



Commentary

Social ecology, sustainability, and economics

Raul P. Lejano^{a,*}, Daniel Stokols^b^a Department of Planning, Policy, and Design, School of Social Ecology, SE-I, Room 218G, University of California, Irvine, Irvine, CA 92697-7075, United States^b Department of Planning, Policy, and Design, Department of Psychology and Social Behavior, School of Social Ecology, SE-I, Room 206C, University of California, Irvine, Irvine, CA 92697-7075, United States

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ABSTRACT

What mode of analysis might be employed, that captures the confluent action of material and social systems acting together? The framework of Social Ecology, which first emerged as a rejoinder to the Chicago School of Human Ecology of the early 1900s, evolved over subsequent decades as an attempt at such integration. We revisit social ecology's historical origins and foundational assumptions. We propose that the social ecological framework can offer useful conceptual grounding to scholars of ecological economics. We illustrate how this analytical lens affords a deeper understanding of unsustainable systems and valuation problems.

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1. Introduction

In his monumental work on modernization, Max Weber (1904–05/1958, 1922/1978) described the fundamental analytical problem of integrating the different value spheres or fields of human life. In his analysis, as society developed rational methods for planning and administration, decisions began to be made that focused on one field to the exclusion of the others. An example of this would be the evolution of the mass assembly plant that maximized material production to the detriment of social values such as worker satisfaction or job security. This process of rationalization involves the artificial separating of reasoning into different systems (e.g., cultural, financial, etc.), and allowing each system to operate autonomously. This problem looms especially large with the question of how to reconcile the twin demands of ecology and economy. Failure to reconcile these demands through enlightened public policies poses the potential danger of lapsing into what Weber called *zweckrationalität* – a narrow, means–end rationality that neglects to consider differing dimensions in an integrative way.

Even earlier, the phenomenologist, Edmund Husserl (1900), recognized the basic problem as one of reconciling the natural dimension (or the material plane) with the dimension of meaning (which we will sometimes refer to as the social-semiotic plane). He criticized the singular focus of scientific knowledge on the natural system, to the exclusion of the social-semiotic. Consider the river Ganges, which Hindu tradition holds sacred. Pollution of the river, on a material plane, registers simply as an increase of certain constituents in the water column. On the social-semiotic dimension, however, it

can amount to a form of sacrilege, a moral trespass (Kelley, 1998). As another example, schemes for tradable market instruments for carbon suffer from a similarly insular mode of analysis. The transfer of carbon from one country to another, even with proper payment for such exchange, can engender unanticipated social conflict. At times, it can even be interpreted as a neo-colonialist oppression of the poor by the rich (Lejano et al., 2010).

Furthermore, the difference between these two distinct planes of reality is an *ontological* one, such that one cannot simply translate or subsume one dimension into the other. For example, simply being able to refer to consequences that lie outside one's utility function as externalities does not mean that there is a way to integrate them into a utilitarian framework (cf., Bithas, 2011 for a related argument). This incommensurability problem also extends to things, such as values, that lie within the social-semiotic (or cognitive) dimension. For example, Sen (1977) argues that moral commitments are a type of value that cannot be expressed in terms of individual utility. To illustrate his argument in a simplistic way, insistence on the universal commensurability of all values would suggest the possibility of creating a tradable market instrument for basic human rights. Elsewhere, we have tried to apply a vector payoff model of decision-making, but this can lead to other, equally intractable analytical problems (Lejano and Ingram, 2011). In the following discussion, we describe an analytical approach that may be useful to scholars of ecological economics. The main contention of this article is that the social ecological framework emphasizes certain analytical insights, including the basic separation of constructed and material systems and the notion of transactions that mediate between the two systems, that can help scholars diagnose fundamental issues around the non-sustainability of economic systems.

* Corresponding author.

E-mail addresses: rplejano@yahoo.com (R.P. Lejano), dstokols@uci.edu (D. Stokols).

2. The Social Ecological Framework

Ecology refers to the various fields of study of the relationships between organisms and their respective environments. The earliest scholarship in this area (e.g., Darwin, 1859/1964; Haeckel and Lankaster, 1876) placed an emphasis on the processes of natural selection and adaptation whereby biotic and abiotic components of an ecosystem achieve dynamic equilibrium.

In the 1920s and 30s, a group of sociologists at the University of Chicago took the concepts and methods of the 19th century biologists, particularly the insights on homeostatic processes of adaptation, and applied these to the study of human communities. This laid the foundations for what came to be known as the Chicago School of Human Ecology, which subsequently branched out to incorporate like-minded scholars from other institutions (Hawley, 1950; Park et al., 1925). Examples of their application of ecological principles to urban and social institutions include Haig's (1926) theory of highest and best land uses and Christaller's (1933) central place theory. These were employed to explain socio-economic and land use patterns observed in the different zones of the Chicago metropolitan region. For example, the ecological concepts of niche and succession are prominent in Burgess's (1923) "concentric zone" theory of urban development.

Other scholars began to note some limitations in the Human Ecology paradigm, however – e.g., the one-way influence of material conditions on the social (rather than reciprocal relationships). As an example, the concentric zone theory was seen to focus too exclusively on the biology and economics of society and paid scant attention to the sociopolitical, ethical, symbolic, and other dimensions of human communities (c.f., Michelson, 1970; also Firey, 1945). Alihan (1938) wrote an influential critique of the field of human ecology and called for the foundation of a more integrative framework, one that would be better able to incorporate the concepts and methods from fields such as anthropology, psychology, and ethical philosophy. She and other scholars (e.g., Emery and Trist, 1972) referred to this new conceptualization of human–environment relations as *Social Ecology*.

Subsequently, academic programs in Social Ecology were established at the University of Vermont (Bookchin, 2005) and the University of California, Irvine (Binder, 1972). Cornell's College of Human Ecology similarly espoused this broader conception of human–environment relationships, particularly Bronfenbrenner's (1992) pioneering work on multi-scalar analyses (i.e., at micro, meso, and macro-societal levels). Today, the term, *social ecology*, is broadly conceived as the study of communities from interdisciplinary perspectives, reflecting multiple scales and levels of analysis, and more deeply incorporating psychological, cultural, and institutional contexts of human–environment relations than the earlier human ecology research (examples of social ecological scholarship include Michelson, 1970; Moos, 1979; Ostrom, 2009; Peterson, 2010; Stokols, 1996).

3. Core Tenets of Social Ecology

The social ecology literature emphasizes a number of conceptual assumptions (Stokols et al., 2003; 2013), among which are the following:

- (i). Multiple dimensions of socio-physical environments act in concert to produce outcomes observed in society; correspondingly, we need integrative modes of analysis that can account for their conjoint action. Much social ecological research focuses on conjoint phenomena occurring at different scales – e.g., Bronfenbrenner's (1977) analysis of phenomena at macro-, exo-, meso-, and micro-scales. In this article, we will focus less on scale and more on various dimensions or realms of human activity (e.g., social, moral, material).
- (ii). Social ecology attaches great importance to the degree of fit or incongruity across multiple dimensions of activity.

To some extent, we can observe and describe transactions between these different dimensions. For example, an increase in social capital of a community (e.g., formation of a neighborhood group) can to some degree address a decrement in other forms of capital (e.g., by establishing a children's arts program in response to a loss of open space and playgrounds). Resilience can be interpreted in a social ecological way – i.e., employment of some forms of capital to make up for changes in another.

- (iii). It is instructive to think of differing, interacting forms of capital (Bourdieu, 1986; Stokols et al., 2003). Strictly speaking, however, there is no fungibility from one form to another (see Neumayer, 1999, with regard to climate change). Rather, social ecology is a transdisciplinary effort that seeks richer, often multiple modes of analytical description to describe how changes in one dimension (e.g., social capital) are related to changes in another (e.g., financial capital).
- (iv). The interaction between multiple dimensions of activity (cultural, financial, ecological) is most deeply analyzed and understood in context. Contextual analysis entails close collaboration among multiple disciplines employing diverse analytics; methods such as action research, participant-observation, and ethnography assume as much importance as quantitative modeling and laboratory experimentation.
- (v). Lastly, the social ecological paradigm traces failures in the management of socio-physical systems to underlying logics that are based on one aspect of value, to the exclusion of others, as well as to self-regulated, autonomic systems that operate in one dimension without reference to the others.

3.1. Related Conceptual Frameworks That Have Been Proposed by Other Groups of Scholars

Here, we briefly discuss some of the most important attempts at integrative analysis and then speak to what is distinct (and similar) about the social ecological framework. We focus especially on the integration of material and semiotic realms of human activity, especially in relation to the theme of sustainable economic systems. We emphasize that these different frameworks, which have each emerged in response to the integration problem discussed earlier, should not be seen as competing but, rather, complementary frameworks. Our intention is to simply highlight features of each that help distinguish one framework from another and then, focus more closely on the social ecological frame.

Among the most influential attempts at integration traces back to scholars including Herman Daly (1993), Nicholas Georgescu-Roegen (1977), and Boulding (1981). These scholars emphasized the degree to which economic systems for material exchange are supported, materially and thermodynamically, by the natural resource base. Daly's formulation, in particular, portrays economy as a subsystem within the larger ecological or natural system. Our understanding of the social ecological paradigm is greatly influenced by Daly's (1993) notion of steady-state economics, which portrays the economy not as a closed (or autopoietic) system but an open one with a constant exchange of resources to and from the larger system.

Another important frame of analysis draws from the field of integral ecology (Esbjörn-Hargens and Zimmerman, 2009; O'Brien, 2010). In this framework, human–environment relationships are understood as the coming together of four different dimensions of interaction: the *social, cultural, behavioral, and intentional*.

The third analytical system we discuss here is Ostrom et al. (2007) IAD (Institutional Analysis and Development) framework. Within this framework, researchers strive to characterize the complex norms and strategies ("rules-in-use") employed by communities regarding resource use. These directly or indirectly influence resource use, while the state of the resource ("outcomes") influences the same norms, rules, and strategies through feedback loops.

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