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# Environmental issues: global natures in the space of assemblage

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#### I Introduction

In a previous report I explored the growing interest in 'urban nature' among geographers, but cautioned that the production of nature in cities must be understood in terms of spatio-temporalities that are often global in reach (Braun, 2005). Rather than bounded spaces, cities are best seen as 'polyrhythmic' assemblages composed of multiple networks stretched across space and time in which humans and nonhumans are inextricably entangled (Amin, 2002; Smith, 2003). Here I take up this line of thought further, focusing on recent writing that either explicitly or implicitly understands nature on a 'global' scale. I use both terms - nature and global - advisedly. Nature, as is now commonly asserted, is inextricably social, even as it cannot be reduced to the actions of humans alone (Braun and Castree, 1998; Whatmore, 2002). Likewise, the 'global' is an effect not a condition, and uneven rather than uniform, perhaps best understood in terms of specific connections and encounters that work across and through difference. It should be clear, then, that by placing 'nature' and 'global' in the same phrase, I am not seeking to return to a notion of Nature as singular and universal, an understanding that Williams (1973) and so many others have steadfastly warned against. Global natures are always specific: this configuration here, that network there. Nor do I imagine a global scale that preexists its construction. Drawing upon Collier and Ong (2005), and taking inspiration from Jon Murdoch (1997a; 1997b), my emphasis lies on the word assemblage, so as to stress the *making* of socionatures whose intricate geographies form tangled webs of different length, density and duration, and whose consequences are experienced differently in different places.

Recent writing has analyzed these shifting geographies of 'global' nature variously. For many writers the key concern has been making these geographies visible and understanding the practices and processes that compose them, from technological innovations, transnational trade agreements and the local-global practices of environmental groups, to the lively materiality of the non-human 'stuff' of nature, which brings its own spatial forms and logics to the story. For some this has meant grappling with 'neoliberalism', understood as the economic logic of globalizing capital and a force driving environmental change and governance. Others have focused on the global reach and ambition of specific forms of knowledge such as molecular biology, biochemistry and genetics, which have together led to the molecularization of life and the belief that all life forms can be known and manipulated in terms of their underlying structure. Still others have attended to the globalization of

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*ethical-political* discourses about non-human nature or human-non-human relations, as has occurred through the activities of global media, international ENGOs and the World Bank, and through such notions as 'sustainability' and 'green development'. Arguably, configurations of global nature today emerge as conjunctural effects of all of these: the political-economic, the technoscientific and the ethical-political.

### II Tracing socioecological networks: the nature of commodities

What does it mean to speak of global assemblages of nature, and how are they to be studied? One place to begin is with David Harvey's practice of asking his students to contemplate the often circuitous geographies of their morning breakfast. One of Harvey's objectives is to have students 'get behind the veil, the fetishism of the market' (1990: 422) in order to understand the social, spatial and ecological organization of production, and to consider the dynamic social and ecological processes embodied in something as mundane as a bowl of cereal. Ultimately this analytical task is tied to ethical-political considerations, for the exercise reveals that the composition of our bodies that seemingly most local and intimate nature is linked to the lives of distant strangers, human and non-human alike, and that an ethical life must attend to how and why these connections exist.

Perhaps the most popular approach to tracing human-non-human assemblages has been the study of commodity or supply chains (see Hughes and Reimer, 2004). Ian Cook's (2004) 'Follow the thing: papaya', for instance, guite literally follows the commodity from Jamaican fields to British homes, introducing the farmers, buyers, financiers, processors, importers, transporters and consumers, while describing the picking, processing and all the other cultural, political and economic practices that go into making papaya as a commodity. For Cook, ethical and political concerns emerge from the details of the story itself. Although ecological relations are surprisingly downplayed - despite analyzing papaya! - his account provides terrific insight into the everyday practices that bring distant humans and natures into intimate relation. The dizzying *complexity* of such commodity chains becomes evident in the work of writers like Becky Mansfield, who traces the complicated transnational commodity chains of seafood. Most famous, perhaps, is the production of sushi-grade tuna, whereby 'a single fish may be caught off Spain, shipped overnight to the Tsukiji wholesale market in Tokyo, sold for up to tens of thousands of dollars, and then consumed in a high-end sushi market in New York' (Mansfield, 2003: 1). Indeed, today's 'slow food' movement, and related attempts to strengthen local food networks (see Miele and Murdoch, 2003; Ilbery and Maye, 2006), can be seen as a reaction to these globalized assemblages, although, paradoxically, the work of 'shortening' networks often involves creating other global networks, such as through establishing international standards. Likewise, tracing these socioecological networks has become a potent political strategy for fair trade advocates and for green activists seeking to 'discipline' capital (Emel, 2002).

For students in introductory geography classes, the complex networks embodied in every Tekka Maki may seem remarkable on their own. But the more important question is how and why specific nature-culture assemblages are produced. How, for instance, has nature in the Mekong Delta in Vietnam come to be so intimately connected to productions of nature in the Mississippi Delta in the United States (Duval-Diop and Grimes, 2005)? What are the conditions of possibility for this, and the social and ecological consequences? What makes some global assemblages so dynamic and others so stable (Murdoch and Miele, 2004)? Not all commodity chain analyses are the same: global commodity chain (GCC) approaches emphasize the forms of relationships and transformations of value that occur through various stages in commodity production; commodity circuit approaches assume a less linear model and attend to cultural inflected relationships between production, circulation and consumption; while *commodity network* approaches stress the topological nature of these geographies (Hughes and Reimer, 2004). While GCC approaches still hold great appeal, recent work has increasingly drawn on network approaches that emphasize the heterogeneity of practices, spaces and times within these global socioecological assemblages.

A brief focus on Becky Mansfield's (2004) work on the globalization of the surimi seafood industry provides a sense of the heterogeneity and dynamism of globalized natures, as well as their specificity. Surimi, a fish paste formerly used only in Japan, is today found in numerous commodities, from fish cakes to imitation crab. Mansfield explores the global geographies of surimi through what she calls the 'geography of quality'. As she explains, 'quality' plays a significant role in the dynamic geographies of surimi production, in part because it is both a cultural construction and a physical attribute (high-quality surimi 'is smooth and elastic and has a chewy "mouthfeel"'; p. 9). In contrast to social constructivist accounts, Mansfield places the physical gualities of fish front and center. As she explains:

Quality is an assemblage of a number of different factors, including fish biology, processing technologies, and the products into which surimi is made. To create a smooth, chewy texture, fish are washed to isolate the fibrous proteins in the fish, and these proteins then set into a gel. To make gel of the proper texture, processors have to use extremely fresh fish (ie, never frozen, ideally used within 24 hours of being caught), or the critical proteins disintegrate. (Mansfield, 2004: 10)

It is not possible to understand the emergent spatio-temporalities of the surimi seafood industry without attending to the spatiotemporalities of fibrous proteins in fish: proteins disintegrate differently in different fish, and more or less quickly at different temperatures. The strategies of states and corporations must account for this. This is far from a determinist argument, however, for the spatio-temporalities of protein molecules are, as Mansfield notes, increasingly *transformed*  through technological innovations. The introduction of factory trawlers in the 1960s, for instance, changed the global geographies of the surimi industry by overcoming the problem of distance, thereby drawing Alaska pollock (with its own biochemistry and its own ecological conditions) into Japanese commodity chains. Later, chemical additives slowed the disintegration of proteins and allowed different fish species, and different marine territories, to be integrated into global networks. So also did the extension of state sovereignty over vast expanses of the ocean, as when the United States and other countries 'enclosed' 200-mile zones of the ocean off their coasts, setting in motion events that brought Thailand, Singapore and Europe within increasingly complicated global seafood networks and made the definition of 'quality' a growing economic and geopolitical concern.

The construction of 'quality' points to the importance of specifically cultural and political processes for the production of global natures. This is most evident in food industries, where 'product traceability', the creation of 'grades' and 'standards', and other constructions of quality 'mediate' agro-food complexes (see Morris and Young, 2004; Barrett et al., 2004; Guthman, 2004), and where histories of colonialism, aesthetics, cultural norms, and even personal relations of trust shape emerging transnational circuits (Freidberg, 2004). The role of culture in the making of commodity circuits extends to practices of representation. In his discussion of the globalization of liquid natural gas (LNG) Gavin Bridge (2004) notes that gas reserves are often discussed as 'stranded', a metaphor that 'establishes the 'natural' state as one of economic connectivity not isolation, positions gas production as a heroic narrative of search and rescue, and highlights how the primary task - taken up by commercial gas research - is to transform use value into exchange value' (p. 396). This adds to earlier work in which Bridge (2001) analyzed how the representation of resource-supply zones as 'shadowlands' was *integral* rather than merely *incidental* to the extraction of natural resources and their displacement into global circuits of commodities and capital, a point taken up in Braun's (2002) discussion of localglobal circuits of science and culture in British Columbia's forest industry, and Perreault's (2001) work on ideas on indigeneity in resource development in Amazonian Ecuador (see also Sawyer, 2004; Valdivia, 2005).

Bridge (2004) provides the additional insight that commodities such as LNG must be 'engineered' to be global. Precisely because of its unstable gualities, LNG 'remains substantially contained within continental bounds' (p. 395). It becomes global only through technological innovations that overcome its physical limits, in this case through cyrogenic cooling, which 'corrals the waywardness and variability of gas' (p. 396). This 'uncooperativeness' of commodities is an increasingly important theme, as the physical qualities of objects are shown to influence the forms of economic and political rationality that can be applied to them, and the social and political relations in which they get entangled (see Bakker, 2004; Prudham, 2005).

Together, these studies illustrate the complexity and dynamism of socionatural assemblages, such that global(ized) natures are perhaps best described as imbroglios that mix together politics, machines, organisms, law, standards and grades, taste and aesthetics, even the production of sovereign territory and the politics of scale. In Mansfield's words 'difference and heterogenous practices produce global processes and interactions' (2004: 15). The result may be the production of socionatures on a 'global' scale, but in ways that are remarkably differentiated, a globalization of nature that is spatialized in particular and consequential ways.

### III The environment and neoliberal globalization

This focus on heterogeneous practices is consistent with Stephen Collier and Aihwa Ong's (2005) work on global assemblages in

anthropology. While they pay scant attention to the non-human they capture well the composition of global forms. Of interest to them are the complex conditions that allow global forms to function and how these forms interact with other elements in contingent, uneasy, and unstable interrelationships. As they explain, 'the product of these interactions might be called the *actual* global, or the global in the space of assemblage' (p. 12). In important respects geographers and anthropologists have led the way in studying the 'actual' global, for in contrast to economics, which tends to assume global or universal forms of rationality, the former place far greater importance on the practices that constitute global forms (see Sheppard, 2005, on free trade, and Goldman, 2005, on green governmentality), and how such forms are continuously displaced or reconfigured (see Tsing, 2005, on local-global environmentalism, and Cohen, 2005, on the globalizing trade in body organs).

But is it enough to describe these networks, or to show their complexity? Or is the objective to understand the underlying processes through which particular global assemblages of nature and society are produced? An emphasis on the latter characterizes the growing literature on neoliberalism and the environment. For writers like Heynen and Robbins (2005: 1) neoliberal capitalism 'drives the politics, economics and culture of the world system, providing the context and direction for how humans affect and interact with non-human nature and with one another'. Not all writers make such bold statements, seeing instead a decidedly uneven geography of neoliberal practices and policies, although agreeing that they are 'deeply if not inextricably interwoven' with environmental change and environmental politics (McCarthy and Prudham, 2004).

While the term neoliberalism is ubiquitous in geographical writing today, it is not easily defined. McCarthy and Prudham (2004) provide one list of identifiable dimensions: near worship of self-regulating markets, requiring privatization, marketization, and antagonism to state regulation (even as the state actively defines and defends property rights and marketization processes); rolling back of state functions through privatization and fiscal and administrative cuts; rescaling of governance and the hollowing-out of the nation state through devolution to local levels of government (although without the capacities or powers to properly regulate), and through rescaling regulatory capacities 'up' to international institutions (although with little transparency); and, finally, shifts to voluntary regulatory frameworks. While such characterizations of neoliberalism are widely accepted, McCarthy and Prudham claim that current writing fails to adequately recognize that 'neoliberalism is an environmental project, and that it is necessarily so' (p. 277; see also Perreault and Martin, 2005; Heynen and Robbins, 2005). This is true, they suggest, because contemporary neoliberalism involves the restructuring of social relations to nature, such as occurs in the enclosure of the global commons, the extension of the commodity form to everything from fisheries to genes, transformations in the form and scale of environmental regulation and governance, and the 'greening' of neoliberal globalization through tradeable emission permits, transferable fishing quotas and user fees for public goods.

The past few years have seen countless studies that examine neoliberal natures. Karen Bakker (2004; 2005) explores the privatization of water in England and Wales, and the substitution of 'economic efficiency' in water provision systems in place of the previous goal of 'equalization', a process that has occurred from Bolivia to South Africa (eg, Smith, 2004; Perreault, 2005). Privatization, or enclosure, is a common theme, whether the privatization of wildlife (Robbins and Luginbuhl, 2005), the enclosure of ocean fisheries (Mansfield, 2004), or the privatization of the conditions of production, a process that McCarthy (2004) explores through an examination of investor protection provisions in NAFTA. It should be noted that the 'enclosure' of the global commons does not necessarily mean privatization - it can also result in forms of collective or state property (Mansfield, 2004); likewise, privatization and commercialization are not always synonymous with commodification. As Bakker (2004) notes, due to its physical characteristics water resists full commodification and hinders direct competition in water markets (see also Castree, 2003a; 2003b). Indeed, this emphasis on the 'friction' of nature within neoliberal projects is shared by many (eg, Prudham, 2004; 2005; Mansfield, 2004), who insist that the physical environment adds something to the story of neoliberalism, rather than being merely a passive stage on which neoliberal policies unfold.

Bakker (2004) also draws out a theme that is increasingly common in this literature: that privatization and marketization are often accompanied by forms of reregulation, consistent with what Peck and Tickell (2002) have called the 'roll back-roll out' dynamics of neoliberalism. For Bakker, neoliberalism is 'a process of reregulating socionatures that entails a shift in power geometries, empowering some socionatures and disempowering others, reconfiguring (and in some cases constraining) the entitlements of both humans and non-humans' (Bakker, 2005: 561). For Mansfield (2004: 570), and for McCarthy and Prudham (2004), this illustrates Karl Polanyi's insight that 'for every move toward free markets and economic liberalism, there is a concurrent counter-movement for social protection', a dynamic that Polanyi dubbed the 'double movement' of liberalism. These countermovements, Mansfield notes, were not only about protections for certain groups of people and the environment, but protection for the market system itself, which cannot survive on its own.

Others have focused more explicitly on changes in environmental governance. The shift from state-led to market-based governance in natural resource management has often involved the 'rescaling' of governance, either by devolution to local governments, or through scaling-up to transnational bodies, such as NAFTA or the WTO. Holifield (2004) explores the devolution of environmental justice initiatives by the EPA, noting how 'neo-communitarian' approaches that emphasized community self-sufficiency and entrepreneurial initiative have replaced 'collective' programs. Prudham (2004) and Ali (2004) explore some of the tragic outcomes of deregulation and reregulation of environmental monitoring, linking the neoliberal 'common-sense' revolution of the Ontario government to deaths in a small Canadian town caused by water contaminated with E-coli bacteria. McCarthy (2005a) reveals that the scalar politics of neoliberal environmental governance are at once complex and highly politicized. His example - the attempt under NAFTA by Canada-based Methanex Corporation to overturn California's regulation of the gasoline additive MTBE - calls attention to the 'scaling-up' of environmental governance to transnational bodies in ways that at once constrain the sovereignty of signatory states, and reduce democratic accountability. McCarthy adds to the story, however, by noting how environmental groups have employed a complex scalar politics of their own by defending established scales, using such scales as stable platforms, reconfiguring relations within scales, participation in the construction of new scales, redefining relationships among scales or jumping across scales (see also Kurtz, 2002; Shaw, 2004 for an attempt to bridge scalar and topological analyses of environmental governance; see Bulkeley, 2005).

Finally, Gail Hollander (2004) notes that the scaling-up of governance can also result in new strategies for *local* governance, rather than simply superseding them. For instance, the introduction of the concept of 'multifunctionality' during the Uruguay Round of the WTO resulted in the redefinition of agriculture by local authorities in Florida as being about more than the production of food, but also about sustaining rural landscapes, protecting biodiversity, generating employment and contributing to the viability of local areas. In this case, the WTO 'provided a strategic opening in which to recognize the landscape functions of agriculture and rural settlement, so that the resultant social and ecological complexity can be defined as public goods and maintained through state policies' (Hollander, 2004: 302). While the Florida case can be seen as a protectionist strategy – something Hollander terms 'weak' multifunctionality – in other cases a 'strong' version of multifunctionality has been invoked 'as an anti-development or alternative development discourse' (p. 303).

Perhaps the most common conclusion of writers working on neoliberalism and the environment is that there are many *distinctive* forms of neoliberalism. But this begs the question: if they are so distinct, what makes them neoliberal? An initial problem is that many claims about the heterogeneity of neoliberalisms presuppose neoliberalism as a coherent economic category in the very act of pointing out its 'locally contingent', 'hybrid' or 'variant' forms (Larner, 2003; Perreault and Martin, 2005; McCarthy, 2005b). The problem here is that, before one can posit a contingent form, one must presuppose the general or universal one. Perreault and Martin take this farthest, suggesting that 'because of its seemingly omnipresent character ... neoliberalism in practice eludes simple identification' (2005: 192, italics added) employing the logic that the difficulty involved in identifying neoliberalism is the most powerful sign of its existence! It is perhaps worth pausing here to consider Timothy Mitchell's (1991) careful interrogation of the peculiar metaphysics of modernity whereby the world is divided into an 'empirical' reality and a more 'real' reality that lies behind it, of which the former is merely a sign. Noel Castree (2005) makes a similar point when he suggests that what is missing in this burgeoning literature is a thorough discussion of the practice of abstraction. On what basis do we move from the particular to the abstract? How do we determine

that different particulars are comparable? This is a crucial question, since one of the problems that follows from presupposing neoliberalism as a coherent and logical category is that everything risks getting reduced to the 'same' and emergent social, economic and political forms in global assemblages may go unrecognized.

#### IV Imagining the 'global biological': molecular biology, genetics, and 'life itself'

There is yet another sense in which it can be said that human and non-human collectives have been 'globalized'. This has more to do with technoscientific rather than politicaleconomic practices, although the two are intimately connected. Sarah Franklin's (2005) work on stem cells provides a point of entry. Franklin argues that the production of stem cells has become a 'global biological enterprise', as nation states compete for a share in the high-tech stem cell industry. But, Franklin argues, stem cells are 'global' also in the sense of their projected uses, since they 'offer the prospect of downloading genomics into a wealth of applications' (p. 60), such that 'life itself' is now imagined in terms of its recombinant outcomes (Haraway, 1997; Rose, 2001). The results are entirely new 'imaginary futures' for socionature, with renewed global reach and ambition.

What Franklin calls attention to is the emergence of a new *global language* of nature predicated on the reduction of nature to the molecule or the gene, yet which at the same time only achieves its apparent universality through the extension of particular scientific knowledges and practices – in laboratories and at conferences, or through the mediation of state policy and law. The 'global biological' is thus the *effect* of the extension of technoscientific networks, by which a 'local epistemology' becomes ubiquitous (see also Latour, 1988; Longino, 2002; Mol and Law, 2005).

Increasingly scholars in the social sciences have begun to interrogate this reduction of nature to the molecule and gene. For Franklin

et al. (2000), what is significant about 'global natures' of this sort is that they are at the same time constitutive of emergent forms of 'global culture'. Much like space exploration and photographs of earth from space which projected a single, shared biocultural condition, so has the exploration of 'inner' nature located a similar biocultural unity at the molecular level. The dissemination of such knowledge carries with it new forms of biological citizenship (Rose and Novas, 2005) and new forms of identity and sociability (Rabinow, 1996; Rose, 2001), although, as Franklin (2005: 61) notes, these are invariably linked to 'specific national and economic priorities, moral and civic values, and technoscientific institutional cultures'. The geographers Gavin Bridge, Phil McManus and Terry Marsden (2003: 165) make a similar point, noting that genomic technologies are invariably mediated by social institutions, forms of governance and institutional dynamics, which determine how and by whom biotechnologies are developed and deployed.

Geographers have only recently begun to tackle the challenges posed by biotechnology. Kathy McAfee (2003) explores the 'double reductionism' involved in biotechnology battles. On the one hand, she argues, the biotechnology industry reduces bodies to genes (something she terms 'moleculargenetic reductionism'), abstracting them from their cellular, environmental and cultural contexts, and leading to simplistic representations of the life and development of organisms (see also Haraway, 1997; Kay, 2000; Keller, 2000; Lewontin, 2000). On the other hand, this molecular-genetic reductionism provides conceptual support for economic reductionism, whereby these 'discrete units' can be enclosed as property and constructed as tradable commodities. As McAfee notes, this double reductionism has set off furious political battles over the social and environmental effects of biotechnology, and over the governance of plant genetic resources and GMOs, as corporations, the WTO, and countries in the North and South have fought for or against globalized property regimes.

For McAfee, genetic and economic reductionism is ultimately incompatible with biological and cultural diversity. Others are more equivocal. Sarah Whatmore (2002) understands the global biological as a moment of danger and hope, and attends to emergent forms of life in all their promise and risk. For Whatmore, one cannot know the protagonists in advance; biotechnological objects are 'added to' human-non-human collectives that are themselves already dynamic, such that politics turns not on what should be conserved, but on what should be included or excluded from our collectives, and how this should be determined (see Davies, 2003; 2006; Latour, 2004; Wainwright, 2005).

Some of the most interesting work in this area has analyzed the spatial and socioecological networks that have emerged with revolutions in genomic sciences, new forms of global governance, and new strategies of capital accumulation. Two recent books by Cori Hayden (2003) and Bronwyn Parry (2004) explore the transnational circuits of capital and plant genetic knowledge that comprise the 'bioprospecting' industry and that link universities and state institutions in the United States and Europe, transnational corporations, and academics and peasants in the Global South (see also Brand and Gorg, 2003). These emerging geographies are ideologically mediated, as nature comes to be understood as at once a global 'storehouse' of valuable genetic resources and a 'workhorse' that produces novel genetic forms. Precisely because nature is increasingly viewed as consisting of the 'essential raw materials' necessary for ongoing evolution (ie, 'genetic diversity'), conservationists and capitalists alike have come together with a shared interest in 'sustaining' genetic resources as an investment in the future. Not only has this wed sustainability to capitalism, a process enhanced through TRIPS agreements, it has also displaced 'local' natures into 'global' arenas, authorizing actions that protect a 'global heritage' from 'local threats'. As Hayden notes, one result has been the remaking of rural residents in the Global South as 'stewards' of resources valued by the North, in part through incentives that encourage local communities to have an interest in biodiversity.

### V Ethnographies of global connection: social natures in the making

Hayden's careful empirical study of bioprospecting stands in contrast to the abstract claims of boosters who tout it as a 'win-win' phenomenon that brings development and conservation (ie, Reid et al., 1993; Nader and Mateo, 2001), and critics who dismiss it as 'green developmentalism' (see McAfee, 1999; Brush, 1999). In this sense, her work illustrates two increasingly widespread developments. The first, as noted throughout this review, is an increased focus on the *practices* that produce socioecological assemblages. The second is the growing importance of ethnography to study them. Two recent books by anthropologists - each in close conversation with geographers - provide clear examples for how such research and writing is done, and bring this report to a close. Donald Moore's (2005) richly textured Suffering for territory attends to the micropractices of government, sovereignty, and spatial discipline that constitute the environmental and territorial practices of state and residents alike in Zimbabwe's Eastern Highlands. Like others, Moore suggests that human-non-human landscapes are best understood as 'assemblages', a conceptual tool that:

displace[s] humans as the sovereign makers of history . . . Kaerezi is alive with natural-cultural hybrids: SaGumbo's irrigation channel, his wife's neatly planted rows of maize and beans, and cooking hut fires that burn harvested trees. Assemblages arrange provisionally, giving emergent force to contingent alignments of social relations, material substance, and cultural meaning. And like places, assemblages foreground multiplicities irreducible to a single sense, structure, or logic. (Moore, 2005: 23–24)

Crucially, these assemblages consist of 'striated space'; in these 'entangled land-scapes', Moore writes, 'multiple spatialities

mingle. Neither serial nor successive, they are copresent, sometimes as hauntings, other times as explicit invocations, shaping a plural terrain where no single space prevails' (Moore, 2005: 22; see also Raffles, 2002).

Anna Tsing's (2005) *Friction: an ethnography of global connection*, expands these themes further. Focusing on political struggles in the rainforests of Indonesia, Tsing notes that although she draws on fieldwork in the mountains of South Kalimantan, 'this is not a story that can be confined in a village, a province, or a nation' (p. ix). To be sure, it is a story that is insistently about social nature in a particular place. Yet it is simultaneously:

A story of North American investment practices and the stock market, Brazilian rubber tappers' forest advocacy and United Nations environmental funding, international mountaineering and adventure sports, and democractic politics and the overthrow of the Suharto regime. (Tsing, 2005: ix)

To tell this story, Tsing offers an 'ethnography of global connection' that attempts to grasp the 'spatially far-flung collaborations and interconnections' and the 'zones of awkward engagement' in which local-global forms are forged. To do this, ethnography itself had to be reworked, no longer focused on discrete places, but instead moving 'back and forth' between the communities and landscapes in which she had 'long-term ethnographic background' and all the places 'implicated in the chains [she] traced' (p. x). Environmental and social geographers alike will find much to take from Tsing's efforts. As Tsing shows, emergent cultural and environmental forms are the 'persistent but unpredictable effects of global encounters across difference' (p. 3).

Like Whatmore (2002), Tsing gives us global natures that are always in the making, always partial and precarious. Environmental knowledges turn out to be neither monolithic nor settled, commodity chains never escape heterogeneous projects of space and scalemaking, and global conservation takes shape only through the friction of encounters and interactions between residents, nature lovers, scientists and policy-makers alike. To the extent that natures can be said to be global, then, it is only in and through these spaces of assemblage, which give them their specific biosocial and spatio-temporal dimensions.

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