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Environmental philosophy 2.0: Ethics and conservation biology for the 21st century ☆

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ABSTRACT

In this essay, I critically engage Sahotra Sarkar's Environmental Philosophy. The several topics include the conceptual foundations of conservation biology and traditional philosophy of science, naturalism and its implications, and ethical theory and specifically the status of human welfare.

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1. Introduction

Sahotra Sarkar's *Environmental Philosophy* is a wonderfully provocative work of environmental philosophy. This book takes on dogmas of environmentalists and philosophers alike. Likewise, this volume is an apt successor to his *Biodiversity and Environmental Philosophy* (Sarkar, 2005) since it is more accessible to both students and those outside the philosophy of biology and the philosophy of social sciences. But the book does not simply return to topics of value theory, biodiversity, and systematic conservation planning. It includes discussions of environmental restoration, sustainability, social justice, and much else besides.

Sarkar's articulated position is especially interesting given that it runs counter to those in environmental ethics, traditional North American conservation biology, and other disciplines such as environmental economics and possibly ecology. Let me mention some of the interesting features of his position as discussed in this book. First, traditional conservation biology has often been focused on the preservation of endangered species with tools like population viability analysis and reserve design using island biogeography (see Hunter Jr. & Gibbs, 2009 for a survey of traditional conservation biology). Sarkar's own view is that at the core of conservation biology is *systematic conservation planning* (Margules & Sarkar, 2007). Conservation biology utilizes the richness of decision, game, and social choice theory (along with other analytic tools) to consider both social and environmental values. Hence, it is as much of a social science as a natural science. Second, Sarkar is a naturalist. We are members of *Homo sapiens*; we are encultured animals. Many environmental ethicists worry about whether humans are "natural" in some sense or other. He simply notes that what we do is not different in kind from other species; nevertheless, our actions clearly differ in magnitude of effects from other animals. Third, it is clear that Sarkar has little patience for environmental ethics as currently practiced. With exceptions noted, most environmental ethicists spend the bulk of their time discussing the viability of non-anthropocentric holistic accounts of intrinsic value (Light & Rolston, 2003). It is clear that his main interests concern *practical ethics* as opposed to such excursions.[1] Fourth, traditional

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[1] This is evident by virtue of the fact that Sarkar spends some space discussing the various values associated with organisms and species but almost no time discussing different normative theories (e.g. consequentialism, deontology, and virtue ethics) and only mentions in passing metaethiical views like moral realism and expressivism.

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(i.e. Western) conservation biology has concerned itself with preserving species by designing reserves which often dislocate marginalized, poor people of the global South (Guha, 1998). Sarkar explicitly brings social justice to the fore in his discussions of social and political ecology and ecofeminism. Traditional conservation biology, and typical strategies of the Global North, are simply inadequate to the challenges facing conservation in the Global South.[2]

In the sections below, I critically engage several topics including (a) the conceptual foundations of conservation biology and traditional philosophy of science, (b) naturalism and its implications, and (c) ethical theory and specifically the status of human welfare.

2. Philosophical implications of systematic conservation planning

One of the most striking things about *Environmental Philosophy* is how it articulates the conceptual foundations of conservation biology. In the 1970s and 1980s, conservation biology used theoretical work from population ecology and genetics in order to perform population viability analysis (Soule, 1986, 1987). There was an investigation of how E. O. Wilson and Robert H. MacArthur's equilibrium theory of island biogeography could inform reserve design (MacArthur & Wilson, 1967) (e.g. the SLOSS debates—"single large vs. several small" reserves). Additionally, there was work done on genetics of inbreeding, demographic stochasticity, habitat fragmentation, metapopulation structure, etc. which were thought to contribute to conserving biologically significant taxa. However, as Sarkar notes, population viability analysis requires enormous amounts of data to reliably carry out which is often unavailable for threatened or endangered species. Likewise, equilibrium island biogeography did not unequivocally support any particular reserve design and the theory itself had been disconfirmed (Simberloff et al., 1976; Simberloff & Abele, 1982).

Out of the early beginnings, conservation biology has been transformed. It has become an explicitly socio-ecological, value-oriented discipline which has developed very sophisticated computational tools for designing conservation area networks. Sarkar thus characterizes conservation biology as it is currently understood as systematic conservation planning. The stages of systematic conservation planning are:

(1) Choose and delimit the planning region.
(2) Identify all stakeholders.
(3) Compile and assess all data.
(4) Treat data and construct models as necessary.
(5) Identify and evaluate biodiversity constituents and surrogates.
(6) Set explicit biodiversity goals and targets.
(7) Review existing conservation areas for performance with respect to targets.
(8) Prioritize additional areas for conservation management.
(9) Assess biodiversity constituent and selected area vulnerabilities.
(10) Refine the network of selected areas.
(11) Carry out multi-criteria analysis.
(12) Implement conservation plan.
(13) Monitor network performance (Sarkar, 2012, pp. 100–103).

There are many different philosophically interesting elements in this process. Here are some examples. First, who are the stakeholders in determining the boundaries of the analysis, what are the relevant criteria to be used, and what is the focal biotic unit? It is clear that procedural justice requires that those affected by the plan have a voice in the process. One should not subject stakeholders to negative effects without their informed consent. So, should conservation area networks be in part designed by nonexperts? Second, what is biodiversity—what are the biotic constituents that we are trying to preserve and ensure persist? Sarkar notes that canonical definitions of 'biodiversity' include: (a) 'Bio-diversity' refers to the variety of life at every level of structural, taxonomic, and functional organization, and (b) 'Biodiversity' refers to diversity of genes (alleles), species, and ecosystems (Sarkar, 2012, p. 113). Definition (a) is useless since it is extensionally equivalent to 'living thing and groups of them', and definition (b) is non-operational because for example it is extremely difficult to measure allelic variation in populations (Sarkar, 2012, p. 114). Thus, conservation biologists must articulate what biodiversity *constituents* and *surrogates* are while avoiding the above problems. It should noted that in the United States we typically focus on threatened or endangered species because of the Endangered Species Act but this is not required.[3] Additionally, there are many different *diversity* and *persistence* concepts which must be made explicit in designing conservation area networks.[4]

Third, conservation resources are scarce and thus economy must be one of the goals of systematic conservation planning. This leads to the *minimum area* and *maximum representation* problems. What is the minimal amount of area that is needed to represent our biodiversity constituents adequately? What is the maximal number of biodiversity constituents that can represented adequately in a given area? Sarkar writes,

> Thus, in conservation biology, like computer science and unlike most of ecology, theoretical research consists of devising algorithms rather than formulating models and theories. In fact, because a variety of algorithms can be used to solve these problems, a lot of theoretical debate in conservation biology has been about the choice of algorithms. (Sarkar, 2012, p. 124)

Thus, I want to finally dwell on how the conceptual foundations of conservation biology fits into the philosophy of science as traditionally understood. Customarily, philosophers of science think the major topics of interest are:

- What is the structure of scientific theories?
- What is the logic of confirmation?
- What is a scientific explanation?
- What values are present in scientific practice and do these challenge the objectivity of science?

[2] I do not spend much space discussing his view of social and political ecology because I in agreement with Sarkar on this point. It is a shame that north American environmentalists and the science associated with it have largely ignored the plight of the poor. I am less sympathetic to ecofeminism than Sarkar because I find the "logic of domination" too simplistic and I see more of an naive non-anthropocentrism present in their writings. But, this could be a difference of emphasis.

[3] The emphasis on endangered species is often due to the ESA being one of the few pieces of environmental legislation with teeth. But this requires that many conservation efforts be hamstrung to recovery plans and designation of critical habitat. For example, few would claim that the Northern Spotted Owl deserves the special attention it has received save for the fact that by protecting them we protect old growth forest and their denizens. Systematic conservation planning does not require endangered species be the relevant constituents of biodiversity. We are free to consider larger ensembles of species or habitat for protection.

[4] One ecological concept that has received much attention recently is that of *resilience*. In fact, the Resilience Alliance argues that socio-ecological systems should be managed for resilience; i.e. being able to withstand and "bounce back" from perturbations. One concern I have with this approach, which Sarkar may share, is that this concept is not operationalizable. In dynamical systems theory, we consider extremely small perturbations to some variable of interest and see if the variable returns to its previous value. Additionally, we investigate whether there is a basin over which the system does so return. The worry is that for the socio-ecological systems of interest the notion of "resilience" is at best a metaphor and at worst something non-operational and distracting. My worry is that it is the latter.