

**POSTHUMAN POLITICAL ECOLOGY:
ACTORS, NETWORKS, SYSTEMS**

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ABSTRACT

This paper discusses the implications for political ecology of contemporary attempts to move beyond anthropocentric or dualistic conceptions of agency in order to include nonhumans, both living beings and material entities, as meaningful actors in the complex entanglements that produce real effects in the world. Starting from early contributions in the field of Science, Technology and Society studies (STS), notably by Bruno Latour, Michel Callon and John Law, actor-network theory (ANT) has encouraged an in-depth renewal of the human and social sciences by incorporating posthumanist ideas and methods. At the same time, thanks to the work of Niklas Luhmann and others, systems theory has been moving away from the cybernetic analysis of open systems, incorporating notions of self-organization and operational closure that provide more robust models of complexity in natural, social and cultural systems. This paper argues that these two trends, far from being contradictory, provide complementary tools to rethink in new and suggestive ways the scope and methods of political ecology.

Keywords: posthumanism, political ecology, actor-network theory, systems theory, complexity

1. INTRODUCTION

Political ecology is one of the various fields that have emerged in the last decades in the human and social sciences as a response to the growing sense of environmental crisis and the perception that environmental problems are linked in one way or another to human activities. Different definitions and delimitations have been proposed, often reflecting the heterogeneous disciplinary backgrounds and interests of researchers. the outset, political ecology was often conceived as the application of political economy's tools to the understanding of ecological issues and concerns,

with an emphasis on the use and allocation of natural resources (Blaikie and Brookfield 1987; Bryant 1992; Greenberg and Park 1994). At the same time, political ecology has often incorporated political approaches to the study of environmental movements (Cockburn and Ridgeway 1979; Peet and Watts 1996), environmental change and conflict (Hempel 1996), or environmental narratives (Stott and Sullivan 2000). It has also been enriched by anthropologists, historians, geographers, and other researchers in the environmental humanities who have tended to conceive the field as a broader exploration of the complex relations between nature and society (Watts 2000; Escobar 1996; Willems-Braun 1997), while being mostly interested in the analysis and critique of power/knowledge discursive formations from a poststructuralist or social-constructivist framework (Foucault 1982, 1991). In the face of such diversity, some researchers have come to see political ecology, not so much as a coherent field of research, but as a “community of practice united around a certain kind of text” (Robbins 2012).

No matter how it is theorized or carried out in practice, most political ecology to this date has relied more or less explicitly on the modern epistemology that conceives nature and culture as two separate and distinct spheres of reality. This nature/culture dualism has been pervasive in modern thought at least since the time of Descartes and is very much linked with the expansion of humanism and the scientific revolution in Renaissance Europe. In recent times, it has served to underpin the walls erected to separate and oppose the natural from the human or social sciences. On one side of the wall, the scientific metaphysic has clung to an essential nature, “an independent domain of intrinsic value, truth or authenticity” (Soper 1996:21), the sphere of nonhuman objects whose secrets natural science had the mission to unveil. On the other side of the same wall, the humanistic disciplines have relied on different versions of a constructivist metaphysic that binds human subjects to their own semiotic sphere of discursive reality, the multifaceted and self-enclosed order of culture.

Political ecology, which emerged from the ramparts during the “science wars” between realists and postmodernists, bears the mark of these battles, but has generally fallen on the side of culture. Given its innately hybrid nature, being both ecology and politics, such an outcome was not written at the outset. But it is well known that war does not spare mediators, unless they are quick enough to pick a side.

And the fact is that scientific ecology, bent on the complex exchanges of matter and energy between inanimate or unconscious nonhumans, lacks any working model of politics, whereas politics has at its disposal a socially constructed model of nature as human discourse. It is hardly surprising therefore that political ecology should have grown to become a science of society, one more amongst the humanistic disciplines that reflect the order of human culture back onto ourselves.

The question I would like to raise here is whether we can conceive a different form of political ecology, one that would be more faithful to the promise of its hybrid name and leave behind the dualisms of culture and nature, subjects and objects, humans and nonhumans. Of course, nothing will be achieved by climbing up the wall and searching for the answer on the side of the pristine and self-sufficient nature of an essentialist scientific ecology. That would only throw us back into the trenches, pitting once again anthropocentric social needs against the preservation of an idealized and biocentric wilderness (Cronon 1996). Fortunately, we might not need to choose a side anymore. In recent years, researchers at the fringes of both camps, with the blind persistence of moles or ants, have been working to undermine the wall itself, dismantling the stone ramparts of dualism by removing the earth that used to support them. And it is now, as we stand on all this debris, that we can begin to think of a posthuman political ecology.

2. ACTOR-NETWORKS

It is in the battlefields of sociology of science, and more precisely within the interdisciplinary research area of Science, Technology and Society (STS), where the farthest-reaching challenges to the modern dualistic metaphysic have been proposed. Thanks to the work of a motley crew of philosophers, sociologists, epistemologists, and critical theorists (Callon 1984, 1986; Latour 1993, 1999, 2005, 2012; Law 2004, 2009; Law and Mol 2002), Actor-Network Theory (ANT) has been gradually developed as an alternative to the social-constructivist paradigm that has dominated the social sciences in the past decades (Michael 2016).

As John Law has argued, “actor-network theory is a disparate family of material-semiotic tools, sensibilities and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are

located” (2004:141). Thus, ANT is basically an attempt to trace the complex associations that constitute the “social” as an emergent assemblage or network of heterogeneous actors (Latour 2005; De Landa 2006). Importantly, it is not just human subjects that make up this “social,” or, as Bruno Latour (2012) also calls it, the “collective.” In fact, assemblages emerge from the dynamic and fluid interaction of both human and nonhuman actors, which may include other living beings but also material things (Bennett 2010). Drawing on recent posthumanist thought (Deleuze and Guattari 1987; Haraway 1991, 2003), a crucial proposition of ANT is the so-called “principle of symmetry” (Callon 1984), which assumes that nonhumans participate in producing and sustaining these assemblages or actor-networks alongside humans. Thus, nonhumans are not simply objects or passive intermediaries, but autonomous actants or mediators, often so entwined with humans that we can speak of “hybrid” or distributed forms of agency (Latour 2012).

In *Politics of Nature: How to Bring the Sciences into Democracy* (2004), Latour has elaborated the implications of ANT for political ecology by proposing a bold extension of the sphere of politics beyond the human. As he argues, this cannot be done on the grounds of a social constructivist epistemology that would leave the dualist metaphysics intact. We need to rethink in depth the metaphysical foundations of modernity, the anthropocentric constitution that has established nature and culture as two separate and exclusive realms, while proliferating in practice all sorts of unacknowledged human/nonhuman hybrids (Latour 2012). The key question for a posthuman political ecology becomes then: how are all these multiple and hybrid actants collected, now that we cannot rely anymore on the separation of powers that distinguished nature from culture, science from politics? (Latour 2004). Through a variety of case studies and narratives, ANT practitioners have been quite eloquent in their attempt to describe and account for the multiple and fluid assemblages that constitute modern technoscientific practices. However, they have generally been unable, and in many cases also unwilling, to provide a systematic framework, a proper “theory,” to explain how these various actor-networks are assembled and sustained. For that, we might need to turn to a different and often opposed research paradigm.

3. SELF-REFERENTIAL SYSTEMS

General systems theory was developed during the second part of the 20th century as a multidisciplinary effort to understand the dynamics of complex systems, that is, organized wholes with interrelated or interacting components (von Bertalanffy 1968). The main problem of this early theory was how to explain the emergence of such organization in the face of the general principles of thermodynamics, which state that closed systems necessarily produce entropy or disorder, eventually leading them to disintegration. Conceived in structuralist/functionalist terms, first-order cybernetics was able to explain negentropy by moving from closed to open systems and modelling the exchanges of information and matter between systems and their environment through feedback loops (Wiener 1965). While system-theoretical concepts were applied to both social (Parsons 1951) and ecological (Odum 1953) systems, the separation of culture and nature prevailing in the modern metaphysic prevented any serious exploration of the interconnections between both types of system.

The development of second-order cybernetics (von Foerster 1960) allowed General Systems Theory to move from the study of open or flow systems to questioning more complex dynamics of self-organizing or self-referential systems. In particular, the application of second-order cybernetics to biological systems provided the basis for the theory of autopoiesis. According to Maturana and Varela (1980), living (autopoietic) systems can be distinguished from mechanical (allopoietic) systems because they emerge from a difference between system and environment that is constituted and sustained by the functional operations of the system itself. In this sense, autopoietic systems are said to be operationally closed, that is, they can only interact with their own internal domain of interaction (their “niche”), even as they appear to interact with their environment from the perspective of an external observer.

This concept of “operational closure” has been crucial to apply second-order cybernetics to the understanding of social systems, particularly in the work of Niklas Luhmann (1995, 2012). Luhmann’s theory is not simply a metaphorical application of biological autopoiesis to society (cf. Luisi 2003), but an ambitious attempt to analyze social systems as autopoietic systems of their own making, even if they are constituted from components and operations unlike those of living systems. In this sense, it is important to understand

that Luhmann does not analyze social systems as the aggregation of acting (and interacting) individuals, as the classical sociology of Durkheim and Weber, as well as Parsons' action-systems theory, tended to do. If the basic components of a social system were individual living systems, it would be difficult to conceive how it could emerge and sustain itself through autopoietic operations, except in a vague and metaphorical sense. But Luhmann's theory can distance itself from the anthropocentric and dualistic framework of classical sociology precisely because human subjects are no longer the constitutive element of the social. For Luhmann, that role corresponds to communication. It is here that Luhmann's theory approaches the poststructuralist and postmodern critique of subjectivity (Wolfe 2010). "If one views human beings," he writes, "as part of the environment of society (instead of as part of society itself), this changes the premises of all the traditional questions including those of classical humanism" (Luhmann 1995:212). Habermas has described this exclusion of human agency from the constitutive principles of social interaction as a form of "methodological anti-humanism" (1987:378). However, Luhmann's concept of communication remains in many ways anthropocentric. While seeking to establish communication as a prelinguistic form of operation, he relies on a phenomenological theory of meaning ultimately derived from Husserl's notion of intentionality. The consequence is that he only recognizes two types of meaning-processing systems, social and psychic, both of which are constrained within the human sphere, even if the operation that constitutes them is no longer the logocentric self-understanding of subjects, but autopoietic communication and consciousness. In short, Luhmann's theory of social systems, while effectively decentering the human subject, comes short of providing a posthumanist framework to understand the interactions between humans and nonhumans in line with ANT's principle of symmetry. This is quite evident, not only in his analysis of modern society (Luhmann 2012), but also in his approximation to the problems and concerns of political ecology, most notably in his book *Ecological communication* (Luhmann 1989).

4. CONCLUSIONS

Now, the question for a posthuman political ecology is whether it is possible to combine the insights of actor-network or assemblage theory, and particularly its principle of symmetry, with the theoretical framework of second-order cybernetics and self-referential or autopoietic systems. So far, the attempts to achieve such a synthesis in other disciplines (e.g. Noe and Fjelsted Alroe 2002; Koch 2005) have been rather shallow and inconclusive. The challenges of unifying the relativistic approach of ANT with the grand-theoretical aspirations of systems theory seem indeed daunting. But, as Deleuze said, “relativism is not the relativity of truth but the truth of relation” (1988:30, quoted in Latour 2005:95). And it is precisely the truth of relation, not just amongst us humans, but in a more-than-human world, that political ecology could contribute to deliver.

5. REFERENCES

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