—disrupted spatio-temporal relationships, unsettled geographies, disturbed positionalities. Stein argues that in Europe and North America, the 'introduction of railway, telegraph and steamship services radically reoriented geographical and temporal relationships'—developments that were reflected in the phrase 'the annihilation of space and time' (Stein, 2003 at 109). Such developments were crucial, of course, to the circulation of capital through global markets, and steam technology played a fundamental role, as was noted above, both in the building of colonial capitalist markets—and in the service of a small elite that 'aimed steam power' at the rest of the world (Malm and Hornborg, 2014). The impact of the railway was to shrink space by the speed of movement between places, and Stein suggests that 'the metaphor of "annihilation evoked the

sudden impact and violence of the railway as it overturned existing notions of time and distance. On the one hand, the railway opened up new spaces and made them much more accessible. On the other, the railway seemingly destroyed space and diminished the uniqueness of individual places' (Stein, 2003 at 109). The imposition of European 'clock time' based around uniform railroad time further undermined distinctive senses of place: the need for scheduling 'gradually made the existence of multiple local times untenable' (ibid). Significantly, the railway as the expression of European steam technology and market relations was also intimately linked to technological developments in communications. These facilitated simultaneous communication that allowed rail companies to ensure uniform operations across their network of nodes, operations and staff. The social implications of this were profound. Carey, as Stein notes, has argued that such instantaneous communication brought 'changes in language, knowledge and awareness, leading, for example to "scientific" newspaper reporting, with news stripped of its local and regional context' (ibid). Communication itself was transformed in this process:

Politically, it made the idea of 'empire' practically possible by allowing distant colonies to be controlled from the centre. Economically, it evened out commodity markets, diminished the significance of local conditions of supply and demand, made geography seemingly irrelevant, and shifted speculation from space to time, making possible the emergence of a futures market (ibid, 110).

Steam technology, and the demand of railway systems for a unifying sense of time and communication, are thus inaugural to the colonial disciplining of time and space in the foundations of the global order (and implicated—necessarily—in a related eradication of the uniqueness of indigenous place and of multiple indigenous temporalities). The imposition of 'clock time'/'the time'/'corporate time' was operatively fundamental to the colonial (capitalist) foundations of the Anthropocene crisis. The mid-nineteenth century development of a network of rail, steam-ship and communications technologies produced and imposed temporal disciplinarity and ensured greater global interconnectivity, but 'in widening the gap between the places accessible to the new technology and the rest, ... intensified the relative backwardness of those parts of the world where horse, ox, mule, human bearer or boat still set the speed of transport' (Hobsbawm, 1975 at 60, cited by Stein, 2003 at 110). This gap between European and indigenous temporalities, in turn, reflexively fed the myth of European superiority and bolstered the 'emerging nineteenth century ideologies of Western dominance' (Stein, ibid, citing Headrick, 1981 and Adas, 1989).

Such colonising dynamics are central to understanding the climate crisis itself as a *crisis of human hierarchy* (Gear, 2014) and to appreciating the salience of Haraway's claim that the epoch is usefully characterised as the Capitalocene. The Capitalocene remains marked by the 'Europe' without which we cannot even *think* global political modernity (Chakrabarty, 2007). The Capitalocene is the outcome of the savage force of instrumentalist

European rationalism, with its linear temporality and the ecocidal material practices that enact its reductive construct of 'nature' (Geisinger, 1999 at 52-8) as raw material for the capitalist machine—and the legal subject-object relations that gave these juridical force. The Capitalocene remains an epoch intransigently marked by patterns of eco-violation with which law is thoroughly complicit. These patterns, indeed, reflect and deepen entirely predictable, familiar and well-rehearsed (and to varying degrees, legally mediated) distributions of intra-species and inter-species injustice (see, e.g: Collard and Contrucci, 1988; Nibert, 2002; Dekha, 2008; Nibert, 2013). These patterns are so fundamental to the present epoch that 'the Anthropocene' cannot be properly understood without them.³ And, central to the spatio-temporal violence enacted in the Capitalocene is the history of a fossil fuel economy inseparably related to the Anthropocene climate horizon (Newell and Paterson, 2010; Koch, 2012), and *locked-in*, by capitalist priorities and juridical structures (including the international legal order itself), to the path-dependencies of the contemporary global fossil fuel regime (Dangerman and Schellnhuber, 2013).

While Haraway argues that the Capitalocene pre-dates the height of European colonial expansionism (in earlier trade relations), there can be no doubt that the Capitalocene reaches its apotheosis in the drives, fractures and regime structures of capitalism as an *imperialistic* ideology (Woods, 2005). The figuration of the Capitalocene thus drives directly at the radical unevenness characterising the contemporary neoliberal legal order and its antecedent periods of primitive capitalist accumulation and enclosure (Ricketts-Curtler, 1920; Westra, 2004).

What of time and temporalities in the Capitalocene? We have already adverted to the space-time compression produced by capitalist industrial demands and the genesis of regularising technologies demanding the deployment of clock time as a mode of chrono-politics expressed as 'corporate time'. We have also seen that such spatio-temporal practices were intrinsic to the juridical expansion of European capitalist ambition across the globe. In these more eco-conscious times, however—in the light of an Anthropocene awakening to the dark side of capitalism's 'progress'—is there hope that patterns of domination might shift? Perhaps. There are certainly signs of extensive social movement resistance to capitalist priorities—for example in the food sovereignty movements in the Global South and elsewhere against the injustices of the neoliberal food regime (McMichael, 2012), in commons-based initiatives and the like,⁴ but, notwithstanding such counter-movements and forms of resistance, the hegemonic structures of contemporary order seem to remain firmly in place. Neoliberal power remains adaptive, predatory and in the ascendance. Indeed, counter-movements are all too often placed in a highly ambivalent relation to neoliberalism—frequently re-captured by its re-colonisation of liberatory counter-discourses

³ This is a central concern for Malm and Horborg (2014). See also the work of Bookchin, for whose social ecology account *intra*-species practices of domination were causally decisive for practices of ecological destruction: Bookchin, 2005).

⁴ See, for a range of essays on the variety of commons and commons-based approaches emerging, D Bollier and S Helfrich, 2015.

(Caffentzis, 2010). The general picture at this historical juncture remains troubling notwithstanding emergent signs of hope: millions of marginalized, colonized 'others' are still subjected to forms of domination serving Global North imperatives (Gonzales, 2015), assumptions of a Eurocentric epistemological mastery and ontological priority enacted from 'the centre' (Code, 2006), and the imperialistic residues of 'first in Europe, then elsewhere' time (Chakrabarty, 2007).

If anything, a kind of Global North juridical managerialism in the name of the 'global' grows ever more pernicious in its implications. Intensifying forms of eco-governmentality are legitimated by the concern of 'the centre' with the 'global' management of the planet in the name of various forms of 'security' (Global North security). Such practices are widely (and rightly) accused of being intensifying spasms of neocolonial domination (Geisinger, 1999).

Environmental law and governance provides a particularly significant example in the Anthropocene context. It is easy to assume that environmentalism would be a progressive counter-movement to market ideology, but environmental law and governance has increasingly turned to 'green economy' thought. Luke, drawing on Foucault's analysis of biopolitics suggests that the edifice of environmental governance now dominating the realm of the global expresses a distinctively neoliberal market 'environmentality' (Luke, 1995). 'The environment' is fully rendered as a set of 'sites of supervision' through which 'environments can be disassembled, recombined and subjected to the disciplinary designs of expert management... redirected to fulfil the ends of other ...scripts': 'Environmentality... embeds instrumental rationalities in the policing of ecological spaces' (ibid, at 65). The policing of such spaces (all over the world) amounts to the striation of the living order into eco-enclosures (spatio-temporally-materially) for practices of financial accumulation. Such practices privilege and enact suspect logics of (capitalistic, Global North-favouring) development discourse (the 'progress narrative' re-presented), precisely as a *rationalisation* for neoliberal governmentality itself (McMichael, 2012; Corson and McDonald, 2012). As Luke puts it, as 'new mediations of development and growth were constructed after 1945, the geo-power/eco-knowledge nexus of environmentalization came to comfortably supplement the high technology, capital intensive development strategies that have since been implemented' (Luke, 1995 at 67). A 'progress/development'-legitimated chrono-politics is still operative within neoliberal global scripts—scripts profoundly continuous with the early colonising juridical impulses and the linear 'time' of 'progress' lying at the dark heart of the Anthropocene-Capitalocene. The implications of this trajectory remain violent and radically Eurocentric: the resource managerialism intrinsic to such strategies is operationalised by dense networks of corporate-managerial-administrative regulatory regimes facilitating a spectacular range of corporate 'land grabs' and dispossessions in the name of 'environmental protection'—in short, an extensive, planetary land grab driven by the 'rational planning of the planet for Northern security' (McMichael, 2012 at 685, citing Sachs, 1993 at 20).

The linear temporality implied by 'development' as the later proxy for

'progress' is, of course, not the only temporality at play in the Capitalocene. The contemporary Capitalocene has a linear trajectory, but this trajectory plays itself out in highly varied temporal disruptions and multiple temporalities: disjunctures between the temporalities of capital and of bodily rhythms and seasons; tensions between the wider rhythms and variegated beats of the living order and the striated times of technological systems—and the sense in which, in some developments, temporalities are forced together in the materiality of crops themselves (think of Monsanto's 'terminator' seeds (see below), for example). Then there is the overall sense of velocity, intensification, of temporalities folding in on each other unpredictably, even as the linearity of the 'time' of progress/development retains its overall place as an ideological trope taking us far into an unknown techno-future. Sutherland argues, for example, that 'the network society is characterized by an almost-universal belief in a linear progression of technological development in which incremental and seemingly unremarkable developments in digital technology exhibit an increasingly rapid pace of introduction, presenting a continually shifting, seemingly irreversible telos of speed, mobility and productivity' (Sutherland, 2014 at 57). He adds, later, that

the teleology of speed is more than just a metanarrative of progress; it is a telos of indeterminacy or contingency – the utopian future that drove Enlightenment philosophers is replaced by a distant horizon; one that only retreats further the faster we get. Speed becomes an end in itself: it is not a means to a better future, it is a final cause that infects almost every element of our mediative environment, built upon a narrative of technological development that has long forgotten the rationale – that is, the terminus – of its own existence. This is a teleological nihilism, in which the violence of speed cannot any longer even promise a better world, all it can do is offer itself as a means of acceleration towards a future about which we know little, and hope even less (ibid, at 59).

The Capitalocene thus hurls itself towards an unreachable horizon, driven by its compulsion towards limitless growth and intensifying managerialism, while the Anthropocene horizon looms, insisting on ecological limits—full of threat. The sense of temporal dislocation manufactured by the instantaneity of data transmission induces a sense—or perhaps for some even a fantasy—of escaping spatio-temporal limitations—with potentially destructive results. Temporalities collide, inter-penetrate—like reactive elements. Reisch argues that 'the ecological crisis can be read as a clash of different timescales. The timescale of modernity—with the acceleration of technological innovations—collides with the timescales that govern life and the earth ('biological time') (Reisch, 2001 at 371). He points out that nonrenewable resources are consumed at a rate 'infinitely faster than the process of sedimentation'—and that in the case of that most Anthropocene of phenomena, global warming, 'we find that the speed of industrial emissions outstrips the speed of assimilation and that vegetation does not have enough time to adapt to shifting temperature zones caused by the greenhouse effect' (ibid). The

spatio-temporal, here, emphatically, cannot be seen as anything but material. Timescale clashes are, inevitably, spatio-temporal-material collisions. Meanwhile, the financialisation of nature, in which speculation increases on virtual futures (in species extinction, water shortage and the like, traded on markets driven by instantaneous global algorithmic flows) continues apace even as corporate responses to the climate crisis rationalise the impregnation of biological temporalities with altogether different temporalities inscribed into the materiality of crops: Monsanto's terminator seeds, for example, prevent germination, abruptly truncating the biological temporalities of crops with corporate segments of commodified time.

Chthulucene—materiality's spatio-temporal semiosis

Haraway's third framing of the Anthropocene epoch is 'the Chthulucene'. Haraway emphasises two main thoughts in relation to this. First, she points to the way in which biology is shattering the myth of human exceptionalism and individualism, arguing that '[w]e are all lichens now. We have never been individuals. From anatomical, physiological, evolutionary, developmental, philosophic, economic, I don't care what perspective, we are all lichens now' (Haraway, 2014 at 22:33). Secondly, Haraway emphasises the 'tentacularity' associated with the Chthulucene.

Haraway's claim that 'we are all lichens now' refers to a phrase from Scott Gilbert, who (with Sapp and Tauber) proposes the necessity for a symbiotic view of life, insisting that 'we have never been individuals' (Gilbert et al, 2012). Gilbert et al begin by noting the way in which individualism—which emerged 'with the appearance of the independent citizen' (and, we must note here again, this citizen is a quintessentially Eurocentric construct reflecting the ontology of *Anthropos* (Gear, 2015))—shaped biological assumptions concerning the existence of individual animals, plants and the like. In the second half of the nineteenth century with the emergence of ecology, systems were seen as complements to individuals (Gilbert et al, at 326). With the emergence of ecology, the rigidly binary Cartesian separation between (disembodied, rational) humanity and *the rest* began to fray, but new technologies now emphatically problematise the status of individuality (and thus individualism). New technologies in existence at the present time

dramatically transform our conceptions ... [and] have not only revealed a microbial world of complex and intermingled relationships—not only among microbes, but also between microscopic and macroscopic life. These discoveries have profoundly challenged the generally accepted view of 'individuals' (Gilbert et al, 2012 at 326).

Haraway likewise insists that 'we are all lichens now'. Lichens have been defined as 'symbiotic associations between two (or sometimes more) entirely different types of microorganism' (Deacon, 2013). Importantly, though, 'lichens are unique because they look and behave quite differently from their component organisms. So lichens are regarded as organisms in their own right...' (ibid). Gilbert, Sapp and Tauber argue that *all* 'animals are symbiotic complexes of many species living together' (Gilbert et al, 2012 at 326-7).

Haraway's Chthulucene is a world relational 'all the way down'—an entangled world of hybrids and critters: a world of lichens. Framing the Chthulucene as an epoch in the way that Haraway does, presents an overt invitation to celebrate the porous movements, drifts and vectors of a world alive and moving at multiple scales and tempos. And just as the biological sciences incontrovertibly reveal complex lively relationalities at all scales, from the microscopic to the macroscopic, so other broadly New Materialist accounts (responding to such science⁵) point to assemblages operating at multiple scales and look explicitly towards the lively meaning-making capacities of materiality itself—to materiality's semiosis. Materialities and meanings co-emerge as materio-semiotic entanglements—and this necessarily means that the world is a multiplicity of overlapping, porously open spatio-temporalities. Chthulucene temporalities are thus also a lively entanglement, and if, as Coole and Frost argue in *New Materialisms: Ontology, Agency and Politics*, (2010) 'foregrounding material factors and reconfiguring our very understanding of matter are prerequisites for any plausible account of co-existence and its conditions in the 21st century' (ibid, at 2), so too is humble attentiveness to the materiality of lively time-spaces and spatio-temporal movements. ⁶

Indeed, respect for variegated spatio-temporalities is fundamental to countering the violent chrono-politics of neoliberal capitalism. The stakes could hardly be higher in the Anthropocene epoch. Foregrounding material factors and reconfiguring our very understanding of materiality and its multiple temporalities will *necessarily* present 'nothing less than a challenge to some of the most basic assumptions that have underpinned the modern world, including its normative sense of the human and its beliefs about human agency, but also regarding its material practices such as the ways we labor on, exploit and interact with nature' (Coole and Frost, 2010 at 4). In short, Eurocentric ontological and epistemological assumptions (including chronological constructions) are pervasively challenged by an understanding of matter as 'materialization [,] a complex, pluralistic, relatively open process' in which 'humans [are] thoroughly immersed within materiality's productive contingencies' (ibid, at 7). Such insights cut at the very heart of the idea that 'agents are exclusively humans who possess cognitive abilities, intentionality and freedom to make autonomous decisions and the corollary presumption that humans have the right or ability to master nature' (ibid, at 10).

The epistemic implications of such an understanding are profound. Haraway's insistence that 'we are all lichens now' folds human flesh into a much wider field of materio-semiotic energies. The de-centred human is re-positioned as just one partner in a 'spatial and temporal web of interspecies dependencies' (Haraway, 2008 at 11). Politically, such a position has the potential to disturb the chrono-politics of Eurocentric 'progress' so implicit in the Capitalocene trope. Indeed, the managerialism at the heart of the meta-narrative of linear progress/development is thoroughly laid bare to the critical

⁵ An excellent general introduction to New Materialism and its links with emergent science is provided by Coole and Frost, 2010.

⁶ Some gestures towards such an attentiveness are made by, for example, Critical Environmental Law. See Philippopoulos-Mihalopoulos, 2011,

gaze. New Materialist frames of analysis draw together the effects of macro-structural projects such as the international economy, neoliberalism's 'well-honed micro-powers of governmentality' and the sheer materiality of existence as corporeal beings inhabiting 'a world of natural and artificial objects' and having biological needs (Coole and Frost, 2010 at 27). New Materialist framings place all these and more in relations where capitalist agency—and its accumulative market and individuated legal subject—is no longer inevitably prioritized. Indeed, the focus of attention moves away from 'individual bodies, subjects, experiences or sensations' towards 'assemblages of human and non-human, animate and inanimate, material and abstract, and the affective flows within these assemblages' (ibid, at 406). The frame of analysis fully embraces materiality and the affective energies of multiple spatio-temporalities.

For Haraway, embracing the Chthulucene as a way of thinking the Anthropocene epoch holds out hope of 'something—just maybe—*more liveable*' (Haraway, 2014 at 01:05). I suggest that central to the search for this 'something more liveable' is fresh attention to what Code has called the *politics of epistemic location* (Code, 2006). Such a politics necessarily involves confrontation with the neoliberal panopticon at the heart of intensifying levels of eco-governmentality. The Chthulucene is, as noted above, an age of 'tentacularity'—and this can easily be read as an invitation to epistemic tentacularity: What if human epistemic engagements were to 'begin in the middle' (Philippopoulos-Mihalopoulos, 2011) rather than at the assumed 'centre'? What if control and commodification fantasies were abandoned in favour of a respectful, tentacular exploration of materiality in all its variegated spatio-temporal expressions? What if such an approach were to yield what Code calls for in the shape of a fully 'ecological epistemology'?⁷ And what might this mean for law's epistemic practices?

In Code's words, such an epistemology 'emerges from and addresses so many interwoven and sometimes contradictory issues ... that its implications require multifaceted chartings' (Code, 2006 at 4). This, then, is an epistemology characterised by epistemic practices particularly sensitive to local, situated diversities and 'proposes a way of engaging—if not all at once—with the implications of patterns, places and the interconnections of lives and events in and across the human and nonhuman world ... in projects of inquiry ... where epistemic and ethical-political concerns are reciprocally informative' (ibid). A tentacular epistemology would, I suggest, necessarily feel its way along the particular in its unrepeatability and singularity and invites a mode of knowing that is knowingly incomplete. This, in turn, invites epistemic relationalities of all kinds, including interspecies engagements—which would necessarily involve attentiveness to relationalities within variegated spatio-temporalities. Might such thinking not inspire new partnerships of knowing? Even for law? Might not such tentacularity invite the thinking of 'the human' into a lichen-like 'mutual and dynamic crafting of people and environments' (ibid, at 280)? That this tentacularity is a live possibility for legal systems is already richly implied by Critical Environmental Law's insistence upon the

⁷ This is the essence of Code's project (Code, 2006).

importance of attending to singularity (Philippopoulos-Mihalopoulos, 2011),⁸ and by existing modes of epistemic legal praxis that draw upon the mutual crafting of environments by animals and people (Philippopoulos-Mihalopoulos, 2012; Pieraccini, 2012), such that property relations—for example—become the ‘contingent product of [both] humans and non-human animals’ (Pieraccini, 2012 at 273). Such tentacularity could also develop further the rich implications of ecological thought for legal judgment (Pallonty, 2015). Fundamentally, such a world-sensing, situated epistemology would question the ‘eye from nowhere’ suppositions typical of Western epistemology in favour of a braille-like, gentle and responsive attentiveness to materialisation and its patterns, allowing materiality itself renewing agential significance for law and legal outcomes. Minimally, thinking the Chthulucene positions the human in a de-centred position within an entangled ontology, and in the process, re-constitutes epistemology as an ecologically-responsibilised tentacularity: a sensing form of ‘onto-epistemology’. This implies practices of radical openness to multiple scales, tempos, movements, flows, and relationalities, to ambiguities and puzzles, to incomplete knowing and to a profound and mutually informing intimacy between the epistemic and the ethical. From such thinking, yes, ‘something—just maybe—*more liveable*’ might emerge.

Ultimately, thinking through the Chthulucene could move beyond the brute Eurocentric deployment of ‘time’ as power, and in turn, hold out hope for appreciation of the lively flow of spatio-temporalities intrinsic to the world—and to the expression of multiple forms of relationality (human and non-human alike) mediated by, within, without and beneath law as a powerful form of spatio-temporal-material relationality.

REFERENCES

- Adas, Michael, *Machines as the Measure of Men: Science, Technology and Ideologies of Western Dominance*, Ithaca, Cornell University Press, 1989.
- Anghie, Anthony, *Imperialism, Sovereignty and the Making of International Law*, Cambridge: CUP, 2005.
- Bookchin, Murray, *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy*, Oakland, AK Press, 2005.
- Bollier, David and Helfrich, Silke, *Patterns of Commoning*, Amherst, Commons Strategies Group, 2015.
- Caffentzis, George, ‘The Future of the “Commons”: Neoliberalism’s “Plan B” or the Original Disaccumulation of Capital?’ 69 *New Formations* 23–41, 2010.
- Chakrabarty, Dipesh, *Provincialising Europe*, Princeton, Princeton University Press, 2007.
- Code, Lorraine, *Ecological Thinking: The Politics of Epistemic Location*, Oxford, OUP, 2006.
- Collard, Andree, and Contrucci, Joyce, *The Rape of the Wild: Man’s Violence against Animals and the Earth*, Bloomington, Indiana University Press, 1988.
- Coole, Diana H and Frost, Samantha, *New Materialisms: Ontology, Agency and Politics*, Durham, Duke University Press, 2010.
- Corson C, and MacDonald, KI, ‘Enclosing the global commons: the convention on biological diversity and green grabbing’ 39 *The Journal of Peasant Studies* 2, 263–283, 2012.
- Crutzen, Paul J, ‘Geology of Mankind’ 23 *Nature* 415, 2002.
- Crutzen, Paul, J, ‘The Anthropocene’ in Ehlers, E and Krafft, T, *Earth System Science in the Anthropocene*, Berlin and Heidelberg, Springer, 2006, 13-18.
- Dangerman, Jerome, and Schellnhuber, Hans Joachim, ‘Energy Systems Transformation’ *PNAS* E549-E558, 2013 (available at www.pnas.org/cgi/doi/10.1073/pnas.1219791110) (Date of last access: 18 Feb 2016).
- Deacon, J, ‘The Microbial World: Lichens’, Institute of Cell and Molecular Biology, The University of Edinburgh, 2013 available at <http://archive.bio.ed.ac.uk/jdeacon/microbes/lichen.htm> (date of last access 15th Feb 2016).
- Dekha, Maneesha, ‘Intersectionality and Post-humanist Visions of Equality’ 23 *Wisconsin Journal of Law, Gender and Society* 249-267, 2008.
- Fuchs, Christian, ‘Digital presumption labour on social media in the context of the capitalist regime of time’, 23 *Time and Society* 1, 97-123, 2014.
- Geisinger, A, ‘Sustainable Development and the Domination of Nature: Spreading the Seed of the Western Ideology

⁸ See Philippopoulos-Mihalopoulos, 2012—and more generally Haraway, 2008.

of Nature' 7 *Boston College Environmental Affairs Law Review* 43, 52-8, 1999.

Gilbert, S, Sapp, J and Tauber, AI, 'A Symbiotic View of Life: We Have Never Been Individuals' 87 *The Quarterly Review of Biology* 4, 326-341, 2012.

Gonzalez, Carmen, 'Bridging the North-South Divide: International Environmental Law in the Anthropocene' 32 *Pace Environmental Law Review* 407-434, 2015.

Grear, Anna, "'Towards Climate Justice'? A critical reflection on legal subjectivity and climate injustice: Warning signals, patterned hierarchies, directions for future law and policy', Special Edition *Journal of Human Rights and the Environment* 103-133, 2014.

Grear, Anna, 'Deconstructing *Anthropos*: A Critical Legal Reflection on "Anthropocentric" Law and Anthropocene "Humanity"' 26 *Law and Critique* 3, 225-249, 2015.

Haraway, Donna, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective' 3 *Feminist Studies* 575-599, 1998..

Haraway, Donna, *When Species Meet*, Minnesota, University of Minnesota Press, 2008.

Haraway, Donna, 'Anthropocene, Capitocene, Chthulucene: Staying with the Trouble', a lecture given by Donna Haraway at University of California, Santa Cruz on 5th September 2014, available at <https://vimeo.com/97663518> (last accessed 18th September 2015).

Headrick, Daniel R, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century*, New York, OUP, 1981.

Hobsbawm, Eric, *The Age of Capital 1848-75*, London, Weidenfeld and Nicholson, 1975.

Hoy, David Couzens, *The Time of Our Lives: A Critical History of Temporality*, Cambridge, Mass, MIT Press, 2009).

Huggan, Graham and Tiffin, Helen, 'Green Postcolonialism', 9 *Interventions: International Journal of Postcolonial Studies*, 1, 1-11, 2007.

Luke, Timothy W, 'On Environmentality: Geo-Power and Eco-Knowledge in the Discourses of Contemporary Environmentalism' 31 *Cultural Critique* 57-81, 1995.

Malm, Andreas, and Horborg, Alf, 'The Geology of Mankind? A Critique of the Anthropocene Narrative', 1 *The Anthropocene Review* 1, 62-69, 2014.

Koch, Max, *Capitalism and Climate Change: Theoretical Discussion, Historical Development and Policy Responses*, Palgrave Macmillan, Basingstoke, 2012.

May, Jon, and Thrift, Nigel, *TimeSpace: Geographies of Temporality*, London and New York, Routledge, 2001.

McMichael, Phillip, 'The land grab and corporate food regime restructuring', 39 *The Journal of Peasant Studies*, 3-4, 681-701, 2012.

Merchant, Carolyn, *The Death of Nature: Women, Ecology and the Scientific Revolution*, New York, Harper Collins 1980.

Morrison, Kathleen D, 'Provincializing the Anthropocene' 673 *Seminar* 75-80, 2015.

Nanni, Geordano, *The Colonization of Time: Ritual, Routine and Resistance in the British Empire*, New York, Manchester University Press, 2012.

Nibert, David A, *Animal Rights, Human Rights: Entanglements of Oppression and Liberation*, Oxford, Rowman and Littlefield, 2002.

Nibert, David A, *Animal Oppression and Human Violence: Domesecration, Capitalism, and Global Conflict*, New York, Columbia University Press, 2013.

Newell, Peter, and Paterson, Matthew, *Climate Capitalism: Global Warming and the Transformation of the Global Economy*, Cambridge University Press, Cambridge, 2010.

Pallonity, Tiina, 'Taking aims seriously—how legal ecology affects judicial decision-making' 6 *Journal of Human Rights and the Environment*, 1, 55-74, 2015.

Philippopoulos-Mihalopoulos, Andreas, 'Towards a Critical Environmental Law', in Philippopoulos-Mihalopoulos, Andreas (ed.), *Law and Ecology: New Environmental Foundations*, Abingdon, Routledge, 2011, 18-38.

Philippopoulos-Mihalopoulos, Andreas, 'The Triveneto Transhumance: Law, Land, Movement' 3 *Politica and Societa* 447-468, 2012.

Philippopoulos-Mihalopoulos, Andreas, 'Mariana Valverde: Chronotypes of Law: Jurisdiction, Scale and Governance' 42 *Journal of Law and Society*, 4, 668-673, 2015.

Pieraccini, Margherita, 'Property pluralism and the partial reflexivity of conservation law: the case of upland commons in England and Wales' 3 *Journal of Human Rights and the Environment*, 2, 273-287, 2012.

Postone, Moishe, *Time, Labor, and Social Domination: A Reinterpretation of Marx's Critical Theory*, Cambridge, Cambridge University Press, 1993.

Ricketts Curtler, William H, *The Enclosure and Redistribution of our Land*, Clarendon, Oxford, 1920).

Reisch, Lucia A, 'Time and wealth: The role of time and temporalities for sustainable patterns of consumption' 10 *Time and Society* 2, 367-385, 2001.

Sachs, Wolfgang, *Global Ecology*, London: Zed Press, 1993.

Simons, Penelope, 'International Law's invisible hand and the future of corporate accountability for violations of human rights' 3 *Journal of Human Rights and the Environment* 1, 5-43, 2013.

Smith, Mark M, *Mastered by the Clock: Time, Slavery and Freedom in the American South*, Chapel Hill and London, University of North Carolina Press, 1997.

Stein, Jeremy, 'Time-Space Compression' in May, J, and Thrift, N, *Timespace: Geographies of Temporality*, London and New York, Routledge, 2003, 106-119.

Sutherland, Thomas, 'Getting nowhere fast: A teleological conception of techno-social acceleration' 23 *Time and Society* 1, 49-68, 2014.

Valverde, Mariana, *Chronotypes of Law: Jurisdiction, Scale and Governance*, Abingdon, Routledge Glasshouse, 2015.

Westra, Laura, 'Environmental Rights and Human Rights: The Final Enclosure Movement' in Brownsword R (ed), *Global Governance and the Quest for Justice: Volume IV: Human Rights*, Hart Publishing, Oxford, 2004, 107-19.

Woods, Ellen M, *Empire of Capital*, Verso, London, 2005.