DISCUSSION

Why We Need Political Ecology to Understand Climate Change: A Response to T. Jayaraman

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I am deeply grateful to Professor Jayaraman (2015) for reviewing my new book *The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change and the Conflicts of Development*. As his review makes clear, there are many aspects of agreement that stem from our shared concerns with how questions of power, production, and social inequality stand at the core of contemporary agrarian change. Dr. Jayaraman, however, also raises a number of strong reservations with regard to my approach. In particular, he is deeply suspicious of my use of political ecology as a framework for the book's analysis. Although the title of his review is "Can Political Ecology Explain Climate Change?" it might be more accurately named "Why Political Ecology Cannot Explain Climate Change." At the core of this disagreement is the way we understand "nature" and "society" and the role of science and technology within that complex relationship. These are vital issues for any discussion of agrarian futures in an era of climate change. In order to take the debate forward, I seek to clarify my position concerning the compelling contribution of political ecology to these debates.

At first glance, Jayaraman's suspicions regarding political ecology might seem surprising. The starting point for political ecology as a field has been an attempt to combine the concerns of ecology with a focus on power, production, and exchange that stems from agrarian political economy. As Blaikie and Brookfield (1987) put it, this field of inquiry incorporates "the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself." Such an approach would seem to align well with Jayaraman's correct insistence that inequality and oppression are why poor and marginal farmers suffer disproportionately the effects of climate variability (Jayaraman 2011). Political ecologists, for instance, have

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been at the forefront of developing critical conceptualisations of social vulnerability and ecosystem degradation that directly challenge mainstream approaches.[1]

That said, Jayaraman chides political ecology on two core points. First, he sees an inherent tendency within political ecology to over-politicise environmental issues. While political ecologists may earnestly seek to fuse political economy and ecological processes, Jayaraman believes that in practice ecology has been sacrificed on the altar of politics. In a blind rush to attribute environmental problems to social factors, such as inequitable access to and control over natural resources, political ecologists like myself apparently lose sight of what Jayaraman terms the "objective biophysical dimensions" of ecological processes.[2] In Jayaraman's opinion, the outcome is that political ecology portrays human agency as virtually unlimited because it cannot adequately grasp how such agency is shaped or constrained by geographical or technological limitations. In short, political ecology refuses to grasp the nature of nature itself. On this basis, he criticises the case studies I present for a lack of attention to the objective character of biophysical processes.

Notwithstanding the shortcomings of my own work, what troubles me here is how Jayaraman appears keen to protect the idea of an objective nature that stands outside of politics and culture and which can be known objectively through the application of scientific methods. On this point Jayaraman and I certainly part company in our respective analyses. In an ever more humanised world in which humans play an increasingly direct role in producing nature on both local and global scales, the idea of an objective nature standing outside of society appears remarkably quaint and deeply unsatisfactory. Throughout the case studies in my book — whether it is the question of exposure to flood risk in Pakistan, groundwater overexploitation in Andhra Pradesh, or the ability of rangeland to support herding livelihoods in the Mongolian steppe — I am at pains to show how the seemingly "objective" limits of nature are established through processes of production that are simultaneously biophysical *and* social.

In short, nature isn't all that natural or, as Timothy Mitchell puts it, what appears as "nature" or "natural" is already shaped by forms of power, technology, expertise, and privilege (Mitchell 2002). This objectification of nature is precisely what political ecology seeks to question because it is often wrapped within governmental discourses that reduce and smother highly political questions to issues of natural facts.

As an example, in my chapter on climatic change and agrarian distress in Andhra Pradesh, I emphasise how the biophysical constraints on groundwater extraction (i.e., the patchy and shallow aquifers located in the Deccan's hard rock formations)

[1] Michael Watt's opus *Silent Violence: Food, Famine, and Peasantry in Northern Nigeria* (2013) is a prime example.

[2] As I discuss in my book, Jayaraman is not the first to level such a critique. For a discussion of this theme that runs counter to Jayaraman's argument, see Walker (2005).

are interlaced with the social relations of land use, technological change, and cycles of debt in ways that fundamentally shape not only who can extract water but also what establishes the effective demand for water and the rate of recharge.[3] As I show, to establish "objective" parameters of groundwater extraction is to make a series of assumptions about extraction and usage that are in practice co-determined by biophysical *and* social forces. Setting "objective" limits therefore rests on assumptions about crop choices, cultivation techniques, rights of access, and the socio-technical organisation of landscapes that affect recharge rates in very complex ways. In such a context, it is impossible to neatly separate out the "social" from the "natural," the "subjective" from the "objective." On the contrary, it is precisely the claim that there are objective natural limits that stand outside of society that underscores the mainstream call for inherently technocratic solutions to such complex socio-ecological problems so as to depoliticise the field of climate change adaptation.

This leads us to a second point. If nature is not entirely "objective," we must then handle with caution the idea that the facts of nature speak for themselves and that scientists are there simply to discover and relay them to us. It appears to be precisely this questioning of the *a priori* objectivity of science — what Jayaraman terms the "confusion regarding the proper role of the scientific and experiential knowledge of climate" — that he finds so unsettling in my work, despite our other areas of close agreement. In this respect, *pace* Jayaraman, many political ecologists have indeed considered the possibility that "scientific and technological knowledge have their own autonomous logic of development in both theory and practice." They have widely questioned this notion on theoretical grounds and by means of multiple case studies.[4] Although scientific frameworks and analysis evidently exert great influence upon the way that humans see and act upon the world, they are not autonomous from the social relations, networks, practices, and hierarchies in which they operate. As Peter Taylor's brilliant work on the social embeddedness of scientific knowledge production clearly demonstrated, if there is some entirely neutral, pre-social position on which to produce accounts of ecological processes, scientists rarely approximate it (P. Taylor 2005). On the contrary, scientific practice is shaped (not determined) by a mixture of social conventions, values, political pressures, and, increasingly, the cold, hard logic of both public and corporate financing.[5]

This does not mean that all ecological science is inherently compromised or that such knowledge is not vital for our understanding of the world. On the contrary, it simply

[3] I am mystified as to why Jayaraman considers my analysis of agrarian crisis and farmer suicides so problematic given that the counter-citations he provides seem to share a very similar perspective to my own (see also M. Taylor 2011).

[4] As a case in point, the development of modern climatology has been strongly shaped by the processes of capitalist industrialisation, agrarian rationalisation, colonial expansion, and military planning. These historical processes greatly shaped the aims and practices of climatology as it took shape and continue to influence its current form (see Chapter 2 of my book).

[5] For a rigorous and uncompromising examination of science, politics, and uncertainty in genetically modified food research, see Stone (2014).

compels us to be cautiously reflexive about what forms of scientific knowledge are produced, by whom, by what means, and why some forms of knowledge count over others.[6] In contemporary rural India, where an industrial model of agricultural intensification predicated on proprietary bio-tech solutions is being rammed home by a corporate-political nexus to solve an apparently "objective" problem of low yields, these seem very pertinent questions to be asking. By linking social inequalities with the processes by which truth claims are made, political ecology provides the most finely graded tools by which to have precisely that discussion.

This brings us to a final point of tension. Jayaraman argues that political ecology perspectives share "a general tone of scepticism … with regard to the objective aspect of technology." If by "scepticism" he means that political ecologists have critically detailed the many ways in which technological change — from canalisation, to synthetic crop inputs, to biotech seeds — creates new contradictions, tensions and power relations with multiple unforeseen effects, then yes, guilty as charged. Far from a vice, I would strongly contend that such a characteristic is a primary virtue of political ecology. After all, is not global warming the mother of all technology-driven "side-effects" that threatens to unravel many of the basic parameters of the modernist vision of progress? In the age of the "anthropocene," wherein humans aided by technology have chiselled furiously away at the biophysical systems upon which we all depend, perhaps a little scepticism towards the objective aspect of technological change might well be warranted?

Of course, it is possible that Jayaraman sees the independent logic of science and technological development setting the objective conditions for a broader social transformation in an equitable and sustainable direction. This is a worthy ambition and I dearly hope that he is right. Yet in a world in which technological change and scientific research remain driven by troubling political-economic logic, I greatly fear that he is not.

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[6] Some of the best political ecology work on these topics include Blaikie and Muldavin (2004) and Stone (2012).

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