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*Book Review*

# Code, L. 2006. Ecological Thinking: the Politics of Epistemic Location. Oxford University Press, Oxford, UK.

*Maureen Biermann* [1]

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Scientists increasingly are asked to account for the ethical and political implications of their research, forcing them to tread the uncomfortable terrain between objectivity and normativity. Because of the historical ontological separation of scientific objectivity from value-laden policy, many scientists feel underprepared to enter this territory. In *Ecological Thinking: the Politics of Epistemic Location*, philosopher Lorraine Code offers us an antidote to this problem in the form of a re-imagined epistemology that provides physical, natural, and social scientists alike with the practical and conceptual tools not only to engage more constructively with social and ethical considerations but to improve the quality of their scientific methods. Drawing on both feminist philosophies of science and the science of ecology, she encourages a movement towards "ecological thinking", a contextually situated, imaginative, and socially aware way of building knowledge that defies the traditional Western "epistemological monoculture", which characterizes knowledge-making as a form of mastery over the natural world.

Code begins by constructing the concept of ecological thinking as science born of anecdotal evidence, testimonials, and case studies in situ rather than limited by controls or a laboratory setting. The work of ecologist Rachel Carson and biologist Karen Messing are used as concrete examples of ecological thinking in action. Both scientists overturned existing frameworks for understanding the world and thereby revolutionized their respective fields; both formulated their inquiries based on empirical evidence that was considered anomalous in dominant scientific explanations. Carson's work on the environmental impacts of pesticide and herbicide use, some of the first science to "bring ecological debate into the public sphere" (p. 38), challenged prevailing narratives that techno-scientific mastery over nature was possible and desirable. Messing questions scientific practice that attempts to decontextualize research. Testimony—first-person, experiential narrative—is often perceived as a threat to objective scientific knowledge produced through "a controlled, formal experience" (p. 51). However, Messing's research on occupational health demonstrates that arriving at unifying scientific laws or predictions often erases statistically marginal experiences of people who fall outside of the "norm." Code draws on this to reconceptualize the goal of science as uncovering multiple situated understandings of the world rather than determining one monolithic objective "truth".

Code uses these examples not to challenge the value of scientific inquiry but to illustrate that science that claims it is "capable of explaining everything mechanistically and without remainder" (p. 86) is putting unnecessary limitations on the types of questions asked and the types of answers sought. Furthermore, there are tangible ethical implications for framing certain empirically measurable results as anomalous to the status quo. The complex reality that renders these material outcomes possible is likely to remain hidden, which means that the potentially unjust social constructs that labeled them anomalous in the first place continue to go unchallenged. Messing's work is a prime example of this. She demonstrates how much research on occupational medicine chalks up the disproportionate experiences of health problems in the workplace by women to the physical nature of women's bodies (in comparison to men's). By taking bodies out of context, such research fails to identify aspects of the workplace, such as structural inequalities, that may differentially impact genders.

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How can scientists avoid this trap? Code suggests a way of "negotiating" empiricism that draws on feminist standpoint theory, which reasons that all science is situated within a particular social context. Here, she carefully argues that social constructivism and empiricism are often falsely painted as mutually exclusive ontologies. In fact, she points out, both are necessary for doing responsible science. Our situation within a given social context provides us with the language and conceptual building blocks to create knowledge out of our empirical experiences; our reflexive acknowledgement of our situatedness allows us to continually refine this process of knowledge-making to reflect our empirical experiences more accurately and ethically. The remainder of the book examines this in practice through various lenses: language and developmental psychology, autonomy and expertise, advocacy, imagination, and trust. The final three chapters, in particular, offer valuable techniques for scientists to productively reflect on their work.

*Ecological Thinking: the Politics of Epistemic Location* provides a road map for ecologists who are looking for ways to situate their research ethically and politically, as well as scientifically. It offers multiple openings for thinking about collaborative interdisciplinary research or theoretical conversations across disciplines. However, the unique benefit of this book is its roots in the process of scientific inquiry. Rather than focusing on ways to explicate the social significance of research ex post facto, Code demonstrates ways to include social considerations within empirically-based scientific methodologies and problem definition. Potential readers should be aware that this book draws heavily on theory to explicate the practical application of ecological thinking. However, the clear writing style renders it accessible to brave nonphilosophers who are curious about the construction of scientific knowledge and its practical implications for their own work.

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