Environmental Social Sciences

Methods and Research Design

EDITED BY
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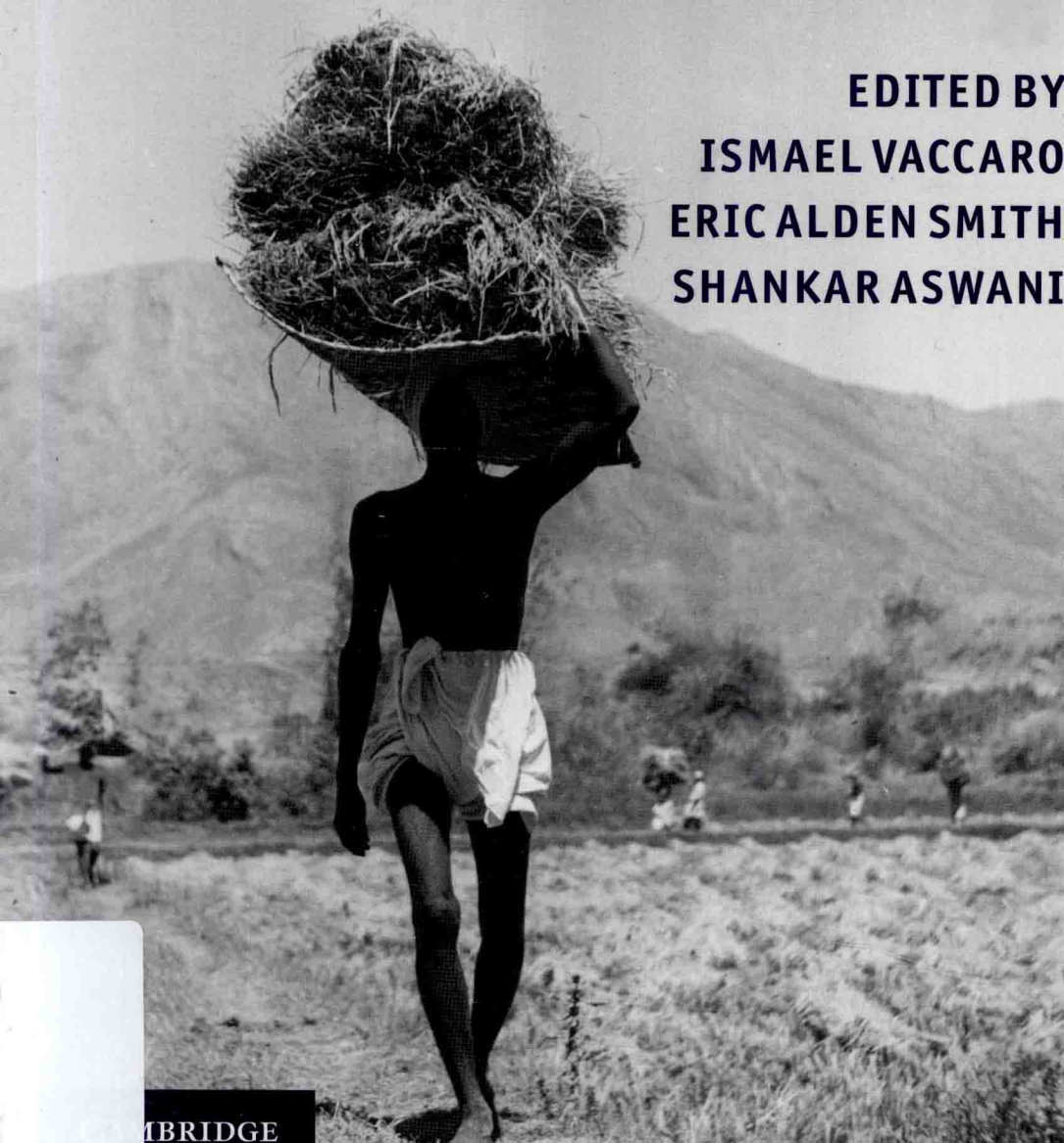

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Environmental Social Sciences: Methods and Research Design

The relationship between human communities and the environment is extremely complex. In order to understand this relationship, interdisciplinary research combining natural sciences, social sciences, and humanities is necessary. Here, specialists summarize methods and research strategies for various aspects of social research devoted to environmental issues. Each chapter is illustrated with ethnographic and environmental examples, ranging from Australia to Amazonia, from Madagascar to the United States, and from prehistoric and historic cases to contemporary rural and urban ones. The volume discusses climate change, deforestation, environmental knowledge, natural reserves, politics and ownership of natural resources, and the effect of differing spatial and temporal scales. Contributing to the intellectual project of interdisciplinary environmental social science, this book demonstrates the contributions it can make to environmental studies and to larger global problems, and thus will be of interest to social and natural scientists and to policy-makers.

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Foreword

This book, *Environmental Social Sciences*, represents the best of what's happening in social science right now: (1) it exemplifies the movement toward interdisciplinary research; (2) it rejects the pernicious distinction between qualitative and quantitative in the conduct of social research; and (3) it makes clear the value for all social scientists of training in a wide range of methods of collecting and analyzing data. I treat these in turn.

1. Interdisciplinary social science. Environmental science has always been an interdisciplinary effort. The *Science Citation Index* lists 163 journals in the category of environmental science. Look through the top 10 journals (the ones with an impact factor of 4.0 or more) and the range of disciplines is clear: biologists, chemists, meteorologists, paleontologists, geologists ... Increasingly, it is common to see articles – like one by Clougherty (2010) on gender analysis in the distribution of the effects of air pollution, or one by Knoke *et al.* (2009) on reconciling the subsistence needs of farmers in Ecuador with the need for conserving forests, or one by Rosas-Rosas and Valdez (2010) on the impact of fees from deer hunts on the willingness of landowners in Mexico to suspend killing of pumas and jaguars – articles that can only be described as social science. (We see this as well in medical science, where the very best journals now also routinely publish articles that also can only be described as 100% social science.)

Environmental *social* science is developing quickly within the environmental sciences, with Ph.D. programs in several universities, a major textbook (Moran 2010), and, now, this book on research methods.

2. Rejecting the qual–quant distinction. Whether it's anthropology or sociology or geography, social scientists are often asked – no, required – early in their careers, to choose between humanistic and

scientific approaches to the subject matter of their discipline and between collecting and analyzing qualitative or quantitative data. Even worse, they are taught to equate science with quantitative data and quantitative analysis and humanism with qualitative data and qualitative analysis. This denies the grand tradition of qualitative approaches in all of science, from astronomy to zoology. When Galileo first trained his then-brand-new telescope on the moon, he noticed what he called lighter and darker areas. The large dark spots had, Galileo said, been seen from time immemorial and so he said, "These I shall call the 'large' or 'ancient' spots." He also wrote that the moon was "not smooth, uniform, and precisely spherical" as commonly believed, but "uneven, rough, and full of cavities and prominences," much like the Earth. No more qualitative description was ever penned (Galileo 1610: 3).

3. The need for training in a range of research methods. The chapters in this book make clear the importance for environmental social scientists of extensive training in methods. How much methods training is enough? No one can be expert in all methods of research, but increasingly, research projects demand expertise in multiple methods, including methods for collecting and analyzing qualitative data. Methods tend to be associated with disciplines, but they can never belong to disciplines. Anthropologists developed the method of participant observation, for example, but this method is now part of every social science. Sociologists are most associated with the questionnaire survey, but this method, too, is part of every social science. All social scientists, in my view, need training in research design, in several kinds of data collection (structured and unstructured interviewing, for example), and in data analysis. Anyone who works with survey data needs good skills in statistical analysis. Working with interviews or narratives or images requires training in text management.

We properly disagree with one another about epistemology – first principles in how we know anything at all – and about whether biological or material or cognitive forces predominate in explaining any given human phenomenon. Most social scientists, however, share a commitment to empiricism – to recording observations about how people think, behave, and feel. This shared commitment is made wonderfully clear in this book on methods in the environmental social sciences.

Dr. Russell Bernard

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Preface

This book resulted from our desire to achieve two goals. First, we wanted to assemble a volume that could help researchers and students interested in the social aspects of environmental issues to identify the methodological possibilities offered by social sciences. Second, we wanted to present the pluralistic, interdisciplinary mix of methods, and qualitative and quantitative approaches, found in contemporary research in this area. We hope readers will find our attempts successful.

We want to acknowledge our intellectual debt to the colleagues and teachers who have helped us understand the dynamic range of possibilities in environmental social science. Ismael and Eric specifically offer tribute to the Graduate Program in Environmental Anthropology at the University of Washington. Although now moribund, the "EA Program" flourished for over a decade and provided its participants (students and faculty alike) with a dynamic intellectual and social environment for exploring diverse and non-dogmatic approaches to environmental social sciences. In comparison to a decade ago, there are now a growing number of vibrant programs for environmental social science, and an expanding scholarly and applied literature.

Finally, we want to thank William Balée, Ashwini Chhatre, Steven Goodreau, Michael Gurven, Karen Lupo, Ronald Niezen, David Nolin, Laura Ogden, Laura Rival, Raja Sengupta, and Richard Stepp for their excellent contribution as external reviewers of the chapters included in this volume.

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Introduction

ISMAEL VACCARO AND ERIC ALDEN SMITH

ENVIRONMENTAL SOCIAL SCIENCE

Environmental social science has its roots in several disciplines and research traditions, ranging from anthropology to zoology Disciplinary identities and frameworks continue to play a significant role: environmental anthropology, political ecology (centered in geography), environmental social science, and similar named entities in several other disciplines have their own associations, scholarly journals, and sets of issues. But increasingly there is convergence, transdisciplinary interaction, and the forging of a coherent if loosely bounded research community, with scholars and practitioners from many different disciplines in the social sciences, humanities, and applied fields engaged in fruitful dialogue and collaboration. This volume aims to foster this emerging field by presenting authoritative summaries of central research methods in a manner accessible to all. In the next section, we summarize the organization of the volume and the content of each chapter; but first, in the present section, we wish to situate this emerging field in a broader intellectual and historical context.

There are many factors that helped generate environmental social science, but two are prominent. The first was the realization that landscapes and the multitude of components they contain cannot be understood without serious consideration of past and present human communities. It is now widely understood that most terrestrial and near-shore environments are profoundly shaped by human actions – they are "socionatural" systems (Balée 2006; Denevan 1992; Smith and

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Wishnie 2000). These anthropogenic impacts are not limited to large-scale societies, but extend back to the initial dispersal of *Homo sapiens* some 60 000 years ago, and include effects that both enhanced and diminished biodiversity and ecosystem functions.

The second key stimulus for environmental social science is the recognition that human societies cannot be understood without analyzing their interactions with the environments that supported them. There is a long tradition of social analysis of the complex relationships between humans and environment, ranging from the philosophical accounts of Montaigne (1595), Montesquieu (1748), Voltaire (1759) to Malthus (1798), and Boserup (1965) on the relationships between demography and resources, with other classics Morgan (1877) and White (1959) on technology, Engels (1884) and Wittfogel (1956) on environmental drivers of social complexity, and Ratzel (1882), Wissler (1926), Steward (1955), and Rappaport (1984) on ecological adaptation. Some useful reviews and collections include Borgerhoff Mulder and Coppolillo (2005), Haenn and Wilk (2006), Johnson and Earle (2000), Orlove (1980), and Vayda and Rappaport (1968).

Initially, environmental social science emphasized economic factors as key mediators of human-environment relationships (cultural ecology). Economic perspectives, however, were soon joined by analyses of the social construction of knowledge (ethnobiology and science studies), politics and ideology (political ecology), and institutions (property theory and collective action theory), among many others. Although most of the contributors of this volume are anthropologists, this edited book has been explicitly designed to be useful to practitioners interested in the environment from all types of social sciences and humanities. Indeed, none of the tools or frameworks presented here are the exclusive patrimony of a single discipline.

Environmental issues, in any case, have proven to pose extremely complex theoretical and methodological demands. For instance, what is a forest habitat? There is no unique and uncontested answer to this question. To foresters, a forest is a productive unit that should be managed to produce its maximum sustainable yield. To urban dwellers, this same forest constitutes a dramatic and picturesque landscape suitable for camping and contemplation. Local farmers may perceive a forest as wasteland, since it occupies space that is not being cultivated; or they may perceive it as a storehouse of useful wild plants and animals, or (in the case of swidden farmers) the site of once and future gardens. The very same forest, to biologists, may be the habitat that sustains species that they are trying to conserve in a protected area,

or the ecosystem that generates important "services" for people and other living things. The forest is all of these things and more, but the perspective and values of any one individual or "stakeholder" group is necessarily partial. Any analysis of forests must recognize this subjectivity, and the potentially conflicting views and interests this implies. That being said, the analysis is likely to improve if, thanks to ecological analysis, we know it is a tropical rain forest with high species diversity and rapid nutrient turnover, if it has few or many introduced species, what kind of disturbance regime (from fire, wind, etc.) it is characterized by, and so on. In addition, a quantitative analysis of the extraction of timber and non-timber resources, a demographic analysis in and around the forest, and an examination of tourism in the area will offer useful complements to narratives about the forest provided by the various social actors.

In sum, the methodological complexity of socioenvironmental issues emerges in two different dimensions. First, analysis of these issues benefits from the combination of diverse methods and concepts from both natural and social sciences (Abel and Stepp 2003; Borgerhoff Mulder and Coppolillo 2005; Crumley 1994; Scoones 1999). Second, different disciplines and research traditions within the social sciences have developed diverse methodologies to approach the social components of environmental issues that often complement each other. This edited book focuses on the second point, or the need for methodological heterogeneity. The social sciences and humanities have developed a very diverse set of methodologies devoted to producing data on social issues connected, in one way or another, with the environment. This heterogeneity has resulted in qualitative and quantitative approaches that combine localized and multi-sited research, synchronic and diachronic perspectives, and discursive, statistical, or spatial analyses.

Most research projects can be thought of as including three basic elements: (1) an epistemology, or set of assumptions about how to construct, evaluate, and articulate knowledge; (2) a methodology, which is understood as a conceptual and analytical framework; and (3) a set of specific methods used to collect specific types of information, which are hopefully linked to (justified by) the first two elements. The goal of this volume is to introduce students and professionals to diverse methodologies and methods which are currently used in various environmental social sciences. Because the relationships between environment and society are extremely complex, and the methods for studying them have developed in diverse field settings and disciplines,

there is no single methodological framework uniting this work (or the chapters in this volume). Any environmental issue can be studied from a multiplicity of perspectives, causality can be studied from different angles, and information can be extracted from different areas or about different aspects of the issue. Thus, the diversity of theoretical and methodological approaches has resulted in production of information distributed within many different dimensions, often with little cross-referencing (let alone integration) and often highly dependent on the theoretical or research goals of the investigator.

This book presents a representative (if not complete) sample of environmental social science methods and methodologies. The intent is to provide readers with an introduction to several important analytical options for society–environment research. The chapters also highlight case studies that illustrate the application of these methods. Overall, we hope to show how complementary these different approaches and types of information can often be. A research design that incorporates several of the proposed methods may be better equipped to generate a more nuanced approach to a particular issue. This last goal, however, is not easy, as demonstrated by the difficulties we encountered in designing this very book. The last 25 years of social sciences and humanities research have been characterized by considerable theoretical confrontation. The starkest theoretical divide has opposed scientific or positivist approaches to critical, subjectivist, or postmodern schools, with obvious epistemological and methodological consequences. The subjectivist approaches, to simplify the terminology here, have tended to emphasize qualitative approaches in general and discursive analysis in particular. Positivist approaches have gravitated towards systematic collection and statistical analysis of quantifiable information. This book, however, is designed to challenge this dichotomy by incorporating chapters from both sides of the divide, and by explicitly emphasizing multiple levels of complementarity between quantitative and qualitative methods. In fact, we suggest that this plural approach to environmental social research design is required by the complexity of environmental issues.

OVERVIEW OF THE VOLUME

As noted above, this volume is designed to offer researchers and students an array of analytical approaches and associated methods that are available to study different social dimensions of environmental issues. We believe it covers a gap in the available literature, and will