Ambiente & Sociedade
ISSN: 1414-753X
revista@nepam.unicamp.br
Associação Nacional de Pós-Graduação e Pesquisa em Ambiente e Sociedade
Brasil

Hogan, Daniel Joseph
Human Dimensions of Global Environmental Change
Ambiente & Sociedade, vol. X, núm. 2, julio-diciembre, 2007, pp. 161-166
Associação Nacional de Pós-Graduação e Pesquisa em Ambiente e Sociedade
Campinas, Brasil

HUMAN DIMENSIONS OF GLOBAL ENVIRONMENTAL CHANGE*

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1 *Introduction*

Unlike the experience of many fields, the social sciences[1] were not led to the study of the environment through the gradual development of their major paradigms – what Kuhn called "normal" or incremental science. On the contrary, it was the irruption of serious environmental problems, and above all, of socio-environmental movements and the social conflict embedded in these movements, that placed the issue on social science agendas. While initial approaches in the seventies tended to be ad hoc attempts to delimit the field of environmental social science, the field today is thriving and diversified, with more clearly defined research orientations.

Although many social scientists thus came to study the social determinants and consequences of environmental change, they were even more unprepared to incorporate global changes in the scope of their work. The problems of global warming and the rise in sea levels, in particular, were remote from social science concerns, occurring on temporal and spatial scales which their research paradigms did not contemplate. And unlike environmental issues in general, global change did not at first generate socio-political movements which commanded their attention. The early calls for social science involvement came from physical scientists who clearly saw that human activity was responsible for the acceleration of changes observed in world climate. It would be necessary to engage social scientists in these efforts if current trends were to be modified. The challenges of inter and multidisciplinary research, always stretching the vision – and often the patience – of "normal" scientists, are considerably amplified when collaboration seeks to bridge the gap between natural and social science.

These considerations are important for understanding the development of what has come to be called the human dimensions of global environmental change; the pace, institutional framework, geographical extent and (relative) success of these developments; as

*The first version of this text was originally prepared as a contribution to a research program on climate change, to be launched by FAPESP in 2007.

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Recebido: 08/10/2007. Aceito: 09/10/2007.

well as the timid response of Brazilian social science. Most importantly, they are essential for tracing a strategy of promoting and supporting social science involvement in climate research within the social science community.

2 *International research on the human dimensions of global environmental change*

Three related initiatives have been fundamental in establishing the scientific agenda, promoting exchange and publishing and disseminating results of human dimensions research. The Open Meeting of the Human Dimensions of Global Environmental Change Research Community, as a venue for these activities was first organized at Duke University in the United States, in 1995, followed by meetings in Austria (1997), Japan (1999), Brazil (2001), Canada (2003) and Germany (2005). While the Human Dimensions Program of the International Social Science Council (launched in 1990) and, since 1996, the International Human Dimensions Programme on Global Environmental Change, with support of several countries, have been active in the preparation of the Open Meetings, each has been independently organized, with the election of a Steering Committee at each meeting. This loose association of researchers, centers, national and international agencies permitted the identification of a research community, whose identity has consolidated over time. The second, more structured initiative was the creation of the IHDP itself in 1996. Since the completion of its core project on Land Use and Land Cover Change (co-sponsored with IGBP) in October 2005, the IHDP has six Core Science Projects:

- Global Environmental Change and Human Security (GECHS);
- Institutional Dimensions of Global Environmental Change (IDGEC);
- Industrial Transformation (IT);
- Urbanization and Global Environmental Change (UGEC);
- Land-Ocean Interactions in the Coastal Zone (LOICZ) (co-sponsored with IGBP); and
- Global Land Project (co-sponsored with IGBP and successor of LUCC and the IGBP core project on Global Change and Terrestrial Ecosystems).

The Vienna Open Meeting was the moment when competing topics were sorted out, and LUCC and the first three of the above projects were selected[2]. Researchers who participated in these projects first produced a Scoping Report for the IHDP Scientific Committee; when approved, this was followed by a Science Plan, a Scientific Steering Committee, the preparation of an Implementation Strategy, and collaborative research. Successive Open Meetings, meanwhile, widened the range of topics, some of which evolved as core projects.

The third related initiative was the participation of the national academies of science. In many countries, the academies established national committees and created formal lines of research support. Most of the significant work on human dimensions has been the fruit of these activities[3]. Sixteen countries have created National Committees on Human Dimensions and another 16 have created Global Change Committees which integrate human dimensions into the larger research community.

3 *Brazilian human dimensions research*

The *Academia Brasileira de Ciências* accompanied these moves, creating a Human Dimensions Committee in 1997. One consequence of this decision was a bid by Brazil to hold the 4th Open Meeting in Rio de Janeiro in 2001[4]. The preparation and the implementation of this meeting was, without doubt, the most significant activity of the Committee, and had as a major objective the mobilization of the Brazilian Environmental Social Science community, increasing interest and involvement in climate research. While this meeting coincided with the creation of the National Association for Graduate Studies and Research in Environment and Society (ANPPAS), which unites Graduate programs on society and the environment and promotes well-attended national meetings on a biannual basis, the Open Meeting did not significantly increase participation of Brazilians in this field and global environmental change continues to be a little-explored theme at Anppas meetings[5].

The reasons for this are important to consider as calls for social science participation increase. The international experience synthesized above makes it very clear that a proactive role on the part of funding agencies is fundamental. Research in this field will not take off on its own, as, indeed, it has not done. Perhaps more important, however, has been the lack of response of the environmental social science community itself. In a country of such pressing environmental problems, long-neglected and still without the necessary priority, immediate problems at the local, regional and national level monopolize the attention of researchers and students[6]. In a field as new as environmental social science, graduate students and their theses are a major source of new knowledge. The issues which inspire students to seek out the 40 or so graduate programs in environmental sciences in Brazil are those to which they have been exposed in their role as citizens. Global climate change is not one of them.

Breaking this vicious circle of exclusive attention to pressing local problems is an important objective for environmental social sciences. In this respect, international experience is a useful guide. Four core projects galvanized the nascent "human dimensions of global environmental research community" for more than a decade. Such focusing was important for two reasons.

First, sub-communities of researchers were organized into interdisciplinary, interinstitutional and international networks on themes sufficiently few in number and limited in scope to be able to conduct comparative research and synthesize results in fifteen years. Projects interested in this exchange submitted their plans, which were accepted as part of the Scientific Committee's scope[7]. The exchange and visibility provided by the Open Meetings and publication and dissemination of results by the IHDP created a space for this research which had been lacking in conventional, disciplinary-oriented organizations. This collective effort, potentialized by the network established by each core project, was fundamental in forging effective programs, creating training possibilities and advancing knowledge. This focusing favored cumulative results, which gave both visibility and legitimacy to the field.

Secondly, the IHDP was realistic in the choice of core projects, not identifying as central issues the Big Questions: What are the human activities causing climate change and How do we stop them? Rather, they took as starting points themes already the object of research, whose connection to global change is not always self-evident, focusing on interme-

diate relations rather than direct connections between human actions and climate change. The four major issues are areas in which environmental social scientists had a tradition of work but whose center of attention had not been climate change. Thus, land-use and land-cover change had been studied in name of the loss of forest cover (to monoculture, cattle-raising and lumbering) and its impact on traditional livelihoods of small farmers and Indians; in the name of the demographic occupation of new territories; and in the name of the loss of biodiversity. Understanding the social, political, demographic and economic consequences of changes in land-use and land-cover would prove to be an important link between human activity and the carbon cycle – with its inherent effects on climate change.

Environmental change and human security, in the same way, moves from common concerns in the social science community to refocusing the issues in terms of climate change. What has been called the risk society places humankind in a new, vulnerable relationship to the world, and environmental issues are among the principal factors involved. Whether in the various approaches to food security (from labeling to diet patterns to transgenics to outright hunger), or by way of exposure to thousands of chemical compounds whose cumulative effect is unknown, or from the conflicts around such essential resources as water, the perspective of environment and security provides a path for incorporating the concern for the effects of climate change on health and community well-being.

The study of institutions is among the most traditional pursuits of sociology. The creation and development of institutions in the environmental field has generated much research in both North and South in the last quarter-century, as the environmental issue has become embedded in contemporary societies. Indeed, the institutionalization of environmental protection and of environmentalism itself is a major fact of our times. For sociologists and political scientists who study institutions, the move to focusing on the role of environmental and resource regimes, or of other institutions such as trade and investment regimes in causing/confronting global environmental changes is a logical step, one for which the conceptual basis has been well established.

The study of industrial transformation brings some reluctant participants into the discussion. Economics – most especially in Brazil – has not been at the forefront of environmental social science. Industrial transformation, however, has been a central issue for economists, and the move to more environmentally friendly production processes; the use of alternative fuels; production which is less energy- and materials-intensive are issues which tie into some of the most basic links of human activity to climate change.

Among the newer core projects is that on urbanization. The environmental changes associated to urbanization had already been identified by the Brazilian Committee as central issues from the perspective of developing countries in 2000, when a chapter on the topic was commissioned for the book mentioned earlier. The rapid pace of urbanization in Brazil, especially in Amazônia and in the *cerrado*, and all of the profound changes this has meant in national life mean that this process is related to all of the issues addressed in this paper. As one of the major transformations of Brazilian life in recent decades, its implications for values, behavior and national priorities related to climate change are multiple and profound. From the IHDP's point of view, this is an issue which is set to take off as a core project.

4 *Conclusions*

A reading of the international experience recommends both focusing on a limited number of themes and choosing themes in consonance with this experience. These issues are currently the object of research by the Brazilian environmental social science community, even though researchers have not often identified the link with climate change. If they can be induced to identify a place for themselves in this scenario and to recognize that climate change is being approached by way of issues they are indeed currently researching, they may be drawn in to the growing community of human dimensions scholars. As a rather esoteric, remote issue, without clear links to current social processes, it will not motivate this community.

Notes

[1] Social sciences, broadly understood. In Brazil, following French traditions, the field of human sciences includes social sciences, economics, history, demography, social psychology as well as several applied fields.

[2] Among the projects not selected was GOES – the Global Omnibus Environmental Survey, a project which would have conducted periodic international surveys to monitor public opinion on global change. Led by the Survey Research Center of the University of Michigan, GOES was the first project to mobilize the Brazilian Social Science community. In the year preceding the Vienna meeting, researchers from Unicamp, USP, UFMG, UnB and ISER met several times, in Brazil and at the University of Michigan, to prepare this project. While the IHDP did not select it as a core project, GOES was carried out in the late 1990s. Without international funding, it proved impossible to carry out a national survey in Brazil, although pre-testing was done in Campinas, Belo Horizonte, São Paulo and several other sites. The results are published in Peter Ester, Henk Vinken, Solange Simões, Midori Aoyagi-Usui (eds.), Culture and sustainability: a cross-national study of cultural diversity and environmental priorities among mass public and decision makers, Dutch University Press, 2003. It includes chapters by S. Simões, E. Viola and D. Hogan on partial Brazilian surveys.

[3] Google provides a measure of the success of these activities: a search for climate change produced approximately 212,000,000 results, while a similar search for human dimensions of climate change produced approximately 11,200,000 results, nearly 20% of the total.

[4] On this occasion, the Committee organized a book of commissioned chapters to present Brazilian views on human dimensions to the international community. This book, D. Hogan and M. Tolmasquin (eds.), Human Dimensions of Global Environmental Change: Brazilian Perspectives, Rio de Janeiro, Academia Brasileira de Ciências, Rio de Janeiro, 2001, remains one of the few publications on human dimensions in Brazil.

[5] The IHDP's Annual Report for 2004-2005 registers eight researchers from Brazilian institutions, only three of whom are social scientists. The other five became involved in human dimensions research as an aspect of their research in the exact sciences. Of the three social scientists, none participate in a core project: Eduardo Viola was co-chair of the 2005 Open Meeting; Roberto Guimarães is a member of the IHDP Steering Committee; and Daniel Hogan was a member of the Steering Committee of the Population-Environment Research Network, a joint activity of the IUSSP and IHDP.

[6] This attitude does not derive from any isolation of this community from international debate; indeed, Brazilian environmental social science has been at the forefront of research, participating intensely in international fora.

[7] The IHDP does not finance research, but the identification of a project with one of the core projects has proven useful in securing funding; the principal gain for participating groups has been through the collective work of defining concepts, research strategies and research designs, as well as the exchange of results.