The International Handbook of Environmental Sociology, Second Edition

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6 Postconstructivist political ecologies

Arturo Escobar

Three generations of political ecology

Political ecology (PE) is an interdisciplinary field that has been under development for several decades; the process of constructing it has been marked by rich epistemological, paradigmatic and political debates since its inception. It is broadly recognized that it emerged in the 1970s out of the interweaving of several ecologically oriented frameworks and political economy. By bringing these two fields together, PE aimed to work through their respective deficiencies, namely, human and cultural ecology's lack of attention to power and political economy's undeveloped conceptualization of nature. Too mired still in structural and dualist ways of thinking, this 'first generation political ecology' (Biersack, 2006) has given way over the past decade to what could be termed a 'second-generation' political ecology; variously informed by those theoretical trends marked as 'post-' since the 1980s (poststructuralism, postmarxism, postcolonialism), the political ecology of the last 15 years has been a vibrant inter- and transdisciplinary space of inquiry drawing on many disciplines (geography, anthropology, ecology, ecological economics, environmental history, historical ecology, development studies, science and technology studies) and bodies of theory (liberal theory, Marxism, poststructuralism, feminist theory, phenomenology, postcolonial theory, complexity and natural science approaches such as landscape ecology and conservation biology). What distinguishes this second-generation PE from its predecessor is its engagement with the epistemological debates fostered by the theoretical positions known as constructivism and anti-essentialism.

Although very provisionally, given the newness of the trends in question, it could be said that a third-generation PE has been in ascension over the past five years. With roots in the second-generation PE and in the critical social theories of the 1980s, this emerging PE finds its direct conditions of possibility in the most recent debates on post-representational epistemologies in geography and science and technology studies (STS), on the one hand, and flat and relational ontologies in anthropology, geography, cultural studies and STS, on the other. At the social level, this tendency is influenced by persistent environmental problems for which PE did not have fully satisfactory answers and in social movement trends that resonate with similar problematics. The key difference between second- and third-generation PE is the attention that the latter gives to issues of ontology besides epistemology. Today, the three PEs can be seen at play in various works, although orientations from the second phase are still dominant. If PE1 could be said to be preconstructivist and PE2 constructivist, PE3 can be referred to as postconstructivist in the sense that, while informed by transformative debates on constructivism, anti-essentialism and anti-foundationalism that swept the critical scholarly worlds in the humanities and social sciences in many parts of the world, it builds on the efforts at working through the impasses and predicaments created by constructivism, radicalizing them, while at the same time returning to questions about 'the real'. As I shall suggest,

PE3 arises out of broader transformations in social theory – what could be called an 'ontological turn' in social theory, more concretely what a number of authors refer to as 'flat ontologies'.

The range of questions with which these various PEs deal, in both historical and contemporary terms, has remained relatively stable, although the list of problem areas keeps on growing: the relation between environment, development and social movements; between capital, nature and culture; production, power and the environment; gender, race and nature; space, place and landscape; knowledge and conservation; economic valuation and externalities; population, land and resource use; environmental governmentality; technology, biology and politics; and so forth. This range of questions, conversely, refers to problems whose very salience lends relevance to the field; these include, among others, destruction of biodiversity, deforestation, resource depletion, unsustainability, development, environmental racism, control of genetic resources and intellectual property rights, bio- and nanotechnologies, and global problems such as climate change, transboundary pollution, loss of carbon sinks, the transformation of agricultural and food systems, and the like.[1] Some recent trends discuss the multiplicity of socionatural worlds or cultures–natures, relational versus dualist ontologies, networked versus structural forms of analysis, and even a renewal of the question of what constitutes life. While these questions are more intractable theoretically, they seem to stem from the social more clearly than ever before, due in great part to the practice of some social movements.

The next section of this chapter deals with epistemologies of nature and their implications for PE. In the third section, I present a provisional outline of third-generation PE.

Varieties of nature epistemologies

The knowledge of nature is not a simple question of science, empirical observation or cultural interpretation. To the extent that this question is a central aspect of how we think about the present environmental crisis – and hence PE's constitution – it is important to have a view of the range of positions on the issue. To provide such a view is not a simple endeavor, for what lies in the background of this question – besides political and economic stakes – are contrasting epistemologies and, in the last instance, foundational myths and ontological assumptions about the world. The brief panorama of positions presented below is restricted to the modern social and natural sciences.

Nature epistemologies tend to be organized around the essentialist/constructivist divide. Essentialism and constructivism are contrasting positions on the relation between knowledge and reality, thought and the real. Succinctly, essentialism is the belief that things possess an unchanging core, independent of context and interaction with other things, that knowledge can progressively know.[2] Concrete beings develop out of this core, which will eventually find an accurate reflection in thought (e.g. through the study of the thing's attributes to uncover its essence). The world, in other words, is always predetermined from the real. Constructivism, on the contrary, accepts the ineluctable connectedness between subject and object of knowledge and, consequently, the problematic relation between thought and the real. The character of this relation yields varieties of constructivism.

As is well known, poststructuralism transformed the discussion on epistemology in many fields, including those concerned with nature. From a certain poststructuralist perspective (Foucaultian and Deleuzian in particular) there cannot be a materialist analysis

that is not, at the same time, a discursive analysis. The poststructuralist analysis of discourse is a social theory, that is, a theory of the production of social reality that includes the analysis of representations as social facts inseparable from what is thought of as 'material reality'. Poststructuralism treats language not as a reflection of 'reality' but as constitutive of it. That was the whole point, for instance, of Said's (1979) *Orientalism.* For some, there is no materiality unmediated by discourse, as there is no discourse unrelated to materialities (Laclau and Mouffe, 1985). Discourse, as used in these approaches, is the articulation of knowledge and power, of statements and visibilities, of the visible and the sayable. Discourse is the process through which social reality comes into being.

There is an array of epistemological positions along the essentialist/constructivist divide, from positivism to the most recent forms of constructivism, each with their respective philosophical commitments and political attachments (see Escobar, 2008 for a more substantial discussion). The constructivist positions are difficult to classify. The following are said to be the most salient ones in the nature–culture field; these are not distinct schools but partially overlapping positions. They do not necessarily constitute highly visible trends (some are marginal or dissident within their fields, including biology). It is debatable whether all of them can be described in terms of a constructivist research program, although in these cases their effect *vis-à-vis* epistemological realism is similar to that of the constructivist proposals.

Dialectical constructivism

Besides the transformation of historical materialism through ecology – the account of capital's restructuring of production conditions (O'Connor, 1998) – the Marxist framework has produced the influential view of the dialectic of organism and environment, especially in the work of biologists Levins and Lewontin (1985). By complicating the binarism between nature and culture, these biologists contributed to rethinking theories based on this cleavage, including evolution and the ontogeny–phylogeny relation, although the implications of their work for ecology have been less explored. A similar contribution, although from different sources, including theories of heterarchy, comes from the field of historical ecology. This field studies long-term processes in terms of changing landscapes, defined as the material – often dialectical – manifestation of the relation between human beings and the environment (e.g. Crumley, 1994).

An altogether different conception of the dialectical method has been developed by Murray Bookchin and the school of social ecology, building on socialist and anarchist critiques of capitalism, the state and hierarchy. By weaving together the principles of social anarchism (e.g. decentralized society, direct democracy, humanistic technology, a cooperative ethic etc.) with what he sees as the natural dynamic that characterizes evolution itself, Bookchin developed a systemic analysis of the relation between natural and social practice (1986, 1990; Leff, 1998 for a critique). The cornerstone of his framework is the notion of dialectical naturalism, that is, the idea that nature presupposes a dialectical process of unfolding towards ever-greater levels of differentiation and consciousness. This same dialectic is found in the social order; indeed, social ecology poses a continuum between natural and social evolution (between first and second natures) and a general tendency towards development, complexification and self-organization. Extending Bookchin's insights, Heller (2000) identifies mutualism, differentiation and development as key principles affecting the continuities between natural and social life,

natural and social evolution. For social ecologists, there is, then, an organic origin to all social orders; natural history is a key to understanding social transformation.

Constructive interactionism

This approach, proposed by Susan Oyama, deepens the insights of dialectical biology by infusing it with debates on constructivism, including feminist critiques of science. Oyama's focus is on rethinking biological development and evolution, taking as a point of departure a critique of gene-centric explanations in evolution (Oyama 2000, 2006). Oyama's call is for a dynamic and holistic approach to biological processes, which she advances, in her own field, through the concept of 'developmental system', defined as 'a heterogeneous and causally complex mix of interacting entities and influences' that produces the developmental cycle of an organism (2000: 1). She also proposes a non-dualist epistemology called constructive interactionism; rather than relying on a distinction between the constructed and the pre-programmed ('reality'), it upholds the idea that 'our presence in our knowledge, however, is not *contamination*, as some fear, but the very *condition* for the generation of that knowledge' (p. 150). Oyama's biology thus 'recognizes our own part in our construction of internal and external natures, and appreciates particular perspectives for empathy, investigation and change' (p. 149).

Phenomenological perspectives

Tim Ingold (1992) has long argued against the Cartesian assumption of the divides between humanity and nature and living and non-living things characteristic of most neo-Darwinist approaches. Besides the ethnography of non-Western groups, his main source of inspiration for overcoming this dualism is phenomenology, according to which life happens in the engagement with the world in which we dwell; prior to any objectification, we perceive the world because we act in it, and we similarly discover meaningful objects in the environment by moving about in it. In this way, things are neither 'naturally given' nor 'culturally constructed' but the result of a process of co-construction. In other words, we do not approach the environment primarily as a set of neutral objects waiting to be ordered in terms of a cultural project, although this certainly happens as well (what Heidegger, 1977 called 'enframing'); rather than this 'designer operation', in much of everyday life 'direct perception of the environment is a mode of engagement with the world, not a mode of [detached] construction of it' (Ingold, 1992: 44). Knowledge of the world is obtained not so much through abstraction, but through a process of 'enskillment' that happens through the active encounter with things (for related approaches in biology see Maturana and Varela, 1987; in computer science, Winograd and Flores, 1986).

Poststructuralist anti-essentialism

Donna Haraway's effort at mapping 'the traffic across nature and culture' is the most sustained anti-essentialist approach to nature. The notion of 'traffic' speaks to some of the main features of anti-essentialism, such as the complication of naturalized boundaries and the absence of neatly bounded identities, nature included. For Haraway, contrary to the positivist view in which the world/real informs knowledge, it is the other way around: knowledge contributes to making the world in profound ways. The disembodied epistemology of positivist science ('the god trick' of seeing everything from nowhere, as she descriptively put it (1988: 188)) is at the root of the modern culture of white capitalist

patriarchy, with its subordination of nature, women and people of color. Haraway offers a profoundly historicized reading of the making of socionatural worlds, particularly by contemporary techno-science. Building upon other proposals for a feminist science, she articulates an alternative epistemology of knowledge that is situated and partial but that nevertheless can yield consistent, valid accounts of the world (Haraway, 1988, 1989, 1991, 1997, 2003).

A great deal of work being done today at the interface of nature and culture in anthropology, geography and ecological feminism follows the strictures of anti-essentialism, and it would be impossible to summarize it here.[3] Among the basic tenets of these works are, first, the idea that nature has to be studied in terms of the constitutive processes and relations – biological, social, cultural, political, discursive – that go into its making; second, and consequently, a resistance to reduce the natural world to a single overarching principle of determination (whether genes, capital, evolution, the laws of the ecosystem, discourse, or what have you). Researchers following these principles study the manifold, culturally mediated articulations of biology and history – how biophysical entities are brought into social history, and vice versa; one suggestion is that it is possible to speak of different cultural regimes for the appropriation of nature (e.g. capitalist regime, as in the plantations; organic regime, as in the local models of nature of non-Western peoples; and techno-natures, as in the recent biotechnologies; see Escobar, 1999). Whether speaking about forests, biodiversity, or recent biotechnologies, in these analyses there is always a great deal of history, culture, politics, and some (not yet enough) biology. Third, there is a concern with biological and cultural differences as historically produced. In this respect, there is an effort at seeing both from the center – looking at dominant processes of production of particular socionatural configurations – and from the margins of social/natural hierarchies, where stable categories might be put into question and where new views might arise (e.g. Cuomo, 1998; Rocheleau, 1995a, 1995b; Rocheleau and Ross, 1995). As Rocheleau (2000, 2007; see also Whatmore, 2005) puts it, we need to understand how living and non-living beings create ways of being-in-place and being-in-networks, with all the tensions, power and affinities that this unprecedented hybridity entails. Finally, there is a reconstructive strain in many of these works that implies paying attention to particular situations and concrete biologies/ecosystems, and to the social movements that emerge out of a politics of difference and a concern for nature. The hope is that this concern could lead to envisioning novel ecological communities – what Rocheleau aptly calls instances of ecological viability. From this perspective, all PEs could be said to be reconstructive, in the sense given to the term by Hess (2001) in STS to indicate a shift towards actively envisioning and contributing to alternative world constructions.

While constructivism restored a radical openness to the world, for its critics the price was its incapacity to make strong truth claims about reality. There is a growing set of epistemologies that could be called neo-realist, including the following two positions:

Deleuzian neo-realism A non-essentialist, yet realist, account of the world exists in the work of philosophers Deleuze and Guattari (see especially 1987, 1994). Deleuze's starting point is that the world is always a becoming, not a static collection of beings that knowledge faithfully represents; the world is made up of differences, and it is the intensity of differences themselves – flows of matter and energy – that generate the variety of geological, biological and cultural forms we encounter. Matter is seen by Deleuze and

Guattari as possessing its own immanent resources for the generation of form. This difference-driven morphogenesis is linked to processes of self-organization that are at the heart of the production of the real. Differentiation is ongoing, always subverting identity, while giving rise to concrete biophysical and social forms, the result of processes of individuation that are relational and always changing. Instead of making the world depend on human interpretation, Deleuze achieves openness by turning it into a creative and complexifying space of becoming.

One of the problems with most epistemologies and ontologies of nature is that they are based entirely on the human experience; they distinguish between the real and the non-real according to what human beings are able to observe (de Landa, 2002). We need to drop the 'non-realist baggage' if we want to arrive at a new ontological commitment to realism that allows us to make strong claims about, say, emergent wholes. 'Deleuze is such a daring philosopher' – de Landa concludes – 'because he creates a non-essentialist realism' (2002: 11). In the end, de Landa advocates for a new form of empiricism that allows us to follow the emergence of heterogeneous and multiple forms out of the larger field of the virtual. We shall return to this discussion in the next section, when we situate the Deleuzian proposal within a broader trend towards 'flat ontologies', theories of assemblages, complexity and self-organization.

Holistic realism This view has been articulated most explicitly by complexity theorist Brian Goodwin (2007). His reading of research on emergence, networks and self-organization leads him to conclude that meaning, language, feelings and experience are not the prerogative of human beings but are found in all living beings; creativity is an inherent aspect of all forms of life, and it is on this basis that coherence and wholeness is produced. His proposal is for a hermeneutic biology and a holistic realism that accept that nature expresses itself in embodied reality and that opens up towards the epistemological role of feelings and emotions. The implication is that scientists can become

> co-creators of [the] world with beings that are much more like us cognitively and culturally that we have hitherto recognized . . . We are within the history of that unfolding . . . The task before us now is to rethink our place in the stream of creative emergence on this planet in terms of the deeper understanding of the living process that is now taking form. The life of form, of which we are a part, unfolds toward patterns of beauty and efficiency that satisfy both qualitative and quantitative needs in such a way as to maintain diversity of species, cultures, languages and styles of living. (2007, pp.100, 101, 110)

What then is left of the question, 'What is nature?' Within a positivist epistemology nature exists, pre-given and pre-discursive, and the natural sciences claim to produce reliable knowledge of its workings. For the constructivist interactionist, on the contrary, we need to 'question the idea that Nature has a unitary, eternal nature that is independent of our lives. . . Nature is multiple but not arbitrary' (Oyama, 2000: 143). The positivist might respond that if this is the case, there must be an invariant that remains, a central core of sorts that we can know, thus missing the point since, for Oyama, there cannot be one true account of nature's nature. For Leff (1986, 1993, 2002), while nature is a distinct ontological domain, it has become inextricably hybridized with culture and technology and increasingly produced by our knowledge. For Ingold (1992: 44), nature exists only as a construction by an observer; what matters for him is the environment, that is, the

world as constituted in relation to the activities of all those organisms that contribute to its formation. While for social ecologists nature is real and knowable, this realism is not the same as that of the Cartesian subject but of a knowing subject that is deeply implicated in the same process of world-making. For the anti-essentialists in the humanities and social sciences, biophysical reality certainly exists, but what counts most is the truth claims we make in nature's name and how these truth claims authorize particular agendas that then shape our social and biological being and becoming. Despite the neo-realist approaches of complexity theory, finally, the continued dominance of epistemological realism must be acknowledged; it relies not only on its ability to muster credible forms of knowledge, but also on its many links to power: the link between science, production and technology; the current emphasis on the production of life through the further development of biotechnical rationality; and in the last instance its ability to speak for Western logocentrism, with its dream of an ordered and rational society that most human beings have learned to desire and depend upon – now buttressed by genetically enhanced natures and human beings.

Put differently, positivists are good at providing scientific information about biophysical aspects of nature, yet they are unable to account for the differences among nature–culture regimes, since for them nature is one and the same for all peoples and situations; these differences have biophysical implications that they either miss or are at pains to explain. Constructivists do a good job in terms of ascertaining the representations or meanings given to nature by various peoples, and the consequences or impacts of those meanings in terms of what is actually done to nature (e.g. Slater, 2003 for the case of rainforests). This is very important, yet they usually bypass the question, central to neo-realists and dialecticians, of the ontologically specific character of biophysical reality and this latter's contribution to human societies (e.g. Redclift, 2006). Finally, it is still hard to see how the neo-realism derived from complexity might allow us a different reading of the cultural dimension of nature–culture regimes. Leff's is an initial attempt in this direction. Ingold (2000) also points in this direction with his insistence on the profoundly relational character of reality. Even with the result of processes of individuation, things do not exist in the real world independently of their relations. And knowledge is not merely applied but generated in the course of lived experience, including of course encounters with the environment. In sum, to envision relations between the biophysical and the cultural, including knowledge, that avoid the pitfalls of constructivism and essentialism is not an easy task. This is one of the driving impetuses of the emerging political ecology.

An emerging political ecology? From epistemologies to ontologies

The various waves of deconstruction and discursive approaches of the past few decades brought with them a critique of realism as an epistemological stance. A number of very interesting social theory trends at present entail, implicitly or explicitly, a return to realism; since this is not a return to the naïve realisms of the past (particularly the Cartesian versions, or the realism of essences or transcendent entities), these tendencies might be called neo-realist or postconstructivist. As is often the case when a significantly new approach is being crafted, neo-realist views seem to be springing up worldwide in a broad variety of intellectual and even political terrains – from geography, anthropology and cultural studies to biology, computer science and ecology. Some of the main categories affiliated with this diverse trend include assemblages, networks and actor networks, relationality, non-dualist and relational ontologies, emergence and self-organization,

hybridity, virtuality and the like. The trend is fueled most directly by poststructuralism and phenomenology, and in some versions by post-Marxism, actor-network theories (ANT), complexity theory, and philosophies of immanence and of difference; in some cases they are also triggered by ethnographic research with groups that are seen as embodying relational ontologies or by social movements who construct their political strategies in terms of dispersed networks. Taken as a whole, these trends reveal a daring attempt at looking at social theory in an altogether different way – what could broadly be termed 'flat alternatives'. The language used to refer to a host of processes and features is indicative of this aim: flat versus hierarchical, horizontality versus verticality, relational versus binary thinking, self-organization versus structuration, immanence and emergence versus transcendence, enactment versus representation, attention to ontology as opposed to epistemology, and so forth. What follows is a very tentative and partial view of this trend. While they could be said to provide the material for, and contours of, a postconstructivist PE, the trends in question are by no means completely coherent or aiming in the same direction. Moreover, I should stress that there might well be different genealogies to this and to other forms of political ecology at present.[4]

In geography, some of the key interventions are the debates over the past decade on spatial representations (e.g. Pickles, 2004) and 'non-representational theories' (e.g. Thrift, 2007), 'hybrid geographies' (Whatmore, 2002), 'human geography without scale' (Marston et al., 2005, and the ensuing debate in *Transactions of the Institute of British Geographers*, **32** (2), 2007), 'emergent ecologies' in terms of 'rooted networks and relational webs' (e.g. Rocheleau and Roth, 2007), and the shift from dualist to relational ontologies (e.g. Crastree, 2003; Braun, 2008). Again, even within geography these debates cannot be said to relate exactly to the same set of issues, and in some cases they are in tension with each other. Taken together, however, they build up a complex argument about scale, space, place, ontology and social theory itself; 'nature', 'ecology' and 'politics' are often (not always) present in these debates, most potently in Whatmore's and Rocheleau's cases. In these works, there is a renewed attention to materiality, whether through a focus on practice, or relations, networks, embodiments, performances or attachments between various elements of the social and the biophysical domains. The sources, however, are quite varied; some include poststructuralism and phenomenology (in some cases, the latter via anthropologist Tim Ingold's influential work) with attention to practice and engagement with the world, rather than representation. In those works influenced by ANT and Deleuze and Guattari, the emphasis is on ascertaining the production of the real through manifold relations linking human and non-human agents, bridging previously taken-for-granted divides (nature/culture, subject/object, self/other) into processes of productions and architectures of the real in terms of networks, assemblages, and hybrid socionatural formations. Space is no longer taken as an ontologically given but as a result of relational processes.

In *Human Geography without Scale*, for instance, the authors state that most conceptions of scale remain trapped in a foundational hierarchy and verticality, with concomitant problems such as lingering micro–macro and global–local binaries (Marston et al., 2005). An important part of these authors' argument is that these problems cannot be solved just by appealing to a network model; the challenge is not to replace one 'ontological–epistemological nexus (verticality) with another (horizontality)' but to bypass altogether the reliance on 'any transcendent pre-determination' (p. 422; see also the ensuing debate in *Transactions of the Institute of British Geographers*, **32** (2), 2007). This

would be achieved by adopting a flat (as opposed to horizontal) ontology that discards 'the centering essentialism that infuses not only the up–down vertical imagery but also the radiating (out from here) spatiality of horizontality' (Marston et al., 2005: 422). Here flat ontology refers to complex, emergent spatial relations, self-organization and ontogenesis. 'Overcoming the limits of globalizing ontologies', these authors conclude, 'requires sustained attention to the intimate and divergent relations between bodies, objects, orders, and spaces' – that is, to the processes by which assemblages are formed; 'sites' become 'an emergent property of their interacting human and non-human inhabitants . . . That is, we can talk about the existence of a given site only insofar as we can follow the interactive practices through their localized connections' (ibid.: 425). Whether all of this amounts to a complete overhaul of the notion of scale remains an open question (see the debate). Rocheleau's proposal, that recent network approaches that refuse binary thinking can help us to understand the world 'as always already networked, already embedded' (Rocheleau and Roth, 2007: 433) contributes to working through the problems in network thinking pointed at by Marston et al.; their attention to ecological dynamics, which is absent in most of their colleagues' work, enables them to make some particularly apposite propositions for PE. In this PE, networks are connected to places and territories – through the counter-intuitive concept of 'rooted networks' – linking up social and natural elements into dispersed and dynamic formations. The challenge, as Rocheleau and Roth see it, is to 'mesh social, ecological, and technological domains in theories and models of rooted networks, relational webs, and self-organized assemblages, all laced with power, and linked to territories across scale' (2007: 436). This is one particular, and cogent, proposal within the PE3 field.

Anthropologist are also busy, and somewhat independently but with increasing and exciting overlaps with the geographical trends just described, at developing novel approaches to nature–culture questions. There are illustrious predecessors to this endeavor, particularly Ingold (2000), Strathern (e.g. 1980) and Descola (e.g. 1986; Descola and Pálsson, 1996). A main thrust is how to study in postconstructivist ways non-Western understandings of 'nature' and 'the environment', and of course of a whole set of other cultural constructions such as 'persons', 'property' and 'the economy'. Besides similar theoretical orientations (ANT, Deleuze and Guattari, phenomenology, and network approaches are main sources, as in geography), ethnographic research with a host of 'non-Western' groups continues to be crucial (with great presence of ethnographies with Melanesian groups; Andean, Amazonian and Canadian indigenous groups; and Australian aborigines). As is well known, ethnographies of socionatural formations are no longer restricted to non-Western contexts; those following ANT approaches, as well as those influenced by Donna Haraway's work, have been particularly prolific in posing new questions and methodologies, although they will not be reviewed here for reasons of space. It should be underscored, however, that taken as a whole the ethnography-based works (largely in anthropology but some in geography and STS) highlight some of the same issues reviewed above but also a particular, different set; among the most discussed are issues of incommensurability, translation, and other forms of communicability among distinct socionatural worlds (e.g. Povinelli, 1995, 2001; Noble, 2007) and of the extent to which these worlds might embody non-modern, alternative-modern, or other-than-modern (e.g. postliberal) socionatural orders (de la Cadena, 2008; Escobar, 2008; Blaser, in press). In this way, the postconstructivist

political ecology becomes a *political ontology*, a category for which Blaser (in press) has most clearly advocated. The political implications of these ontology-focused ethnographies are also often dealt with explicitly.

A key emerging category is that of 'relational ontologies' (see also Braun, 2008 for geography). This notion is posed as a way to problematize the commonly accepted modern ontology-based binarisms such as nature (the domain of objects) and culture (the domain of subjects). Some works with indigenous, Afro-descended and other communally oriented groups in South America have focused on this notion. As a category of analysis, 'relational ontologies' signals various issues. First, it constitutes an attempt to develop a way to talk about emergent forms of politics that are not based on homogenized conceptions of indigeneity, race, or essentialized cultures or identities. Second, it is a practice-based concept that calls for ethnographic attention to the distinctions and relations that these groups effect on the vast array of living and non-living entities; the notion points, more than anything, to the fact that indeed many of these groups do not think or act in terms of the proverbial modern binaries. Even the binary 'modern'/'indigenous' exists mostly for the moderns, as indigenous groups are better equipped than moderns to move across socionatural configurations, precisely because they think and act in deeply relational and networked terms. Politically, 'relational ontologies' point to the fact that these ontologies have been under attack for centuries, even more so today with neoliberal globalization's hypernaturalized notions of individuals, markets, rationality and the like; references to Polanyi's notion of ' disembededdness' are sometimes found in these works, with the concomitant cultural–political move to promote re/embedding of person/economy into society/nature. Modernity, in this way, is not only about the suppression of subaltern knowledges, but about the veritable suppression of other worlds, thus calling for making visible and fostering 'worlds and knowledges otherwise' (e.g. Escobar, 2008; Santos, 2007).

In these works, questions of difference at all levels – economic, ecological, cultural, epistemic and ultimately ontological – are of paramount importance, and at this level PE3 is a political ecology of difference, or, again, a political ontology. In this political ontology, there is a decentering of modern politics that is seen as being fostered by indigenous movements and intellectuals themselves. By positing, say, the sentience of all beings and mobilizing this construct politically, and by insisting on the persistence of non-liberal (e.g. 'communal') forms of politics, these movements unsettle the modern arrangement by which only scientists can represent nature and politics can be based on these representations; these groups, on the contrary, assert their right to represent non-human entities through other practices, and to have those practices count as both knowledge and politics (De la Cadena, 2008). A related, yet distinct, recent proposal aims at pluralizing modernity from the perspective of relational thinking; it conceptualizes modernity as multiplicity, hence positing the existence of multiple modernities that are not variations of a single modernity (Grossberg, 2008). A final approach that aims at relational ontologies and postconstructivist realism comes from computer science; it posits the need for ontological pluralism and metaphysical monism (the unity of the world), in what one author calls 'immanence with a vengeance' (Smith, 1996: 373). One way to read the emergence of relational ontologies from the perspective of these various trends is as a 'return of the multiplicities'.

The question of sentience brings me to the last body of work I would like to mention, even if in passing. This refers to the small but possibly growing number of applications

of theories of complexity, particularly from biology, to socionatural processes. In these works, the understanding of natural complexity in terms of processes of self-organization, emergence, non-hierarchy, self-similarity and non-linear dynamical processes can provide insights for an altogether different social, or socionatural, theory (e.g. Taylor, 2001; Haila and Dyke, 2006; Escobar, 2008; Leff, 2000). For the biologists, a key message of biological worlds (from neurons to rivers, from atoms to lightning, from species to ecosystems and evolution) is that of self-organization and self-similarity. Some (e.g. Goodwin, 2007) go further to suggest that language and meaning are properties of all living beings and not only of human beings – in other words, that the world is one of pansentience. How do we take this sentience seriously considering that modern epistemes are precisely based on the opposite ontological assumption? The question then becomes: how do we learn to live with/in both places and networks creatively, with the entire array of living and sentient beings? Of course, the idea that material and biological processes could inspire understandings of social life at more than metaphorical levels is bound to be, understandably, resisted by many. One position that could make it more appealing to constructivists is to think of social and biological life in terms of assemblages from a continuum of experience and matter that is both self-organized and other-organized; in this way, there would not be separate biological and social worlds, nature and culture. One could then read the insights of complexity as lessons from one kind of theory to another and not from some pre-given biological realm *per se* (Rocheleau and Roth, 2007; Escobar, 2008).

At the very least, complexity and flat approaches appear as viable proposals to work through two of the most damaging features of modern theory: pervasive binarisms, and the reduction of complexity; like the trends in geography, anthropology and STS reviewed here, they enable the reintroduction of complexity into our intellectual accounts of the real to a greater degree than previous frameworks. While some, perhaps many, of today's social movements also seem intuitively or explicitly aimed at a practice informed by flat conceptions (e.g. self-organizing networks), it remains to be seen how they will fare in terms of the effectiveness of their action (e.g. Zibechi, 2006; Gutiérrez, 2006; Ceceña, 2008 for readings of Latin American social movements from the perspective of autonomous, dispersed and non-state forms of politics). Obviously, there is a need for more empirical and activist-oriented research on particular experiences.

The interest in flat alternatives is, of course, a sign of the times. 'We are tired of trees' – famously denounced Deleuze and Guattari, two of the prophets of this movement in modern social theory; 'We should stop believing in trees, roots and radicles. They've made us suffer too much. All of arborescent culture is founded on them, from biology to linguistics' (1987: 15). What they mean by this is that we need to move away from ways of thinking based on binarisms, totalities, generative structures, pre-assumed unities, rigid laws, logocentric rationalities, conscious production, ideology, genetic determination, macropolitics, and embrace instead multiplicities, lines of flight, indetermination, tracings, movements of deterritorialization and processes of reterritorialization, becoming, in-betweeness, morphogenesis, rhizomes, micropolitics, and intensive differences and assemblages. From biology to informatics, from geography to social movements, from some critical theorists to many indigenous and place-based groups and activists, this is a strong message that can at least be plausibly heard.

Flat alternatives and postconstructivist epistemologies also contribute to putting issues of power and difference on the table in a unique way. If actual economic, ecological and

cultural differences can be seen as instances of intensive differences and if, moreover, these can be seen as enactments of a much larger field of virtuality, this means that the spectrum of strategies, visions, dreams and actions is much larger than conventional views of the world might suggest. The challenge is to translate these insights into political strategies that incorporate multiple modes of knowing while avoiding the trap of falling back into modernist ways of thinking, being and doing. It is still too early to say whether a political ecology will coalesce out of these somewhat novel and diverse trends, but there seems to be a great deal of excitement in thinking anew theoretically and politically about difference; from this impetus might indeed emerge a postconstructivist and reconstructivist political ecology.

The political implications of relationality, finally, have been drawn out admirably by Doreen Massey. First, a politics of responsibility is a sequitur of the fact that space, place and identities are relationally constructed. We are all implicated in connections, and we must have an awareness of this fact of such a kind that enables us to act responsibly towards those entities with which we are connected – human and not. Analysis of these 'wider geographies of construction' (Massey, 2004: 11) is central to this awareness. Second, we need to be mindful that the recognition of relationality 'points to a politics of connectivity . . . whose relation to globalization will vary dramatically from place to place' (ibid.: 17); this calls for some sort of ethnographic grounding to that politics (in a broader sense of the term, that is, in terms of a substantial engagement with concrete places and connections). Third, the geography of responsibility that emerges from relationality also leads us to ask: 'What, in other words, of the question of the stranger *without*' (ibid.: 6, italics in the original), of our 'thrown**together**ness'? This ineluctably links up to issues of culture, subjectivity, difference and nature. The following quote sums up these notions: 'The very acknowledgement of our constitutive interrelatedness implies a spatiality; and that in turn implies that the nature of that spatiality should be a crucial avenue of inquiry and political engagement' (Massey, 2005: 189). Ultimately, one might add, spatiality is related to ontology. In emphasizing an alternative territoriality, for instance, many movements of ethnic minorities in Latin America are not only making visible the liberal spatiality of modernity (from the nation-state to localities) but imagining power geometries that embed the principle of relationality within them.

Many questions remain to be articulated and addressed, such as: if this reconstitution of PE in terms of three somewhat distinct configurations makes sense, what are the continuities and discontinuities among them, particularly between the second and third PEs? It is not clear how PE3 reconstructs understandings of power and production that were central to PE2, for example. A related question is: how does attention to ontology in PE3 influence our understanding of the role of knowledge, and what other epistemologies might be conceived? Another question: what are the methodological implications of embracing these kinds of epistemological and ontological shifts? These methodologies would have to deal with the types of postconstructivist realism reviewed here but also with the demands posed by relationality; given that most research methodologies operate largely on the basis of subject/object, representation/real distinctions (despite much postmodern reflexivity), the answers to these questions are not straightforward. Another set of questions might deal with how non-academic actors themselves (activists, agriculturalists, seed-savers, multi-species advocates, netweavers of various kinds) deal with some of these issues. How do they do it in their ontological–political practice? Finally, can PE3

ever get to frame issues of sustainability and conservation effectively, given that these notions have been largely shaped by non-constructivist expert knowledge and modernist frameworks? What would it be like to engage in the kinds of ontological design required to bring about the ecological–cultural sustainability of relational socionatural worlds?

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Notes

1. For well-known statements on political ecology, see the collections by Biersack and Greenberg, eds. (2006); Haenn and Wilk (2005); Paulson and Gezon (2005). See also Brosius (1999); Bryant and Bailey (1997); Rocheleau et al. (1996); Peet and Watts (1996); Schmink and Wood (1987); Martínez-Alier (2002). I should mention that I shall not deal here with the rich debates in Latin American political ecology (or from other parts of the world of which I might be ignorant). There is a continent-wide related but distinct tradition of Latin American political ecology, and also important national developments in many countries (e.g. Mexico, Brazil, Colombia, Argentina). This tradition – it would deserve its own study – would not fit easily into the categories used in this chapter for the Anglo-Saxon works, and unfortunately very little of it has been translated into English. CLACSO's Political Ecology Working Group has been very productive over the past few decades. For recent meetings and publications, see http://www.clacso.org.ar.
2. Oyama provides the following definition from biology: 'By "essentialist", I mean an assumption that human beings have an underlying universal nature that is more fundamental than any variations that may exist among us, and that is in some sense always present – perhaps as a "propensity" – even when it is not actually discernible' (2000: 131).
3. See, e.g. Brosius (1999), Biersack (1999, 2006), Escobar (1999), and Peet and Watts (1996) for reviews of the trends in poststructuralist anti-essentialism in nature studies in anthropology and geography.
4. It is important to mention that flat alternatives and theories of complexity and self-organization have not emerged in a vacuum; the history of their most important antecedents is rarely told, since they pertain to traditions of thought that lie outside the immediate scope of the social sciences. These include cybernetics and information theories in the 1940s and 1950s; systems theories since the 1950s; early theories of self-organization; and the phenomenological biology of Maturana and Varela (1987). More recently, the sources of flat alternatives include some strands of thought in cognitive science and informatics and computing; complexity theories in biology; network theories in the physical, natural and social sciences; and Deleuze and Guattari's 'neo-realism'. Foucault's concept of 'eventalization' resembles recent proposals in assemblage theory. Deleuze and Guattari have inspired some of these developments, including Manuel de Landa's neo-realist assemblage theory (2002, 2006). Finally, it should be mentioned that the logic of distributed networks discussed in many of the trends reviewed here amounts to a different logic of the political, as a number of social movement observers are pointing out; this includes what is called a 'cultural politics of the virtual', understood as the opening up of the real/actual to the action of forces that may actualize the virtual in different ways (e.g. Terranova 2004; Escobar and Osterweil, 2010; Grossberg, 2008). From the field of computer science, see the persuasive attempt by Smith (1996) to develop a post-representational epistemology. See Escobar (2008: ch. 6) for an extended discussion of some of the aspects discussed in this chapter, including those in this footnote.

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