
Editorial introduction

Towards the socio-ecological fix

Key questions

By now it is well established, even in the mainstream press, that the history and geography of capitalism is riven with periodic downturns, some serious enough to warrant the term “crisis.” Considerable difference of opinion, however, persists when it comes to understanding these episodes of stagnation and devaluation, and whether and how the more serious ones can and do lead to qualitative transformations in the way capital accumulation “works.” Within these debates, remarkably little scholarship (certainly within the geography literature) has systematically developed what we might call the political ecology of capitalist crises, that is the role of specific socio-natural transformations (both material and semiotic, political, and ecological) in constituting and resolving (if temporarily) periodic paroxysms in the uneven historical geography of capitalism. And yet, in the Anthropocene, the scope of the climate change problem continues to broaden, posing disquieting questions about global governance (Wainwright and Mann, 2012) the intensification of industrial cultivation systems in agriculture, forestry, and aquaculture more tightly couples the production of biological life with capital accumulation, with attendant political–ecological ramifications (see e.g. Fargione et al., 2008; Hall, 2003; Li, 2010; Vandergeest et al., 1999) and the future of capitalism itself is increasingly constituted in the political imaginary by the question as to whether and how markets can be “greened” (Goldman, 2005; McAfee, 1999; Watts, 2002).

Nicely encapsulating the moment, Jason Moore in his recent book (2015: 16) asks if “*the ongoing closure of frontiers today signals an exhaustion of capitalism’s Cheap Nature strategy, with its prodigious history of appropriating uncommodified nature as a way to advance labor productivity?*” Moore suggests that the expanded reproduction of capitalism, interrupted by moments of crisis, has been made possible by cheap labor power, food, energy, and raw materials. It follows that if such expanded reproduction is to continue, we need to understand whether and how the mobilization of socio-natures in the service of accumulation, balanced all the while with competing demands in the domains of everyday life and social reproduction more widely, are to be achieved. More specifically, we need to understand how the historical–geographical formation of what David Harvey christened capitalism’s “spatial fixes” increasingly gives rise to or produces the socio-environmental conditions of the age.

This special issue focuses on how crises of capitalism may be temporarily offset through intensive and extensive transformations of landscapes and processes that take the form of specifically “socio-ecological” fixes. Such fixes, we contend, must be understood at two levels. First, building most directly on David Harvey’s (1981, 1982, 1985a, 1985b, 2001, 2003) theory of a spatial fix for capitalist crisis tendencies, contributors to the collection examine ways in which landscapes are produced, how human and nonhuman organisms and socio-natural relationships are transformed, and how labor processes are restructured in order to address or offset (at least temporarily) entangled social and environmental crises of capitalism through conjoined productions of space *and* nature. Second, the special issue extends the idea of the “fix” to include not only arrangements propelled by diversions of large flows of capital into the built environment (broadly understood), but also by shifts in the social regulation of productions of space and nature in response to real and perceived crises of legitimacy.

In exploring the socio-ecological fix, contributors tackle four key questions that animate the collection:

1. How does thinking in terms of socio-ecological fixes draw from but also extend David Harvey's conceptualization of the spatial fix and what value is added in developing a new vocabulary and conceptual register for understanding the capitalization, marketization, financialization, commodification, social regulation, and political contestation of socio-natures as dynamics of spatial fixes?
2. How do environmental politics and regulations limit, constrain, and shape capitalist dynamics, constituting the specific configurations by which capitalist social relations and capitalist spaces are reproduced? What is the articulation of neoliberal capitalism and social regulation with the production of nature and how does that articulation shape contemporary spatial fixes?
3. Can the concept of the socio-ecological fix help us understand broader trajectories of socio-natural change in ways that avoid economism in how we confront the production of nature? How are social movements implicated in shaping the trajectory of socio-ecological fixes and what political possibilities are opened and foreclosed?
4. What are the locational, scalar, and historical dimensions of socio-ecological fixes? How are questions of the body, the country and the city, and globalizing political economic processes bound up in environmentally oriented fixes?

The literature

The concept of the socio-ecological fix in this special issue is developed in relation to numerous implicit and explicit accounts of how capitalist crises may be temporarily displaced or overcome through reworking of capital's circulation in, through and around ecological processes and landscapes, which themselves are always socio-natural in character. In no way is this collection or are these papers the first to explore the socio-ecological dimensions or implications of the formation of spatial fixes, and certainly this is not the first place where the more general conception of environmental regulations as "fixes" for certain kinds of problems or contradictions originating in the political economy of capitalism is advanced. Rather, the main goal of the collection is to take existing precursors as points of departure for conceptual and empirical development.

The starting point for many, but not all, of the contributors is Harvey's influential theory of the "spatial fix," a singular geographical contribution to critical theory more generally, and a core concept for many working on studies of urbanization, gentrification, deindustrialization, and uneven development (Brenner, 1998; Glassman, 2006, 2007; Lang and Knox, 2009; Smith, 2008). Drawing largely from Karl Marx's (1973, 1978) writings on the circulation of capital in the *Grundrisse* and vol. II of *Capital*, Harvey forged insight into how the dynamics of capital accumulation and the space economy of capitalism are reworked in response to political economic crises (for discussions see Jessop 2004, 2008; Schoenberger, 2004), including through the urbanization of capital as well as in the articulation and rearticulation of inter-urban and inter-regional dynamics. For Harvey (1981, 1982, 1985a, 1985b, 2001), socio-spatial fixes provide avenues for reproducing the conditions of capital accumulation and attenuating crisis tendencies via "fixing" capital in particular territorial configurations that transform the intensive and extensive spatiotemporal rhythms of accumulation. In recent years, Harvey (2003) has focused on how formally "noncapitalist" aspects of social life articulate with and facilitate the dynamics of capital accumulation through expanding market exchange and commodification to social relations heretofore non- or partially commodified, including specific socio-natures and socialized services and infrastructure. However, Harvey has not explicitly tied his later work to earlier contributions on the spatial fix by exploring in any systematic way the possibility of a socio-ecological fix. He has not discussed the relationship between the production of nature and the production of space in fixed capital

formation nor in the restructuring of the space economy of capitalism more generally (though there are certainly suggestions pointing in this direction in his work, e.g. see Harvey, 1996). And he has not systematically addressed the ways in which social regulation, including environmental regulation, may help to constitute specific instantiations of the fix dynamic. These papers collectively attempt to close that lacuna.

There are, however, others whose work also provides a foundation for the various contributions to this special issue. Numerous scholars (too many to mention, many cited in the individual papers) have explored the articulation of capitalism and nature, including for instance Cindy Katz's (1998) memorable polemic on nature as an accumulation strategy, Jack Kloppenburg's (1988) examination of the commodification of plant germplasm, James O'Connor's (1997) development of capitalism's second, or ecological, contradiction and perhaps most singularly, Neil Smith's (2008) ground-breaking theory of capitalism's production of nature.

Recent work on urban political ecology (UPE) and urban metabolism is particularly relevant. Building on the aforementioned contribution of Smith as well as those of Henri Lefebvre (1991) and Susan Buck-Morss (1995), UPE literature views urbanization and the production of urban space as conjoined socio-ecological processes. While cities are often taken in the popular imagination (and considerable scholarly work) to be in opposition to nature or to the countryside, careful historical and geographical work links urban development to networks of raw material and energy provisioning (and their politics) in ways that truly make the country and the city conjoined or coproduced, as Raymond Williams (1973) argued they always were. Urban infrastructure developed as part of grand modernization schemes (Gandy, 1999, 2002; Kaika, 2005, 2006; Kaika and Swyngedouw, 2000; Swyngedouw, 1999, 2007) or through Keynesian-style investments into the urban fabric of cities (Graham and Marvin, 2001) has been explored as simultaneously political economic and ecological undertakings, including, e.g. through the production of privatized and/or marketized urban waterscapes (Bakker, 2004; Kaika, 2006; Loftus, 2006) as well as energy systems (Kaika and Swyngedouw, 2000; Prudham et al., 2011). Swyngedouw's (2013) most recent writing on Spain suggests that water desalination is a socio-technical fix to regional water disparities. Central contributions in this emerging literature lie in explorations of the metabolic (i.e. specifically socio-ecological) character of urban and spatial change, together with emphasis on questions of political legitimacy and consent, including the ideological dimensions of landscapes urban and otherwise (see also Ekers, 2009; Ekers and Loftus, 2008; Huber, 2013).

Another influence on the papers in this collection comes from the now sprawling critical scholarship concerning the relationship between neoliberalism and socio-environmental change. A burgeoning literature exploring this nexus draws attention to issues of environmental politics and governance in the context of capitalist crisis tendencies (see e.g. Bakker, 2004; Heynen and Perkins, 2005; Liverman, 2004; McCarthy, 2004, 2005, 2006; Mansfield, 2004a, 2004b; Robertson, 2004), with some arguing that neoliberalism too is an inherently ecological project (McCarthy and Prudham, 2004). In this context, Noel Castree (2008a, 2008b) has explicitly argued that neoliberalism specifically targets economic renewal through an "environmental fix" that marketizes "environmental bads" and deregulates larger domains of the environment. Similarly, Alice Cohen and Karen Bakker (2014) have argued that "ecoscalar fixes" are pursued by governments to address environmental degradation and uneven development. The so-called sustainability fix in the writing of While et al. (2004: 551) speaks to how sustainable development agendas are "part of the search for a spatio-institutional fix to safeguard growth trajectories in the wake of industrial capitalism's long downturn, the global 'ecological crisis' and the rise of popular environmentalism" (see also Kear, 2007; MacDonald and Keil, 2012; Temenos and McCann, 2012).

Curiously, these perspectives on environmental regulatory “fixes” largely circumvent Harvey’s notion of the spatial fix, either in terms of the formation of fixed capital or in terms of his more recent emphasis on extensive or outer moments of the spatial fix, including through accumulation by dispossession and the international integration of markets (1981, 2001, 2003). Rather, in some of the literature on neoliberal era environmental regulation, the connotation of the term “fix” is highly generic, having to do with the solution to any given problem, however temporary. Nonetheless, there is the basis, if sometimes implicit, that neoliberal environmental fixes involve the intensified marketization, commodification, and financialization of “nature” along with attendant forms of rescaling environmental governance in ways that facilitate expansion in the scale and scope of capital accumulation.

More recently, specific forays have been made into understanding how crises may induce the development of green infrastructure and social regulation. Castree (2009: 1789) has again been key to these debates and has advocated for “championing and further developing” the idea of a “green New deal” that could advance ecological and social justice. Similarly, Fred Block (2011) has called for a new green-Keynesianism involving massive investments into environmental infrastructure and the development of a new form of green mass consumption. Most recently, Castree and Christophers (2015) ask whether finance capital may be leveraged to facilitate a shift toward green infrastructure in the service of climate change mitigation.

Collectively, accounts of socio-ecological fixes now in circulation, and hopefully furthered by this collection, ask us to consider how the reproduction of capitalism is increasingly taking place through reconfigurations of socio-natural relationships and, more specifically, through the production of nature. But as this collection of articles demonstrates, such dynamics can play out in multiple and contradictory ways. Indeed, while drawing on some of the conceptual foundations noted and while specifically extending the concept of the spatial fix, the collection’s greatest strength may be the diversity and richness of empirical engagement in exploring the metabolic character of specific spatial fixes. Anna Zalik (2015) explores the collision of international oil companies seeking access to new sites and sources of oil with environmental regulatory reviews pertaining to frontiers of oil and gas development. For her, these arrangements comprise socio-ecological fixes in the dual sense of securing new opportunities to capitalize nature through the appropriation of raw materials while also fixing socio-ecological controversies within bounded institutional spaces and processes. James Nugent’s focus (2015) is on the way the state has led a socio-economic fix in Ontario, Canada originating as a response to the conjunction of growing air pollution, traffic congestion, and economic stagnation, all constituted by lively social movements and addressing both the economic imperative for renewed growth and the political imperative to respond to socio-ecological contradictions. James McCarthy (2015) examines the broad shift toward renewable energy systems on a worldwide basis as a socio-ecological fix or nested set of fixes, propelled by a combination of state and multilateral initiatives and large flows of capital, and in response to the contradictions of the (largely) fossil-fuel era. Leigh Johnson (2015) tackles the role of (re)insurance for spatial infrastructure under threat from climate change, arguing that this “catastrophic fix” in the form of the financialization of climate risk needs to be integrated into existing accounts of fixed capital formation and the threat of periodic devaluations. For Julie Guthman (2015), human bodies comprise a site and a scale for working out some of the contradictions of the capitalist food system, comprising not only an accumulation strategy, but what she calls (drawing directly on Harvey) a form of “inner fix.” Michael Ekers (2015), drawing directly from Harvey’s concern with the diversion of fixed capital into the built environment, explores extensive recession-era Canadian reforestation efforts giving rise to plantation forests as forms of socio-ecological fixes aimed at the renewal of long-term fiber supplies while also shoring up the legitimacy of industrial forestry. Jessica Dempsey’s paper (2015) develops the fix idea using less the

connotation of fixed capital or the spatial organization of capital accumulation and more the role of biodiversity loss (or its threatened loss) as a purported contradiction of or limit to global accumulation whose “fix” (in scientific, regulatory, and quantitative terms) is integral to the legitimacy of ongoing accumulation.

Concluding remarks

We end this brief commentary with some speculations on matters to be addressed more systematically than this collection allows. The concept of a socio-ecological fix, like the spatial fix, is an inherently conservative one. It is fundamentally concerned with how capitalism *survives*, not with how it might be “*disassembled*” to use Geoff Mann’s (2013) term. Why spend so much time, and dedicate so much written space, to assessing how the conditions of profitability may be renewed or restored through the re-working of socio-natural relationships, processes, and landscapes? Surely the answer is not because we or our collaborators are necessarily fans of endless accumulation on an expanded scale. Rather, we believe that understanding how articulations of political-economic and ecological crises comprise the terrain on which future accumulation (and accumulation is always a bet about the future) is crucial for exploring the political and ecological conditions of possibility for various movements. How, then, might social and political movements leverage various openings and/or failures tied to socio-ecological fixes?

One of the key implications of the collection, and an area where we also hope to see future work, is the need to account for politics and contradictions in attempting to fix capital and/or renew accumulation via new or reconfigured socio-ecological relationships, particularly over the longer term. For the most part (with the exception of McCarthy’s paper), the case studies here concern themselves with the here and now, but do not address the longer term trajectory of capitalism’s political ecology. A central question, then, concerns the examination of socio-ecological fixes over longer time periods, in part to examine whether the capitalization of nature through socio-ecological fixes exacerbates crises, as Moore (2015) argues has been the case to this point, or, whether as Castree and Christopher (2015) suggest, progressive gains might be realized. Time, and future work, will tell.

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References

- Bakker K, 2004 *An Uncooperative Commodity: Privatizing Water in England and Wales* (Oxford University Press, Oxford)
- Block F, 2011, “Crisis and renewal: the outlines of a twenty-first century new deal” *Socio-Economic Review* **9**(1) 311–357

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- Brenner N, 1998, "Between fixity and motion: accumulation, territorial organization and the historical geography of spatial scales" *Environment and Planning D: Society and Space* **16**(4) 459–481
- Buck-Morss S, 1995 *The Dialectics of Seeing: Walter Benjamin and the Arcades* (MIT Press, Cambridge)
- Castree N, 2008a, "Neoliberalising nature: the logics of deregulation and reregulation" *Environment and Planning A* **40**(1) 131–152
- Castree N, 2008b, "Neoliberalising nature: processes, effects, and evaluations" *Environment and Planning A* **40**(1) 153–173
- Castree N, 2009, "Researching neoliberal environmental governance: a reply to Karen Bakker" *Environment and Planning A* **41**(8) 1788–1794
- Castree N, Christophers B, 2015, "Banking spatially on the future: capital switching, infrastructure, and the ecological fix" *Annals of the Association of American Geographers* **105**(2) 378–386
- Cohen A, Bakker K, 2014, "The eco-scalar fix: rescaling environmental governance and the politics of ecological boundaries in Alberta, Canada" *Environment and Planning D* **32**(1) 128–146
- Dempsey J, 2015, "Fixing biodiversity loss" *Environment and Planning A* **47**(12) 2555–2572
- Ekers M, 2009, "Constructing hegemony in the forestscape: men, masculinities and work in depression-era British Columbia" *Geoforum* **40**(3) 303–315
- Ekers M, 2015, "A fix in the forests: relief labor and the production of reforestation infrastructure in Depression-Era Canada" *Environment and Planning A* **47**(12) 2537–2554
- Ekers M, Loftus A, 2008, "The power of water: developing dialogues between Gramsci and Foucault" *Environment and Planning D: Society and Space* **26**(4) 698–718
- Fargione J, Hill J, Tilman D, Polasky S, Hawthorne P, 2008, "Land clearing and the biofuel carbon debt" *Science* **319**(5867) 1235–1238
- Gandy M, 1999, "The Paris sewers and the rationalization of urban space" *Transactions of the Institute of British Geographers* **24**(1) 23–44
- Gandy M, 2002 *Concrete and Clay: Reworking Nature in New York City* (MIT Press, Cambridge, MA)
- Glassman J, 2006, "Primitive accumulation, accumulation by dispossession, accumulation by 'extra-economic' means" *Progress in Human Geography* **30**(5) 608–625
- Glassman J, 2007, "Recovering from crisis: the case of Thailand's spatial fix" *Economic Geography* **83**(4) 349–370
- Goldman M, 2005 *Imperial Nature: The World Bank and Struggles for Social Justice in the Age of Globalization* (Yale University Press, New Haven, CT)
- Graham S, Marvin S, 2001 *Splintering Urbanism* (Routledge, London; New York)
- Guthman J, 2015, "Binging and purging: agrofood capitalism and the body as socioecological fix" *Environment and Planning A* **47**(12) 2522–2536
- Hall D, 2003, "The International political ecology of industrial shrimp aquaculture and industrial plantation forestry in Southeast Asia" *Journal of Southeast Asian Studies* **34**(2) 251–264
- Harvey D, 1981, "The spatial fix – Hegel, Von Thunen, and Marx" *Antipode* **13**(3) 1–12
- Harvey D, 1982 *The Limits to Capital* (Blackwell, Oxford)
- Harvey D, 1985a *The Urbanization of Capital: Studies in the History and Theory of Capitalist Urbanization* (Johns Hopkins University Press, Baltimore, MD)
- Harvey D, 1985b, "The geopolitics of capitalism", in *Social Relations and Spatial Structure* Eds D Gregory, J Urry (Macmillan, London) pp 128–163
- Harvey D, 1996 *Justice, Nature, and the Geography of Difference* (Blackwell Publishers, Cambridge, MA)
- Harvey D, 2001, "Globalization and the 'spatial fix'" *Geographische Revue* **2** 23–30
- Harvey D, 2003 *The New Imperialism* (Oxford University Press, Oxford; New York)
- Heynen N, Perkins H, 2005, "Scalar dialectics in green: urban private property and the contradictions of the neoliberalization of nature" *Capitalism, Nature, Socialism* **16**(1) 99–113
- Huber M, 2013 *Lifeblood: Oil, Freedom, and the Forces of Capital* (University of Minnesota Press, Minneapolis)
- Jessop B, 2004, "On the limits of the *Limits to Capital*" *Antipode* **36**(3) 480–496

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- Jessop B, 2008, "Spatial fixes, temporal fixes and spatio-temporal fixes", in *David Harvey: A Critical Reader* Eds N Castree, D Gregory (Blackwell, Oxford) pp 142–166
- Johnson L, 2015, "Catastrophic fixes: cyclical devaluation and accumulation through climate change impacts" *Environment and Planning A* **47**(12) 2503–2521
- Kaika M, 2005 *City of Flows: Modernity, Nature, and the City* (Routledge, New York)
- Kaika M, 2006, "Dams as symbols of modernization: the urbanization of nature between geographical imagination and materiality" *Annals of the Association of American Geographers* **96**(2) 276–301
- Kaika M, Swyngedouw E, 2000, "Fetishizing the modern city: the phantasmagoria of urban technological networks" *International Journal of Urban and Regional Research* **24**(1) 120–138
- Katz C, 1998, "Whose nature, whose culture? Private productions of space and the 'preservation' of nature", in *Remaking Reality: Nature at the Millennium* Eds B Braun, N Castree (Routledge, London; New York) pp 46–63
- Kear M, 2007, "Spaces of transition spaces of tomorrow: making a sustainable future in Southeast False Creek, Vancouver" *Cities* **24**(4) 324–334
- Kloppenborg J R, 1988 *First the Seed: The Political Economy of Plant Biotechnology, 1492–2000* (Cambridge University Press, Cambridge, Cambridgeshire; New York)
- Lang R, Knox P, 2009, "The new metropolis: rethinking megalopolis" *Regional Studies* **43**(6) 789–802
- Lefebvre H, 1991 *The Production of Space* (Blackwell, Oxford, UK; Cambridge, MA)
- Li T M, 2010, "To make live or let die? Rural dispossession and the protection of surplus populations" *Antipode* **41**(s1) 66–93
- Liverman D, 2004, "Who governs, at what scale and at what price? Geography, environmental governance, and the commodification of nature" *Annals of the Association of American Geographers* **94**(4) 734–738
- Loftus A, 2006, "Reification and the dictatorship of the water meter" *Antipode* **38**(5) 1023–1045
- McAfee K, 1999, "Selling nature to save it? Biodiversity and green developmentalism" *Environment and Planning D: Society and Space* **17**(2) 133–154
- McCarthy J, 2004, "Privatizing conditions of production: trade agreements as neoliberal environmental governance" *Geoforum* **35**(3) 327–341
- McCarthy J, 2005, "Devolution in the woods: community-based forestry as hybrid neoliberalism" *Environment and Planning A* **37**(6) 995–1014
- McCarthy J, 2006, "Neoliberalism and the politics of alternatives: community forestry in British Columbia and the United States" *Annals of the Association of American Geographers* **96**(1) 84–104
- McCarthy J, 2015, "A socioecological fix to capitalist crisis and climate change? The possibilities and limits of renewable energy" *Environment and Planning A* **47**(12) 2485–2502
- McCarthy J, Prudham S, 2004, "Neoliberal nature and the nature of neoliberalism" *Geoforum* **35**(3) 275–283
- MacDonald S, Keil R, 2012, "The Ontario greenbelt: shifting scales of the sustainability fix" *The Professional Geographer* **64**(1) 125–145
- Mann G, 2013 *Disassembly Required: A Field Guide to Actually Existing Capitalism* (AK Press, Oakland)
- Mansfield B, 2004a, "Neoliberalism in the oceans: 'rationalization', property rights and the commons question" *Geoforum* **35**(3) 313–326
- Mansfield B, 2004b, "Rules of privatization: contradictions in neoliberal regulation of North Pacific fisheries" *Annals of the Association of American Geographers* **94** 565–584
- Marx K, 1973 *Grundrisse: Foundations of the Critique of Political Economy (Rough Draft)* (Penguin Books, Baltimore)
- Marx K, 1978 *Capital, Volume 2* (Penguin Classics, London)
- Moore J W, 2015 *Capitalism in the Web of Life: Ecology and the Accumulation of Capitalism* (Verso, New York; London)
- Nugent J P, 2015, "Ontario's infrastructure boom: a socioecological fix for air pollution" *Environment and Planning A* **47**(12) 2465–2484

-
- O'Connor J, 1997 *Natural Causes: Essays in Ecological Marxism* (Guilford Press, New York)
- Prudham S, Gad G, Anderson R, 2011, "Networks of power: Toronto's waterfront energy systems from 1840 to 1970", in *Reshaping Toronto's Waterfront* Eds G Desfor, J Laidley (University of Toronto Press, Toronto) pp 175–200
- Robertson M, 2004, "The neoliberalization of ecosystem services" *Geoforum* **35**(3) 361–374
- Schoenberger E, 2004, "The spatial fix revisited" *Antipode* **36**(3) 427–433
- Smith N, 2008 *Uneven Development: Nature, Capital and the Production of Space* (The University of Georgia Press, Athens, GA)
- Swyngedouw E, 1999, "Modernity and hybridity: nature, regeneracionismo, and the production of the Spanish waterscape, 1890–1930" *Annals of the Association of American Geographers* **89**(3) 443–465
- Swyngedouw E, 2007, "Technonatural revolutions: the scalar politics of Franco's hydro-social dream for Spain, 1939–1975" *Transactions of the Institute of British Geographers* **32**(1) 9–28
- Swyngedouw E, 2013, "Into the sea: desalination as hydro-social fix in Spain" *Annals of the American Association of Geographers* **103**(2) 261–270
- Temenos C, McCann E, 2012, "The local politics of policy mobility: learning, persuasion, and the production of a municipal sustainability fix" *Environment and Planning A* **44**(6) 1389–1406
- Vandergeest P, Flaherty M, Miller P, 1999, "A political ecology of shrimp aquaculture in Thailand" *Rural Sociology* **64**(4) 573–596
- Wainwright J, Mann G, 2012, "Climate leviathan" *Antipode* **45**(1) 1–22
- Watts M, 2002, "Green capitalism, green governmentality" *American Behavioral Scientist* **45**(9) 1313–1317
- While A, Jonas A, Gibbs D, 2004, "The environment and the entrepreneurial city: searching for the urban 'sustainability fix' in Manchester and Leeds" *International Journal of Urban and Regional Research* **28**(3) 549–569
- Williams R, 1973 *The Country and the City* (Verso, London)
- Zalik A, 2015, "Resource sterilization: reserve replacement, financial risk, and environmental review in Canada's tar sands" *Environment and Planning A* **47**(12) 2446–2464