Engaging *within* the Academy: A Call for Critical Physical Geography

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"Should some political ecology be useful?" Within many environmental fields the answer to Blaikie's (2012) question is painfully obvious; for Political Ecology, it's just painful. As Blaikie noted many, perhaps even most, Political Ecologists seem to be profoundly ambivalent about helping to craft the natural resource logics, policies, and plans we critique. We may understand what is wrong with those documents and ideas, but that does not often crystallize into determined engagement in reworking them.

What accounts for this common stance of critical but feckless hand-waving? Certainly Political Ecology's emphasis on complexity makes the distillation of bite-sized policy-ready lessons difficult, but many environmental social and physical scientists routinely distill complex findings into relevant talking points. Perhaps instead it is our commitment to social justice which, paradoxically, prevents us from helping to craft more socially just policy: after spending so much time critiquing the establishment, it is difficult to imagine joining it. Regardless, Blaikie's question has sparked a great deal of conversation within Political Ecology about whether more of us can and should engage outside the field, and just what that engagement might look like.

I sympathize with essays in this special section that call for a useful Political Ecology (see Baird, Hirsch, and Turner) and find scholars who engage in the long-term, painstaking work of influencing policy and development deeply

admirable. And yet, I want to begin by highlighting the tyranny of relevance in academia in this age of neoliberalization.[2] Having spent the last decade researching the political-economy of environmental knowledge production, the escalating emphasis on relevance and utility has come to worry me deeply. While neoliberal science management regimes take many different forms, varying by nation, discipline, and even campus, a common theme is the increased, and increasingly exclusive, valuation of knowledge that responds to market demand (Canaan and Shumar 2008; Lave, Mirowski, and Randalls 2010; Mirowski 2011; Randalls 2010; Tyfield 2010). Relevance is increasingly used as a blunt instrument with which to bludgeon the humanities, social theory, and even basic science as insufficiently commercially applicable and, therefore, as of at best very limited intellectual value.

Yet without the social theorists and deep thinkers that enable us to question, analyze, frame, and comprehend the messy complexities of the socio-ecological systems we study – the Polanyis and the Spivaks, the Gramscis and the Bernsteins and the Fanons – our field would stutter to a stop. So I want to begin with Political Ecology heresy: a plea for the preservation of wilderness, albeit of the intellectual variety. We need a protected territory of irrelevance where the charismatic megafauna of our field can reproduce and/or prey on each other in peace.

If we could create and maintain such a foundational fortress preserve of intellectual biodiversity, what forms of relevance might we then attempt? With what would an engaged Political Ecology engage? The clearest direction of movement seems be into the development world in all its contradictory splendor (see for example Baird and Hirsch in this issue); I want to argue in the remainder of this essay for a somewhat different means to that end: engagement with environmental physical science.

Given that the history of relations between Political Ecologists and physical scientists could at best be described as checkered, why would I make such a suggestion? Because physical scientists are surely among the primary agents of change in environmental policy and planning. What they do and think matters; and in fact, it seems to matter earlier and more often than what social scientists do and think. Thus not just physical scientists' findings, but also their understanding of things like the historical legacies of colonialism, the current impacts of accumulation by dispossession, the epistemological status of western science and local knowledge, and the reality of oppression along axes of race, gender, and class are deeply important. Similarly, Political Ecologists' grasp on the material realities of climate change, food insecurity, and natural hazards is just as crucial as our grasp on Marx and Foucault; every time we say something that is physically baseless, even with the best of intentions, we drastically undermine the utility of our work for the communities we study as well as our credibility, and thus our access to the policy-making process. What we need, then, is a bridge between

[2] I am not alone in this concern: Google turns up literally thousands of recent uses of this phrase.

environmental physical and social science, an avenue for collaboration that combines critical social theory and deep materialist knowledge of natural science to craft a more effective and just intervention in environmental policy debates than either side is capable of alone. I term this bridge *Critical Physical Geography*.

Arguing for rapprochement between environmental physical and social science is not new. The current focus on the Anthropocene (Vitousek et al. 1998, Sayre 2012), for example, demands a transdisciplinary approach. Within Geography, calls for active integration of physical and critical human geography have been a common theme for decades. Thanks to sustained work by David Demeritt, Doreen Massey, Keith Richards, Bruce Rhoads, Colin Thorne, and Sarah Whatmore, among others, the hope for a transdisciplinary bridge within Geography has persisted (e.g.Bridge 2008; Castree 2012; Clifford 2002; Goudie 1986; Harrison, Massey, & Richards 2006, 2008; S. Lane 2001; Massey 1999; Matthews and Herbert 2004; Rhoads 1999, 2004; Richards 2003), even as the chasm it must span appears to be widening (Thrift 2002). While actually doing the type of bridging research for which these scholars have called appears very difficult, it has both clear precedents and recent exemplars.

There is a long tradition of critique within Biogeography and Geomorphology that addresses, for example, the ways in which normative commitments shape plant classifications (Vale 1982: 67), as well as key assumptions about the scale of anthropogenic impacts on river systems (Fryirs and Brierley 2009, Rhoads et al. 1999, Walter and Merrits 2008). Early Political Ecology also holds a number of precedents for Critical Physical Geography, in research that wielded soil science, in particular, to politically-informed ends (Blaikie 1985, Hecht 1985). While the post-structuralist turn that begin in the mid-1990s (Peet and Watts 1996) led to critiques that there was little ecology in Political Ecology (Walker 2005), the field has continued to evolve, and the resurgent interest in materiality could provide another base of support for Critical Physical Geography.

Building on these precedents, there is already a small but growing body of research that demonstrates the potential of a Critical Physical Geography approach. For example, Chris Duvall's work (2011a and b) explores the legacies of racist, colonial-era science in modern day soil and plant classifications; Stuart Lane and his collaborators (2011) address the political inequalities codified in hydrological models; Nathan Sayre (2002, 2005) demonstrates the deep ties between widely-adopted range management techniques and political-economy; and Becky Mansfield, Darla Munroe, and Kendra McSweeney are working to better integrate analysis of power relations into research on reforestation in Southern Ohio (2010). Whether through teams of physical and critical human geographers working collaboratively or in the work of cross-trained individuals, this research combines, "critical attention to relations of social power with deep knowledge of a particular field of biophysical science or technology in the service of social and environmental transformation" (Lave et al. 2013).

Expanding Critical Physical Geography would require Political Ecologists to jettison the often bone-deep conviction that environmental science is predominantly a tool enabling elites to grab resources, and acknowledging instead that survey rods and sampling hoops can serve as plowshares as well as swords.[i] Perhaps even more fundamentally, we would need to rethink, or at least broaden, our epistemology and training. There have been extensive debates on this (see Forsyth 2003 for a useful summary) with post-structuralists, strict constructivists, and critical realists fighting it out. Regardless of how we justify it epistemologically, my argument is this: Political Ecologists can (and some of us should) make natural science a more important part of what we do in combination with critical theory. I am not channeling Andrew Vayda here (Vayda and Walters 1999); the critical theory is central. But so is the physical science.

Happily, engaging with Physical Geography (and Physical Geographers) turns out to be a far easier than you might think. Political Ecologists and many Physical Geographers (particularly biogeographers, soil scientists, and geomorphologists), share an intellectual world-view centered on complexity, uncertainty, the importance of processes, and the particularity of local systems; neither of us are big on universal laws or rational actors, which makes collaboration smoother than with many of our colleagues in Economics and Political Science, with whom we supposedly share more common ground.

So let's say you wanted to transform yourself from a Political Ecologist into a Critical Physical Geographer. What would that look like in practice? The first step would be to pick a research area where there is room for Critical Physical Geography to have an impact. One fast way to find such an area is to look for controversies; as STS scholars have long noted, it is relatively easy to gain entrance to conversations where either the science or policy or both are contested, and you are far more likely to be able to substantively contribute to the debate. My dissertation research can serve here as an exemplar, however flawed. In it, I focused on a controversy over methods and scientific expertise that had been convulsing the American stream restoration field since the mid-1990s (Lave 2008 and 2012). Dave Rosgen, a consultant with little formal scientific training, had somehow become the most broadly recognized scientific expert in the field, producing not just the applied tools, but also the most commonly used basic knowledge claims and the primary training in the field. His work had been adopted by almost all of the federal resource management and regulatory agencies in the U.S., as well as by the majority of state environmental agencies, over the vehement protests of many of the most respected academic- and agency-based scientists in the field.

The fight (often referred to by its combatants as, "the Rosgen Wars") was large and protracted enough that both sides welcomed the entrance of a social scientist with sufficiently serious training in fluvial geomorphology to engage substantively with the physical and political-economic issues at stake. Carrying out that engagement transformed my intellectual practice by forcing me to bridge

the political-economics of natural resource policy and the materiality of rivers and streams. My research subjects, methods of data gathering, and theoretical framework expanded to include not just the dynamics of markets and scientific authority, but also of fresh water, willow trees, and sediment.

This transformation of my research practice in turn allowed my work to begin to transform the stream restoration field. As two of my research subjects put it in separate emails, my dissertation 'went viral'. I have no idea how many people have read it, but I have received more than 130 responses since 2008, and dog-eared copies have been spotted everywhere from graduate seminars to government offices to conference bars. The policy paper I wrote based on my research (Lave 2009) has enjoyed even wider distribution, becoming a resource for Rosgen Wars moderates and others who wish to move the stream restoration field into a post-conflict state. By expanding my own intellectual practice to engage substantively across the physical and social sciences, I was able to start a shift in the intellectual practice of U.S. restoration scientists and practitioners stuck in what had previously seemed to be an irresolvable battle over Rosgen's work and scientific status.

To be clear, this research was far from the Political Ecology ideal: no one lives or dies on the basis of stream restoration policy in the U.S. But there are many environmental science and policy controversies that do have pronounced social justice and livelihood impacts where a Critical Physical Geography approach could have substantive impacts.

The discussion above begs one huge question, though: why in heaven's name would anyone bother? Regardless of potential epistemological compatibilities, spanning Physical and Critical Human Geography is hard work. To my mind, the answer lies in the increasingly clear interconnections between social and biophysical systems, which make it quite difficult to think about them separately. And really, given the incoherence of nature/culture dualisms, why would we want to? We cannot address climate justice without understanding the likely impacts, physical and geographic, of climate change; similarly, we cannot understand climate change without understanding its roots in global political economy and the histories of colonialism. We need both lenses to see clearly.

Will every Physical Geographer heed the siren call of Spivak and Marx, throw down their concerns about navel-gazing social scientists, and embrace a new day? Of course not. Nor will every Political Ecologist be willing to discard their concerns about physical science as a tool for resource appropriation, and give up the exhilaration of strong social constructivism to embrace more materialist epistemologies. But if even a few of us choose to embrace a Critical Physical Geography approach, to engage across the current divide and combine social theory with a deep knowledge of a particular field of environmental science, we may be able to move from critiquing natural resource policy to making it more just. And that is a usefulness worth working for.

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References

Blaikie, P. 1985. *The Political Economy of Soil Erosion in Developing Countries*. New York, John Wiley & Sons Inc.

_____. 2012. Should some political ecology be useful? *Geoforum* 43(2): 231-239.

Bridge, G. 2008. Environmental economic geography: a sympathetic critique. *Geoforum, 39*(1): 76-81.

Canaan, Joyce E., and Wesley Shumar, eds. 2008. *Structure and Agency in the Neoliberal University*: Routledge Press.

Castree, N. 2012. Progressing physical geography. *Progress in Physical Geography* 36: 298-304.

Clifford, N. J. 2002. The future of geography: When the whole is less than the sum of its parts. *Geoforum* 33: 431-436.

Duvall, Chris. 2011a. Ferricrete, forests, and temporal scale in the production of colonial science in Africa. In *Knowing nature: Conversations at the border of Political Ecology and Science Studies*, edited by M. Goldman, P. Nadasdy and M. Turner. Chicago: University of Chicago Press.

_____. 2011b. Biocomplexity from the ground up: Vegetation patterns in a West African savanna landscape. *Annals of the Association of American Geographers* 101 (3):497-522.

Forsyth, Tim. 2003. *Critical political ecology: The politics of environmental science*. 1st ed. London: Routledge.

Fryirs, K. and G. J. Brierley. 2009. Naturalness and place in river rehabilitation. *Ecology and Society,* 14(1): 20

Goudie, A. S. 1986. "The integration of human and physical geography." *Transactions of the Institute of British Geographers* 11(4): 454-458.

Harrison, S., D. Massey, D., and K. Richards. (2006). Complexity and emergence. *Area, 38* (4), 465-471.

____. 2008. Conversations across the divide. *Geoforum* 39: 549-551.

Hecht, S. (1985). "Environment, Development and Politics: Capital Accumulation and the Livestock Sector in Eastern Amazonia." *World Development* 13(6): 663-684.

Lane, S. N. 2001. "Constructive comments on D Massey - `Space-time, ``science" and the relationship between physical geography and human geography'." *Transactions of the Institute of British Geographers* 26(2): 243-256.

Lane, Stuart N., Catharina Landstrom, and Sarah Whatmore. 2011. Imagining flood futures: Risk assessment and management in practice. *Philosophical Transactions of the Royal Society A* 369 (1942):1784-1806.

Lave, R. 2008. *The Rosgen Wars and the Shifting Construction of Scientific Expertise*. Dissertation, Geography, University of California at Berkeley, Berkeley.

_____. 2009. The Controversy over Natural Channel Design: Substantive Explanations and Potential Avenues for Resolution. *Journal of the American Water Resources Association* 45(6): 1519-1532.

_____. 2012. *Fields and streams: Stream restoration, Neoliberalism, and the Future of Environmental Science*. Athens, GA: University of Georgia Press.

Lave, R., Philip Mirowski, and Samuel Randalls. 2010. Introduction: STS and Neoliberal Science. *Social Studies of Science* 40(5): 659-703.

Lave, R., M. W. Wilson, E. Barron, C. Biermann, M. Carey, C. Duvall, L. Johnson, M. Lane, N. McClintock, D. Munroe, R. Pain, J. Proctor, B. Rhoads, M. M. Robertson, J. Rossi, N. Sayre, G. Simon, M. Tadaki, and C. Van Dyke. In press. "Critical Physical Geography." *The Canadian Geographer*.

Mansfield, B., et al. (2010). "Does Economic Growth Cause Environmental Recovery? Geographical Explanations of Forest Regrowth." *Geography Compass* **4**(5): 416-427.

Massey, D. 1999. "Space-time, 'science' and the relationship between physical geography and human geography." *Transactions of the Institute of British Geographers* NS 24: 261-276.

Matthews, J. A. and Herbert, D. T. eds. 2004. *Unifying geography: common heritage, shared future*. London: Routledge.

Mirowski, Philip. 2011. *Science-Mart: Privatizing American science*. Cambridge, MA: Harvard University Press.

Peet, R. and M. Watts, Eds. 1996. *Liberation Ecologies: Environment, Development, Social Movements*. London, Routledge.

Randalls, Samuel. 2010. Weather Profits: Weather Derivatives and the Commercialization of Meteorology. *Social Studies of Science* 40 (5).

Rhoads, B.L. 1999. Beyond pragmatism: the value of philosophical discourse for physical geography. *Annals of the Association of American Geographers* 89: 760-771.

Rhoads, B.L., D. Wilson, M. Urban, and E. E. Herricks. 1999. Interaction between scientists and nonscientists in community-based watershed management: emergence of the concept of stream naturalization. *Environmental Management* 24: 297-308.

Richards, K. S. 2003. Ethical grounds for an integrated geography. In *Contemporary meanings in physical geography: from what to why?* ed. S. Trudgill and A. Roy. London: Arnold, 233-58.

Sayre, Nathan F. 2002. *Ranching, endangered species, and urbanization in the Southwest: Species of capital*. Tucson, AZ: University of Arizona Press.

_____. 2005. *Working wilderness: The Malpai Borderlands Group and the future of the Western range*. Tucson: Rio Nuevo Press.

____. 2012. The politics of the anthropogenic. *Annual Review of Anthropology* 41: 57-70. DOI: 10.1146/annurev-anthro-092611-145846

Thrift, N. 2002. "The future of geography." *Geoforum* 33:291-298.

Tyfield, David. 2010. Neoliberalism, Intellectual Property and the Global Knowledge Economy. In *The Rise and Fall of Neoliberalism: The Collapse of an Economic Order?*, edited by K. Birch and V. Mykhenko. London: Zed.

Vale, T. R. 1982. *Plants and people: vegetation change in North America*. Washington, DC, Association of American Geographers.

Vayda, Andrew, and Bradley B. Walters. 1999. Against political ecology. *Human Ecology* 21 (1):167-179.

Vitousek P. M., H.A. Mooney, J. Lubchenco, and J.M. Melillo. 1997. Human domination of Earth's ecosystems. *Science* 277:494–99.

Walker, Peter. 2005. "Political Ecology: Where is the Ecology?" *Progress in Human Geography* 29 (1):73-82.

Walter, R. C. and D. Merritts (2008). "Natural streams and the legacy of water-powered mills." Science **319**(5861): 299-304.

[i] I focus here on critical human geographers because of *ACME*'s typical readership. I have addressed the challenges for Physical Geographers elsewhere (Lave et al. in press).