

## Chapter 8

### Remaking Prospecting's Publics

If nature has long gone public (at least since the time of Locke), so too have the (bio)sciences always had to produce their publics.<sup>1</sup> The question we must ask here is about the distinctive modes and conditions in which such "public-izations" take shape. In Mexico, in the United States, in Europe and the United Kingdom, and across Latin America and Africa (among other places), nature and its publics have been called into being in particular ways through tentative alliances among big pharma/small biotech, public sector institutions and academic researchers both North and South, and the newly designated stakeholders in a distinctive kind of biodiversity entrepreneurialism.

The neoliberalism of the Thatcher/Reagan/Salinas de Gortari years was the incubator for biodiversity prospecting and its promise to conserve nature by taking biodiversity and knowledge to market; the ostensibly kinder, gentler, Third Way (of which Mexican president Vicente Fox is an avid proponent) provides much fodder still for an active bioprospecting imaginary. Over the last twenty years of these neoliberal projects and their successors, a host of powerful and very material institutional shifts have made nature and knowledge increasingly privatizable in Mexico and internationally (the GATT/WTO, NAFTA and its requirements for stronger intellectual property legislation, the end of communal land tenure, and for U.S. patents on genes). Alongside these shifts have been efforts—sometimes opposed, sometimes wholly in concert with these privatizations—to open up the field of potential dividend-holders. Symbolically and materially central to these recalibrations of nature's publics is the benefit-sharing provision of the UN Convention on Biological Diversity, and its mandate—forged (with much contest) in the names of social justice and

biodiversity conservation—that biological resources and cultural knowledge (shall) come with claimants and benefit-recipients attached. Both within and beyond this framework, indigenous activists working through the UN and civil society organizations; activist academics; and other allied parties have been developing their own models of compensation policies, ethical research protocols, indigenous intellectual property rights (and its various versions and alternatives), and indeed, in some cases, benefit-sharing agreements.

As both mediators of and crucial actors in the new traffic in promises, resources, and rights, academic scientists play a particularly complicated and important role in these contemporary modes of "public-ization." For the Mexican researchers with whom I work, bioprospecting contracts are both a *symptom* of, and a potential *solution* for, the challenges posed in this new environment. Participation in the Latin America ICBG has proven to be a somewhat rocky experiment in conducting research in the post-CBD/post-NAFTA world order, an experiment that is now slated to end in 2003 (just as this book comes out), as the Mexican research team has decided not to seek another five-year renewal grant.

Without a doubt, the prospects for these kinds of collaborations in Mexico—and internationally—look very different than they did in 1993, when the Latin America ICBG program was first funded. Now, with the Maya-ICBG and UNAM-Diversa controversies still fresh, and with no product yet concretely on the horizon, it is not, perhaps, entirely surprising that this collaboration will fold at the end of the 1998–2003 grant cycle. The sense that this particular venture will soon come to an end has allowed for a particular kind of reflection, by my colleagues in Mexico, on what has transpired in the course of their participation in this agreement. For chemist Rachel Mata, the project has been a resounding success in a particular and important way: it has been good for Mexican science, she explained to me in the spring of 2002. This does not mean "infrastructure-building" in the usual sense—"I've lent *my* infrastructure to the ICBG," she reminded me—but rather in the more ephemeral but nonetheless important registers of funding for graduate training, Ph.D. research, and for students to attend conferences. These may be "consumable" resources (*comestibles*), but they are difficult to get hold of otherwise, these days. "Even if we don't end up with a product," Mata noted, "I would still say unequivocally that the project has been a success in these terms."

Indeed, for Mata, it is also in large measure the strong scientific/academic dimensions of this project that have helped keep her collaboration out of the kind of frenzy that other prospecting projects in Mexico, most notably the Maya ICBG, have generated. In contrast to the Chiapas project, which had a small research institute (ECOSUR) as its national host—

and even, indeed, in contrast to Chile and Argentina, her counterpart source countries in the Latin America ICBG—*this* project, she argues, has a strong academic/scientific presence. Most of the chemical workup of collected plants is done in Mexico; the contract, in fact, is not directly with a company but rather with the University of Arizona; if Wyeth-Ayerst wants more material for further analysis, the company has to ask; patents on any resulting compounds would indeed be held by UNAM. The control, she argues, rests *here*, and not with the corporate partners.

This confidence in the robustness—political and scientific—of the laboratory-based contributions to this project stands in striking contrast to the assessments of exposure continually made and remade by Mata's colleagues across UNAM's campus, in ethnobotany. Indeed, for ethnobotanist Robert Bye, there are certainly some reasons to think about continuing in this project, and these have everything to do with the new kinds of claims-making that now must be considered an integral part of plant collecting. "Before," Bye told me, "if a chemist colleague asked me to pick up a particular plant while I was out in the field, I would've probably done it. But I don't do that anymore—[the benefit-sharing question] makes it too complex." If routine collaborations, based on the presumption of unencumbered resources, are no longer easily navigable, neither are the conventional standards through which academic researchers do what they are charged to do. "The way we get evaluated as a university is [by] what we put into the public domain, in terms of publications and knowledge produced. But of course once something is in the public domain, anyone can just pick it up and do what they will with it. So we have new responsibilities [to track collections and knowledge providers]" (personal communication April 2002).

These new responsibilities are taking shape at a moment when there is yet another competing public to which/whom Mexican scientists must increasingly consider themselves accountable. In April 2002, the Mexican Congress (with strong support from President Fox) passed its new Law on Science and Technology that included some noteworthy provisions: not only that the private sector shall be invited to compete with public institutions and scientists for research funds, but that publicly funded research must now explicitly and overwhelmingly be calibrated to producing results of interest to the appropriate industrial sector.<sup>2</sup> As in analogous shifts in the United States and the United Kingdom, "basic research" is, as one UNAM scientist dryly told me, "out the window." This is not a radical break, but a crystallization of an ongoing shift in the structure of scientific research in Mexico and more broadly (see Schoijet and Worthington 1993). But one of its implications is, surely that, among other fields, the plant sciences' "publics" are now more than ever to be found in the private sector.

For Bye, these are the contradictory aspects of a "new paradigm" in plant research that make collaborations like the ICBG a necessary if not entirely sufficient venture: its virtue has been that it stands as an all too rare model of how to continue "doing our research while responding to these new conditions" (personal communication April 2002). Of course it is precisely Bye's particular ways of connecting this new paradigm's uneasily related publics—the compensable relations that (are made to) come with plants, the public domains that academic research both draws upon and produces, and the particular kinds of "accountabilities" that come with increasingly tight links to industry—which, themselves shine a (back) light on some of the most vivid and pressing questions surrounding these new conditions. The limitations of the mechanisms through which "everyone" shall, ideally, claim their "fair share" have been made awkwardly evident in the conduct of prospecting in Mexico's roadsides and urban markets, in indigenous communities and government lands, and in the controversies—both anticipated and actual—that have rolled alongside.

The noisy demise of the Maya ICBG, in particular, has had some powerful effects on prospecting's profile both in Mexico and internationally, though not, as ever, entirely in the ways we might expect. Once again, the making and unmaking of prospecting's publics has taken some decidedly odd and telling turns. Consider, first, the fallout for the Latin America ICBG program specifically. Where NIH administrators first phrased their discomfort with Bye's market work in terms of its breach in the incentive structure (i.e., that it "breaks the link" between communities and plants), their preoccupations in the aftermath of the Maya ICBG debacle take on a different tenor. They shade more explicitly into the very questions of liability and encumbrance that Bye anticipated from the start, though they take a distinctive turn: in contrast to the assessment of markets and roadsides as collecting *sites of refuge*, project directors worry now that market work has left the project "uncovered" or vulnerable in juridico-political terms.

Smarting from the Maya ICBG controversy, the NIH thus asked Bye to cease with these ("ownerless") collections and to start working *more* in communities—but not to do so until they drafted a more specific permit/contract for community authorities that mentions both the ICBG program and "bioprospecting" (*bio-prospección*) by name. Indeed, there has been some question of whether the project should continue to work with any of those initial collections *at all*—reinstating the Habermasian view of things here, "public" resources seem, in the current light, beacons of potential conflict rather than devoid thereof. Bye's own trajectory, working less in markets and more in communities as the project progresses, has thus been given an additional boost since 2000, as the UNAM ethnobotanists have largely stopped working in markets and have now recommenced collections in the kinds of sites that the NIH prefers: identifiable

*ejidos* and municipalities, with collections preceded by requests for permission from communal assemblies, presidents, or other appropriate authorities. And so, precisely due to the fallout surrounding the Maya ICBG, the U.S. National Institutes of Health has recommitted itself, and its contracted researchers, to the identifiable local interlocutor.

This twist in events illuminates another, crucial dimension of one of the key concerns of this book: the investment in pegging both resource appropriation *and* redistribution to the “local” or the “community.” This appeal to localizable benefit-recipients *as* resource providers is not just a way to imagine distributing benefits and enticing conservation. It is also, and perhaps even most prominently in the current circumstances, very much like its ostensible foil, market research: an attempt to gird against the political and regulatory complexities that define this provisional promise of “equitable returns.” U.S. funders are projecting the local (and decidedly *not* the public) as *their* route to safety; as the destination and source of the paper trail that they hope (the Maya ICBG experience notwithstanding) will legitimize this new form of ethical appropriation. Much like the move toward increasingly *specific* modes of informed consent in biomedicine (O’Neill 2001), here, the identification of particular people who have granted (ever-more) specific permission to collect plants on (their) land is for this U.S. government agency a scramble for “cover” in what has turned out to be, not surprisingly, highly volatile political territory. Even after its rough ride in Chiapas, this “local” seems to retain some distinct promises of efficacy.

### Prospecting Topographies

The revalorization of the local is, of course, not the end of the story for prospecting in Mexico—though it might, paradoxically enough, signal the end of the line for the brief career of “community-based” prospecting in Mexico. As the UNAM team sorts out its ever more accountable collection practices (the UNAM scientists still cut a wide berth around “*indigenous* communities” and specialized healers’ knowledge), ICBG project directors and participating companies are doing their own reassessments of risk and opportunity. The Mexican research team may have opted out of round three, but this decision was, in a sense, made for them: Wyeth Ayerst, the participating drug company, has expressed interest in the Mexican team’s continuing participation only if they will collect marine organisms and microbes—not out of the range of the chemists’ expertise but certainly not the usual research sites for a team of ethnobotanists. The UNAM team has declined the invitation (Bye, personal communication, 2003). Mexican plants (and their people, whoever they may be) will soon

be cut out of the project altogether, as the ICBG program overall turns its emphasis to “safer” and more lucrative environs. This is a new horizon in which a distinctive kind of nature figures increasingly prominently.

For drug and biotechnology companies, as well as for officials running the ICBG program itself, microbes (terrestrial and deep sea), seem to hold out some extraordinary promise, both biochemically and politically (see Helmreich 2003). Microbes contain, on the whole, a greater number of secondary metabolites; moreover, it is much easier to extract *genetic* information and material from a microbe than from a few milligrams of plant extract of the type sent to Wyeth-Ayerst by the UNAM chemists. Indeed, Wyeth-Ayerst must come back to Mexican scientists for access to more of the particular plants that seem promising—and thus, crucially, must wait out another process of negotiation with local interlocutors. A collected microorganism, on the other hand, is a much different political/biochemical animal. With one sample, a company or academic institution will likely have all the manipulatable genetic material it will need; there is no requirement to do follow-up collections. This grants a great deal more control to the companies in this process—and such control is, within the prospecting world overall, a commodity that is proving increasingly valued (Parry 2003).

As ever, the question to be asked of these rather stunning pronouncements of risk and opportunity remains, promise/threat for whom? Despite the extraordinary example of the UZACHI microbe screening efforts in Oaxaca, the recourse to microbes remains shorthand for “culture-free”—these are, in the prospecting imagination, resources that will entail much less political negotiation than their floral counterparts. As such, the ambivalent promise of benefit-sharing for rural interlocutors will, in this view, no longer even be an issue. Such a possibility, of course, changes the profile of our “ethical dilemma” from the previous chapters: not that “people” may be included badly, but that “people” may not be included at all.

The UNAM scientists, for their part, are also wary of this characterization of trouble-free resources, and what it might hold for them. If the Maya-ICBG protests pointed up the “complexities” of resignifying resource extraction as “advocacy” for indigenous communities, then the simultaneous public mobilization against the microbe-screening project between UNAM’s Biotechnology Institute and the U.S. company, Diversa, looms large as a parallel object lesson, this time in the singular dangers of sending whole organisms and “genetic material” out of the country. Activists’ claims about and to these new denizens of the national patrimony continue to resonate loudly: microbe screening, according to the UNAM researchers, carries some daunting political prospects of its own. Its future in Mexico does not, they surmise, look rosy.

Indeed, if plants and their people look increasingly marginal to the prospecting imagination, Mexico itself has, arguably, started to look a bit less inviting to companies and public sector brokers as a prospecting environment.<sup>3</sup> The continued centrality of indigenous rights to political and activist sensibilities on questions of biosecurity and bioprospecting; the realization that (Mexican) microbes might also have “politics;” and the lack of a concerted national policy on prospecting, have all begun to stack up unfavorably; countries such as Brazil, with a more defined (because more *strict*) juridical framework governing such enterprises, and environs such as the deep sea (because it is outside all bounds of territorial sovereignty [Helmreich 2003]) are now beckoning a new generation of “safer” prospecting enterprises.

As developments in genomics, biotechnology, and bioinformatics continue to generate elastic and ever-shifting demands for a range of molecules, active compounds, and gene sequences, corporate interest in nature does indeed remain high—in a particular form. One Mexican biotechnologist, no stranger to collaborations with companies herself, concisely lays out the current situation: “What companies want is a genomic database or databank, and emphasis on ex-situ holdings analogous to what happened in agriculture—they want material at their fingertips, just in case, a build-up of natural capital” (anonymous personal communication; see also Parry 2003).

But as we know so well from science studies, anthropology, and the historical and political trajectories of agricultural and biomedical research, there is no such thing as an unentangled resource.<sup>4</sup> The bumpy career of bioprospecting in Mexico demonstrates just how actively liabilities, viabilities, claims, and opportunities are being built-in to objects, knowledges, and sites of intervention, and back out of them again, by a stratified and heterogeneous mix of interested parties. The management of these entanglements—their animation, construction, anticipation, evasion—is where the “action” is here, both politically and analytically. If corporate forecasting exercises and that *other* kind of market research might give us a route in here, so too do the politics and mechanics of ethical research practice; the ways in which “public domains” are not just mined for their riches, but also called into being in particular ways through their articulation with new forms of takings and givings; the animation and elision of entitlements based on the idiom, the threat, and the promise of property itself. These are among the most active questions animating contemporary biopolitics; tracking them will be crucial to understanding the inclusions and exclusions that continue to be forged through the ambivalent promise of nature, gone public.

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## Introduction

1. Funded by the U.S. National Institutes for Health, the National Science Foundation, and USAID (initially), the ICBG program began in 1993 and is now in its second generation of five-year grants. I will discuss this program in greater detail below and in chapter 2.

2. Based in South San Francisco, Shaman was a pharmaceutical enterprise dedicated exclusively to working from ethnobotanical leads. The company also established a trust fund, the Healing Forest Conservancy, to distribute royalties to all of the communities that had consented to working with Shaman, once a product came out of the pipeline (King 1992 and 1994). In 1999, Shaman effectively folded, before it could bring any products “to market.” It is now called Shaman Botanicals and is focused on marketing herbal remedies rather than patented pharmaceutical products (O’Conner 2000)).

3. Established in 1991, just as the negotiations of the CBD were coming to a close, Merck-INBio attracted an enormous amount of attention, critical and laudatory, as a “pioneering” model for fusing drug development and conservation—one based not on “indigenous” knowledge or community participation but rather on national scientific capacities and resources (see chapter 2).

4. Sebastian Luna, quoted in a bulletin issued by the North American nongovernmental organization, Rural Advancement Foundation International (RAFI 1999a).

5. A case in point is work that is denominated “institutional ecology.” This research shows how scientific knowledge, whether in the form of natural history collections, oncogenic theories, or discourses about the abortifacient RU 486, travels, in the form of fact or not-quite-facts, across disciplinary and institutional domains and different “communities of practice” (Star and Griesemer 1989; Fujimura 1996).

6. See Annelise Riles's *The Network Inside-Out* for a study of the "efficacy" of the network, not simply as an analytic trope but also in its aesthetic and formal dimensions, and as an object and template for social action itself.

### Chapter 1 Interests and Publics: On (Ethno)science and Its Accountabilities

1. In arguing for a notion of sentiment to bridge the yawning gap between Weberian notions of economic rationality (and its attendant notion of self-interest) and all other forms of cultural action, Yanagisako argues, "[b]ourgeois 'economic' actions, like all culturally meaningful actions, are incited, enabled, and constrained by sentiments that are themselves products of historically contingent cultural processes" (2002: 11).

2. Much anthropology of science has had a sort of double effect, and indeed, double intent: analyzing the cultural commitments embedded and reproduced through science has also been a way to argue that "nature"—the presumed reference point for scientific knowledge—is itself a profoundly mediated space or object of intervention. This dual concern informs one of the most vivid zones of cross-fertilization between "traditional" anthropological concerns and science studies. I refer here to the feminist revitalization of kinship studies, which has made a powerful mark on science studies. (And indeed Yanagisako's critique of interest, too, comes out of this legacy of feminist kinship studies [Yanagisako 2002: 12–157].) Kinship historically has signaled the study of social organization via different systems for classifying relatives, and, implicitly, the study of cultural theories of reproduction; this area of inquiry was a foundational and unique part of anthropology from the discipline's inception in the late nineteenth century. Since the late 1960s, this arena of study has taken on new and critical life, as feminist anthropologists have built on and radically extended David Schneider's call to interrogate the unexamined assumptions behind kinship theory. Chief among these was the notion that people "elaborate" different cultural meanings out of the baseline provided by the "natural facts of reproduction" (Schneider 1968). Against this sort of naturalization of Anglo-American anthropologists' own models, Schneider provocatively labeled Western biological models of reproduction and genetic relatedness "folk categories" that themselves must be understood symbolically, rather than being taken as the foundation against which to measure cultural variation. There has been a direct feed from feminist kinship theory to much of the work currently being done in the anthropology of science on new reproductive technologies, biotechnology, cloning, conservation biology, genomics, and artificial life, among other domains (Helmreich 1998; Franklin 1995 and 2001; Franklin and Ragoné 1998; Haraway 1997; Strathern 1992b and 1999; Ginsburg and Rapp 1996). These studies tell us a great deal about how new knowledge practices and technologies are changing relationships among people, capital, and nature, just as they tell us about "traditional" anthropological concerns such as the relationships between specific notions of nature and culture; or, what counts as a person and a relative.

3. Marilyn Strathern, Donna Haraway, and Sarah Franklin have been particularly important in making these links between kinship theory and questions of

intellectual property and biotechnologies. See Strathern 1992 and 1999e; Haraway 1997; Franklin 2001.

4. The degree to which genetic material has been metaphorized as information makes the distinction between life and knowledge a particularly complicated and generative one (see Helmreich 1998).

5. The Lockean equation for making sense of intellectual property (labor + nature = [ownable] invention) is also, fundamentally, an explicitly gendered formulation. The origins of copyright law, for example, were firmly based in analogizing innovation and creativity to paternity—"genius," like the generative procreative agency of paternity itself, was understood as the unique and proprietary expression of masculine authorship (Rose 1993: 114). The same may be said of patents, which similarly protect the originality understood to derive from intellectual labor, as the defining imprint of a masculine creative agency on a passive, feminized nature (see Coombe 1998: 219; Delaney 1986; Hayden 1998).

6. The original challenge to the *ayahuasca* patent on a commonly used plant (glibly christened in the patent application as "Da Vine"), was brought by the Coordinating Body for the Indigenous Organizations of the Amazon Basin (COICA), together with the Amazon Coalition and the Washington, D.C.-based Center for International Environmental Law (CIEL). For information on the case, see the Center for International Environmental Law's website at <http://www.econet.apc.org/ciel> (last accessed January 2003).

7. I thank Celia Lowe for her insights on this subject. See Lowe 2002 for an exploration of the national specificities of these kinds of translations.

8. Adriana Maya has done some stunning ethnohistorical work on Afro-Colombian communities, land tenure, and ethnobotany. Maya notes the degree to which indigenous peoples in Colombia have been enfranchised within recent constitutional reforms (at least on paper), in some measure due to the many academic researchers who have devoted their work to making visible the plight and the knowledge of indigenous peoples. In contrast, she has argued that the dearth of intellectual allies for communities of African descent has contributed to their invisibility within national political discussions around legal reforms (Maya 2000).

9. I call these moves a liberal oppositional project and not a radical one, for, in most cases, the claims being made by these ethnoscientists have to do literally with hitching indigenous knowledge to the legitimating wagon of "science." These arguments hardly constitute efforts to radically reset the epistemological universe in which science stands for universal truth; indeed, many of these arguments, Hunn's included, are made *against* what some researchers call a dangerous "revival" of "cultural relativism" in anthropology that allegedly robs scholars of any moral ground on which to stand (Hunn 1999; see also Berlin 1992). For these researchers, "science" is a powerful pragmatic and philosophical grounding force, as much in ethnobotanists' arguments about the rationality of indigenous classification as in court testimony seeking to help Native American tribes retain access to tidelands for harvesting shellfish (Hunn 1999). There are, of course, other ways to think about the meeting grounds in which indigenous knowledges and practices intermingle with scientific knowledges and practices. Some of these approaches turn a questioning gaze on science, not in the interest of nihilism as Hunn suggests,

but rather in the interest of understanding knowledges as heterogeneous and dynamic (Watson-Verran and Turnbull 1995).

10. Schultes, by some adulatory accounts, occupies a key place in North American ethnobotany as the generational link between Victorian era natural historians and their 1990s counterparts. In contrast to their forebears, contemporary ethnobotanists are more likely to tell tales of their apprenticeships with shamanic healers than of the wonders and terrors of the forests and the cannibals rumored to inhabit them (Davis 1996; Plotkin 1993).

11. For example, Schultes made a case for the cultural significance of peyote use among Native Americans, against the U.S. government's concerted efforts in the 1940s to criminalize the practice (Davis 1996: 71–73). But perhaps most famously, he's known for collaborating with Albert Hofmann, formerly of the Swiss pharmaceutical company Sandoz, in a study of the correspondence between the Mexican marigold to which "folk wisdom" attributed hallucinogenic properties, and LSD, which Hofmann had discovered in 1953. Among countless other studies, Schultes is celebrated by his followers for unraveling the "greatest of all ethnobotanical mysteries" (the botanical identity and chemical activity of the famed Aztec hallucinogens, *teonanacatl* and *ololiuqui*), and for piecing together in biochemical terms the specific and finely honed combinations of plants used in the Amazon to produce arrow poisons (see Sheldon and Balick 1995: 50).

12. Apologies and thanks go to Brian Noble, whose fortuitous phrase, "Acquisition and Redress," framed a conference panel in which I participated in 2000, at the meetings of the American Anthropological Association. My skeptical characterization of bioprospecting as a form of resource acquisition with "returns" built-in was not, precisely, what he meant by the term "redress," though I continue to find this perversion of the formula a useful one.

13. In 1991, in the shadow and on the coattails of the Human Genome Project's massive efforts to map the human genome, population geneticists Luca Cavalli-Sforza, Mary-Claire King, and Mark Feldman, among others, championed the Human Genome Diversity Project, claiming that there is no such thing as "the" human genome and that resources would be well spent in a coordinated effort to "map" human genetic variation. In the name of the HGDP, these geneticists proposed collecting DNA samples from indigenous peoples, particularly those groups deemed both isolated (in genetic terms) and in danger of "disappearing." The stated goals were several: to study genetic diversity in order to better "root" the human family tree, and also to explore the DNA of isolated populations for potential biomedical value. Such medical applications would mean patents on cell lines and genetic material; and indeed, just as the project was starting to take shape, an NIH researcher who was not part of the HGDP filed a patent claim on a cell line taken from a Guaymí Indian woman from Panama (containing antibodies for a rare form of leukemia). If, as Haraway reminds us, the sampling of blood is never an innocent symbolic act, patent claims have significantly raised the ante of such exchanges (Haraway 1997; Hayden 1998).

14. Beth Povinelli's work (2002) on aboriginal entitlements in Australia focuses on analogous dynamics of taking as giving in what she calls "late liberal" forms of cultural recognition in the context of the multicultural state.

15. For an initial, indicative selection of these conversations within activist academia, see the volume edited by Tom Greaves, *Intellectual Property Rights for Indigenous Peoples, A Sourcebook* (1994), Michael Brown's "Can Culture Be Copyrighted?" and the responses to it in *Current Anthropology* (1998); and Stephen Brush and Doreen Stabinsky's *Valuing Local Knowledge* (1996).

16. Intellectual property has been invoked not just as a tool for determining control over resources but in framing notions of "culture" and identity itself (Coombe 1998).

17. In 1994, applied anthropologist Tom Greaves noted that "until now IPR as a concept and a goal has been almost entirely discussed among a few hundred non-indigenous people in industrial countries." Greaves noted that that might have been about to change; and indeed in the mid to late 1990s, as we shall see, biodiversity politics became an important forum in which the merits and pitfalls of intellectual property protection were rendered an explicit topic of debate among indigenous organizations.

18. I borrow the exact quotation from Posey's account (1994: 235); the full text of the Charter of the International Alliance of the Indigenous-Tribal Peoples of the Tropical Forests is available at <http://www.mtnforum.org/resources/library/citp92a.htm>, or through the Alliance's International Technical Secretariat, London, UK.

19. See the Indigenous Research Protection Act, drafted by the North American group, the Indigenous Peoples Council on Biocolonialism (Wadsworth, Nevada), at <http://www.ipcb.org/pub/irpintro.htm>.

20. Pointedly, in a sweeping 1995 compendium on ethnobotany that Richard Schultes co-edited (with Siri von Reis), Toledo makes a rather singular contribution. Slotted in as the sole contributor to a section on compensating indigenous peoples for their contributions to pharmaceutical development, Toledo uses his allotted space by leaving one of the few critical footprints in this largely celebratory volume, reminding his readers of national and international differences within this discipline, as well as of its often vividly-worn colonial roots.

21. See Brown's book, *Who Owns Native Culture?* (2003), for an extended treatment of the problems accompanying both property and the public domain as rubrics for thinking about rights in cultural knowledge.

22. See the ongoing conversation moderated through the media collective, Sarai, based in New Delhi, on <http://www.sarai.net> (parts of which are published in the Sarai Reader 01: The Public Domain [New Delhi]). One contributor asks us to remember that the Public can be the site not just of openness and the knowable, but of secrets and rumors. "This [co-existence of openness and encryption] means that the Public Domain may be the safest refuge for those ideas that are most vulnerable because they are the most radical" (Sarai Reader 01:1).

## Chapter 2 Neoliberalism's Nature

1. The Brundtland Report, published by the World Commission on Environment and Development in 1987, firmly placed sustainability at the center of international development strategies, around which have continued to swirl a host of

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tics and benefit-sharing agreements, the idiom of knowledge *as* possession is literalized, activated, and on vivid display.

3. In a recent example of how a patent on a well-known plant can abruptly truncate relations, in 1999 a U.S. seed entrepreneur was granted a patent (U.S. patent no. 5,894,079) on a yellow bean, the mayacoba, used widely throughout northern Mexico. This entrepreneur, Larry Proctor, had purchased mayacoba beans in Mexico, grew a few generations of them in Colorado, and then applied for a patent on these new generations on the basis of their unique (in the United States) color—yellow. He has proceeded to sue distributors who export the bean from Mexico to the United States for patent infringement—making it all but impossible for bean growers in Mexico to market their crop north of the border. Alongside the Terminator Technology, the so-called “Enola” bean patent has become one of many lightning rod cases in recent international activist mobilizations against biopiracy (see [www.rafi.org](http://www.rafi.org); [www.greens.org](http://www.greens.org), [www.actionaid.org](http://www.actionaid.org)).

4. Consider Strathern’s discussion of informed consent in the context of (human) tissue banking, when what is at issue is the flow of potentially lucrative information derived from donated samples. Here, efforts to protect tissue donors through the mechanism of consent hover between asserting privacy rights on the one hand, and defining or making explicit ownership rights or entitlement claims, on the other (Strathern 2000: 294).

5. See a related exchange between anthropologist Stuart Kirsch (2000) and post-colonial critic Arif Dirlik, in *Current Anthropology*. Dirlik (2001) wonders at the costs of Kirsch’s efforts to secure compensation for Marshall Islanders subjected to years of fallout from U.S. atomic testing, when the remedy on offer (codification of damages sustained in the U.S. courts) requires acceding to the terms on offer by the same institutions that are responsible for the damage in the first place.

6. This argument about the counterrepresentational effects of liberal governance and knowledge production is the hallmark of postcolonial critique. See Beverly 1999; Chakrabarty 1999.

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1. See Shapin and Schaffer 1985; Haraway 1997.

2. See the article in *La Jornada*, April 24, 2002, p. 42: “Lista, la nueva ley de ciencia; competirá la IP por recursos.”

3. Perhaps with this in mind, the Secretariat of the Environment (now, SEMARNAT) convened a symposium in Cancun, in 2002, among the world’s “megadiverse” countries, hoping to set forth a stronger and united front in order to enter these negotiations from a position of strength.

4. The phrase will resonate with Nicholas Thomas’s *Entangled Objects* (1991), but for an even stronger resonance, see Warwick Anderson (2000) on the travels and constitutions of ‘kuru’ through mid-century anthropology and medical research.

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