

Deconstructing a research project

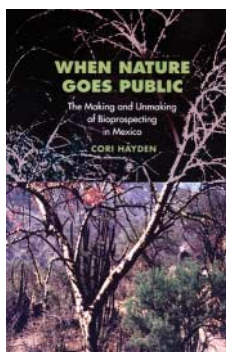
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**When Nature Goes Public:
the Making and Unmaking of
Bioprospecting in Mexico**
by Cori Hayden

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The emerging field of 'science studies' applies the ethnographic approach of anthropologists to analyse the motives, methods and sociopolitical implications of scientific research. One might imagine that ethnography—the detailed study

and systematic recording of human cultures—could yield important insights into the complex relationship between scientists and society, and, in particular, explain why science is frequently viewed with suspicion by laypeople. One might also reasonably fear the publication of simplistic or even grossly misinformed tales, such as the now widely discredited *Darkness at El Dorado* by Patrick Tierney, which accused an Amazonian research team led by anthropologist Napoleon Chagnon of a range of serious ethical lapses.

In *When Nature Goes Public: the Making and Unmaking of Bioprospecting in Mexico*, Cori Hayden offers an intriguing and well-intentioned ethnographic analysis of a bioprospecting project, the Arid Lands International Cooperative Biodiversity Group (ICBG), led by Barbara Timmermann of the University of Arizona (Tucson, AZ, USA). The book will appeal to fans of science studies with its thoughtful analysis of the larger sociopolitical context of this complex project. However, it will probably be frustrating

to most natural scientists, science historians, science policy experts and classical ethnographers. Factual errors, numerous unattributed quotes, convoluted prose and considerable naïveté about the science being analysed make it a flawed work, despite some important and interesting observations.

Bioprospecting is the search for molecules from plants, animals or microorganisms with the aim of developing them into pharmaceutical, agricultural or industrial agents. The practice of bioprospecting is an attractive subject for scholars of science studies because of the frequent involvement of indigenous peoples and 'traditional use' knowledge, the global politics of intellectual property rights, and the complex entanglement of basic science and commercial objectives.

The Arid Lands ICBG was a large-scale effort involving botanists, chemists and drug discovery scientists in the USA, Mexico, Argentina and Chile. The principal objectives of the project were natural-product drug discovery linked to ethnobotanical and biological inventory, research training, benefit sharing and biodiversity conservation. The main focus of the book is on the ways in which researchers at the National Autonomous University of Mexico (UNAM) conducted their work in the context of explicit and implicit agreements with the University of Arizona, local collaborators and the Wyeth-Ayerst pharmaceutical company (Madison, NJ, USA).

As the manager of the ICBG programme for the US government funding agencies that supported it, I met Cori Hayden during the ICBG's annual meeting in 1996. Although the project operated from 1993 until 2004, the book—which also constitutes Hayden's Ph.D. thesis—reflects field research that was conducted between 1995 and 1997, with modest updating to reflect events since then.

Through interviews with project participants and others, observations of the research activities and a review of a variety of relevant documents, Hayden developed an analytical description of the motives and methods of the scientists, and the sociopolitical environment in which they worked. This description, mediated by Hayden's own

assumptions about research and intellectual property, forms the basis of her analysis of the implications of the ICBG research and, by extension, the field of bioprospecting.

The basic concept of the book is that bioprospecting—in a modern ethical framework that includes constraints on access and mandates for benefit sharing—takes knowledge and materials that are in the public domain and attempts to turn these resources into privately owned commodities that generate revenue for a select few organizations and communities. In essence, Hayden believes that the scientists do not invent anything, but rather use scientific methods to 'translate' pre-existing resources and to arbitrarily redistribute the benefits that are generated. This is not a new view of bioprospecting, but it is the first time that I have seen the concept addressed so thoroughly through a deconstructionist lens and with as much analytical depth. Much of the book is dedicated to analysing the various ways in which the concepts of public and private were, in Hayden's view, redefined or inverted by the project.

The brief introductory chapter is a well-organized presentation that outlines Hayden's perspective on bioprospecting. The overtly deconstructionist nature of that perspective is clear. In discussing the benefit-sharing agreements she states, "As such, bioprospecting lays bare some of the defining contradictions of contemporary neoliberalism and its successor projects: [...] such offers of market-mediated inclusion or enfranchisement also contain within them the conditions for unprecedented degrees of exclusion and stratification."

Part One of the book, 'Neoliberal natures', outlines the Arid Lands ICBG project, and the social and geopolitical context in which it operated, including debates on the roles of the World Trade Organization and the UN Convention on Biological Diversity, the Mexican national history of medicinal plant exploitation and the controversy surrounding another ICBG project in Mexico: the Maya ICBG. I found the third chapter, on the history of medicinal plant exploitation in Mexico, informative and interesting. However, the more conceptual first chapter is frustratingly and

unnecessarily dependent on jargon, and includes many invented or tortured words (such as 'futuriticity', 'knowledges' and 'public-ization') and unnecessarily obtuse prose (for example, "...it is precisely in fear of the 'complexity' of the entanglements residing in and emanating outwards from these resources that bioprospectors are articulating and indeed producing a curious and ever-expanding topography of public domains," p46).

A significant factual error in the book casts some doubt on the reliability of the ethnographic method that Hayden used in her research. Both the text (p67) and the only diagram in the book (Figure 2, p68) state that the grant for the ICBG federal project funded the research activities of the collaborating companies, Wyeth and American Cyanamid, and, as such, incurred a direct cost to the group. Not only would this be contrary to the policy and history of the ICBG programme, but this mistaken assumption could have easily been corrected by asking any of the university scientists, company representatives or agency staff that were involved, or by reading any one of the several published papers and accounts of the project. I found many other less serious factual errors (for example the existence of externally imposed quotas on sample collection), and was bothered by the numerous unattributed quotes in the book that do not, to my mind, fundamentally undermine its conclusions, but do erode trust in the methods that were used to develop them. In this vein, it is notable that Hayden cites few of the papers that have been published by the project scientists or ICBG-affiliated agency staff, and almost none that have been published since 1997.

The heart of Hayden's ethnography of the ICBG is in Part Two of the book, which focuses on research by UNAM ethnobotanist Robert Bye. Ethnobotany is the study of the ways in which people use plants and, in the case of Bye, includes the study of medicinal markets as well as the routes by which plants and information about their uses reach these markets. Here, the book appropriately challenges the popular, but frequently inaccurate, idea of the wise old indigenous healer who reluctantly reveals his or her secrets to the scientific world. In fact, a great deal of the knowledge about medicinal plant use is not only in the public domain through publication but is regularly traded in local and national markets.

Hayden very cogently outlines a fundamental problem of Bye's research approach

and the contortions that he goes through to adapt this to the benefit-sharing model of modern bioprospecting. In the post-Biodiversity-Convention world and the ICBG programme, benefit sharing is frequently approached as a means to support biodiversity conservation at the local level. Bye's market methodology begins with knowledge that is definitively separated from the local 'community'. As a result, he must recreate those links by collecting the research samples, and undertaking conservation and development projects from arbitrarily chosen communities.

The ethnography of Bye's work makes for interesting reading, but probably has limited general relevance to the field of bioprospecting based on ethnobotany, except as an extreme example of the complexity posed by traditional knowledge. Bye's focus on markets is not typical of ICBGs, bioprospecting, ethnobotany or traditional knowledge studies. Indeed, Hayden stresses this point on several occasions to indicate the tension with the model used by most ethnobotanists, including those in other ICBG-funded projects, in which primary data and sample collection from community-based practitioners—either selected individuals or by formal consensus analyses—is the rule.

Part Three of the book begins with an intriguing look at botanical fieldwork through the contemporary and historical use of roadways as collection sites. It continues with a discussion of a simple bioassay organism, the brine shrimp, which is used in the UNAM laboratory led by Rachel Mata, and how its modest cost and low-technology requirements make it a useful tool for including scientists from less-developed countries in the post-collection drug discovery process. Hayden's sociopolitical analysis is interesting, but her discussion of the value of the assay as a drug discovery tool implies great naiveté about the relationship of bioassays to drug development.

The final chapter, 'Presumptions of Interest', is concerned with samples that were coded to mask their taxonomic identity and traditional use before they were passed to the ICBG's industrial partners. This observation is the basis for a discussion of the apparent contradiction in the hope of many ethnobotanists and others that drug discovery is a means of recognizing a broader societal value of traditional knowledge, despite its limited usefulness in the high-throughput mechanism-based screening that is used by companies. Hayden further

extrapolates from the constraints on data sharing in the project to briefly discuss the larger issues raised by academic-industrial partnerships that attempt to balance publication and proprietary secrecy commitments.

With regard to the promise of science studies to help us understand the gap between scientists and the lay public, the book is probably more illustrative than explanatory. Perhaps the most enlightening element here is the implicit judgment of scientific research and, particularly, its relationship to intellectual property. The assumptions of the author essentially reject the fundamental premise that the research generates truly new knowledge, rather than translating that of others. This assumption leads almost inevitably to the view that patented 'inventions' that have made use of materials or knowledge in the public domain are, at least in one sense, 'piracy'. Many scientists and intellectual property lawyers contend that this judgement is most often derived from ignorance, rather than a careful analysis of patents and their antecedents. Whether or not this is true, the case for a well-informed judgement would not use this book as evidence. A more informed, explicit and clearly written analysis of the conflicts between intellectual property and traditional knowledge can be found in *Who Owns Native Culture* by Michael Brown.

When Nature Goes Public rides on a recent surge in critiques of ethnobotany and its sister field pharmacognosy, or natural-products chemistry. In addition to the explicit science studies works, numerous articles in recent anthropological, legal and political science literature, as well as the popular press, have analysed the work and implications of this small community of researchers, especially in the context of the Convention on Biological Diversity. Sadly, this surge has coincided with a decline in faculty positions in these fields. Indeed, it seems that we might have already reached the point where there are more people analysing ethnobotanists and pharmacognosists than there are practitioners in these areas. I find this unfortunate.

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