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Territory, Plants, and Land-Use Rights Among the San of Southern Africa: A Case Study in Regional Biodiversity, Traditional Knowledge, and Intellectual Property

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**TERRITORY, PLANTS, AND LAND-USE RIGHTS AMONG THE
SAN OF SOUTHERN AFRICA: A CASE STUDY IN REGIONAL
BIODIVERSITY, TRADITIONAL KNOWLEDGE,
AND INTELLECTUAL PROPERTY***

Stephen R. Munzer** and Phyllis Chen Simon***

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** Professor of Law, UCLA School of Law. For financial support I am grateful to the Academic Senate and the Dean’s Fund at UCLA. My interest in *Hoodia* was stimulated by Laura A. Foster, who presented a draft paper entitled “Patents and Biopiracy: Patent Law Regimes as Colonial Discourse and Origin Myth” on May 5, 2007, to the UCLA Center for Society and Genetics while I was a Senior Fellow of the Center. Her paper supplied me with some sources that I probably would not have found otherwise, for which I am most grateful. Later, she decided to make the topic part of her projected dissertation in the UCLA Department of Women’s Studies, and we agreed that it would be best to keep our work separate. I have not seen any version of her dissertation in progress, and she has not seen any version of this Article. I suspect that she would respectfully disagree with some, perhaps a great deal, of what is said here.

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INTRODUCTION

At present we see a great deal of writing by legal and other scholars on intellectual property (IP) rights in the traditional knowledge (TK) of indigenous peoples. The many articles and books on the subject are notable for their diverse approaches. Among them are legal analyses, philosophical discussions, historical, sociological and economic treatments, studies in political ideology and feminism and critical-race theory, and reports of field work.¹ We believe that a good many of these approaches hold considerable intellectual and practical promise. It is no part of our study to claim that it merits pride of place over all other types of inquiry.

We approach one highly noteworthy case of TK from the standpoint of domestic and international law. The case involves the TK of some of the San people of southern Africa relating to medicinal uses of the *Hoodia* plant. These San use the plant for many different ailments; we concentrate on its use as an appetite-suppressant and hence as a possible anti-obesity drug or herbal remedy. We argue that many factors make the financial rewards to the San of such a drug or remedy far less promising than might at first appear. Some of these factors, such as the dispossession of the San and their low socioeconomic status in the various countries of southern Africa, are not

¹ See, e.g., MICHAEL F. BROWN, WHO OWNS NATIVE CULTURE? (2003) (presenting a series of case studies involving ownership rights to native property); SILKE FELTON & HEIKE BECKER, LEGAL ASSISTANCE CENTRE, A GENDER PERSPECTIVE ON THE STATUS OF THE SAN IN SOUTHERN AFRICA (2001) (analyzing and comparing literature and field research involving gender roles among the San); CORI HAYDEN, WHEN NATURE GOES PUBLIC: THE MAKING AND UNMAKING OF BIOPROSPECTING IN MEXICO (2003); UWE HOERING, WORKING GROUP OF INDIGENOUS MINORITIES IN SOUTHERN AFRICA, BIOPIRATES IN THE KALAHARI? HOW INDIGENOUS PEOPLE ARE STANDING UP FOR THEIR RIGHTS—THE EXPERIENCE OF THE SAN IN SOUTHERN AFRICA (2004) (discussing the problem of indigenous peoples' loss of patent rights); KAUSHIK SUNDER RAJAN, BIOCAPITAL: THE CONSTITUTION OF POSTGENOMIC LIFE (2006) (arguing that modern biotechnologies must be understood in relation to the economic markets in which they are created); SUSAN K. SELL, PRIVATE POWER, PUBLIC LAW: THE GLOBALIZATION OF INTELLECTUAL PROPERTY RIGHTS (2003) (discussing the influential role of big business in international regulation of IP protection); Anupam Chander & Madhavi Sunder, *The Romance of the Public Domain*, 92 CAL. L. REV. 1331 (2004) (examining the exploitation of resources and knowledge in the area of global IP); Graham Dutfield, *TRIPS-Related Aspects of Traditional Knowledge*, 33 CASE W. RES. J. INT'L L. 233 (2001) (analyzing the role of TK in the global economy and in international diplomacy); Angela R. Riley, *Recovering Collectivity: Group Rights to Intellectual Property in Indigenous Communities*, 18 CARDOZO ARTS & ENT. L.J. 175 (2000); Stephen R. Munzer & Kal Raustiala, *The Uneasy Case for Intellectual Property Rights in Traditional Knowledge*, 25 CARDOZO ARTS & ENT. L.J. (forthcoming 2009). Vandana Shiva is perhaps the most prominent critic of Western refusals to recognize legal rights in TK. See, e.g., VANDANA SHIVA, PROTECT OR PLUNDER? UNDERSTANDING INTELLECTUAL PROPERTY RIGHTS (2001); VANDANA SHIVA, BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE (1997). For skepticism regarding rights in culture and TK, see Jeremy Waldron, *Settlement, Return, and the Supersession Thesis*, 5 THEORETICAL INQUIRIES IN L. 237 (2004).

specifically legal but are vital to understanding the San predicament. Other factors, such as domestic law pertaining to land use as well as domestic and international patent law, are squarely legal. We write as legal observers and analysts of a complicated phenomenon. We try to be as even-handed as possible. We are neither activists for TK as a *sui generis* form of IP nor defenders of the status quo who are indifferent to the plight of the San. We do not share the opinions of either those who think that *Hoodia* is extraordinarily valuable or those who dismiss all talk of biopiracy.²

This Article began as a contribution by one of us to a conference honoring the work of Professor Margaret Jane Radin. A salient feature of her many articles is the range of her discussions of property—from land to servitudes to personal property and finally IP. This Article pays homage to this feature of her work by linking territory, land use, regional biodiversity, and IP rights in the case of an indigenous people. We take note that our work appears in a journal devoted to constitutional law, and specifically to the Bill of Rights in the United States. The four African nations—Angola, Botswana, Namibia, and the Republic of South Africa—that are central to our inquiry all have constitutions that shelter property rights in assorted ways.³ Because

² Compare, e.g., Rebecca M. Bratspies, *The New Discovery Doctrine: Some Thoughts on Property Rights and Traditional Knowledge*, 31 AM. INDIAN L. REV. 315, 315 & n.1 (2007) (reciting some of the high prospects for *Hoodia* claimed by others), with, e.g., Jim Chen, *There's No Such Thing as Biopiracy . . . and It's a Good Thing Too*, 37 MCGEORGE L. REV. 1, 3–6 (2006) (attempting to bury what he calls “the biopiracy narrative”). It bears notice that Bratspies has some interesting ideas for rethinking TK and property.

³ See LEI CONSTITUCION art. 10 (Angl.) (protecting “diverse forms of property—public, private, mixed, cooperative and family”); cf. *id.* art. 12(1) (“All natural resources existing in the soil and subsoil . . . shall be the property of the State . . .”); *id.* art. 12(4) (“The State shall respect and protect people’s property, whether individuals or corporate bodies, and the property and ownership of land by peasants, without prejudice to the possibility of expropriation in the public interest, in accordance with the law.”); CONST. OF BOTS. § 8(1) (protecting all property against “the taking of possession or acquisition” by the government except when such taking is “necessary or expedient” and subject to “the prompt payment of adequate compensation”); CONST. OF THE REPUBLIC OF NAMIB. art. 16 (protecting the right of all persons “to acquire, own and dispose of all forms of immovable and movable property individually or in association with others,” except for expropriation by the State “subject to the payment of just compensation”); S. AFR. CONST. 1996 § 25 (protecting all persons from being “deprived of property” except by government action “for a public purpose or in the public interest,” including “land reform,” subject to the payment of “just and equitable compensation”).

Running through these provisions are two themes: the state can expropriate property only by a recognized legal process, and it must pay compensation when it does so. These broad themes are present in most written constitutions, including that of the United States. See U.S. CONST. amend. V (“No person shall be . . . deprived of . . . property, without due process of law; nor shall private property be taken for public use, without just compensation.”); *id.* amend. XIV, § 1 (“[N]or shall any State deprive any person of . . . property, without due process of law”). How such provisions are interpreted varies greatly. The courts and others have interpreted the U.S. Constitution for over two centuries. The African constitutions quoted earlier are comparatively recent, and interpretations of their property provisions are not yet well developed.

protecting property rights often helps to protect the liberty of property owners, we pay special attention to ways in which the liberty of action of the San people has been affected by a failure to protect property rights that they do or should have. Nevertheless, we recognize that organizations such as the Working Group of Indigenous Minorities in South Africa (WIMSA) and many individual lawyers and activists have improved the lot of the San in various respects. And High Court decisions in South Africa in 2003 and Botswana in 2006 suggest that a shift in acknowledgement of some of these rights may be underway.⁴

We decline to elevate this Article over other sorts of inquiry, but there would be little point in publishing it unless it had features that make it stronger than other predominantly legal studies of San TK rights. First, it situates the San more carefully—linguistically, socioeconomically, and politically—than do other law review articles. It does so, moreover, by paying special attention to the *different* situations of the San in Angola, Botswana, Namibia, and South Africa. Systems of land tenure differ across these four nations. Within each country, local conditions are diverse and variable. It is all too easy to fall into the trap of thinking that the San are everywhere in the same linguistic, socioeconomic, and political situation.

Second, this Article explains why, from the standpoints of botany and pharmaceutical chemistry, the financial promise of *Hoodia* is so weak. The relevant species of *Hoodia* grow slowly, grow well only in the climate unique to southern Africa, and are vulnerable to pests. Vast *Hoodia* plantations, in Africa or elsewhere, would require a great deal of agricultural research and development. In addition, though the active compound in *Hoodia* can be synthesized, synthetic chemists face special obstacles in making what we will learn is a steroidal trisaccharide.⁵ The process for making this compound requires multiple stages and is expensive. In the language of the pharmaceutical industry, it cannot, or at least cannot yet, be made “in a scalable process”—that is, in commercially viable quantities at an acceptable price.⁶ Furthermore, to ingest this compound in doses sufficient to reduce appetite has potential side effects, particularly on the liver. The compound has scant prospects as a drug approved by the Food and Drug Administration (FDA). It might fare somewhat better as an herbal dietary supplement, but even without the side effects, the compound appears to have little advantage over a standard weight-loss plan that reduces caloric intake.⁷

Third, this Article identifies the manifold legal impediments to the San people benefiting from *Hoodia*. It is tempting to suppose that Western IP law, especially

⁴ *Alextor Ltd. v. Richtersveld Comty. & Others* 2003 (12) BCLR 1301 (CC) (S. Afr.); *Sesana & Others v. Att’y Gen.* (High Ct. Bots. 2006), available at <http://www.saflii.org/bw/cases/BWHC> (follow “2006” hyperlink; then follow “Sesana & Others v. Att’y Gen.” hyperlink).

⁵ See *infra* text accompanying notes 103–107.

⁶ Lesley Stahl, *60 Minutes: African Plant May Help Fight Fat* (CBS television broadcast Nov. 21, 2004), available at <http://www.cbsnews.com/stories/2004/11/18/60minutes/main/656458.shtml>.

⁷ See *infra* text accompanying notes 111–72.

patent law, is the sole legal obstacle. This temptation, like the serpent's calling attention to the apple, should be resisted. True, the patent law of most countries does not regard *oral* TK as "prior art."⁸ So the San cannot invoke their oral TK of *Hoodia* to block patenting by others, and in any case their TK does not embrace the chemical formula and structure of the active compound in various species of *Hoodia* plants. Also important to the legal plight of the San are the nonexistence or loss of land ownership, their narrowly circumscribed land-use rights, and the difficulty in establishing a connection between these land-use rights and TK as a *sui generis* IP right under the *domestic* law of the countries in which they live. Finally, *international* law, at least as implemented by the nations in which the San live, does little to help them.⁹

For simplicity's sake, we assume that the San, as an indigenous people or ethnic group, are the right unit of analysis as to who, if anyone, should have IP rights in TK concerning *Hoodia* plants. There are grounds for challenging this assumption. It is communal rather than individualistic in orientation. Some may argue that only the proper subset of San who as individuals have knowledge of *Hoodia* plants should benefit from their TK. Next, the assumption has a further assumption underlying it—namely, that no non-San, whether as individuals or as a people or peoples, have *Hoodia*-related TK. As we shall see, some non-San, such as the Damara and the Nama, know of some medicinal uses of *Hoodia*.¹⁰ Again, the assumption may rest on doubtful propositions concerning the geography of people and plants. Neither San individuals nor *Hoodia* plants are evenly distributed throughout southern Africa. Nor do pockets of San exist in all and only those places where *Hoodia* plants exist. Even if there were such pockets, non-San might reside in them as well. Yet again, if San individuals have intermarried with non-San individuals, there are questions about whether their descendants are considered San for purposes of benefiting financially from *Hoodia*-related TK. A connected issue is whether all San share common interests and goals. The San do not view themselves as a cohesive group, but rather define themselves by language or dialect.¹¹ In fact, there is often friction when San subgroups come together, as in the case of relocation of multiple San subgroups into the area formerly known as Bushmanland in Namibia.¹² Even in light of shared recent history, cultural affinities, and closely related languages, San subgroups in that area form a heterogeneous community that lacks overall organization.¹³

⁸ See, e.g., 35 U.S.C. § 102(b) (2008) (entitling a person to a patent when the invention appears in a "printed publication"). However, the European Patent Office does not require publication of prior art. See WIPO, *Progress Report on the Status of TK as Prior Art*, at 3, WIPO Doc. GRTKF/IC/2/6 (July 1, 2001).

⁹ See *infra* text accompanying notes 339, 349–62, 368, 370–380, 390–96; see also *infra* note 417.

¹⁰ See *infra* note 77; *infra* text accompanying note 87.

¹¹ JAMES SUZMAN, LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN NAMIBIA 42 (2001).

¹² *Id.* at 41.

¹³ *Id.* at 42.

Nevertheless, we stick with the assumption. The limited inquiry of this Article would be hugely more difficult if we had to wrestle with these challenges. Meeting these challenges would require field work, which lies outside the scope of our project, and which, more importantly, we are not qualified to do. Moreover, the debate in the legal literature and many related literatures centers on the rights of the San as an indigenous people. We therefore leave the other problems flagged to those who are best able to solve them.

Our discussion takes the following course. Part I describes who the San are and where they live. Part II explains their predicament in regard to *Hoodia*. Part III discusses the relevant botany of the *Hoodia* genus and the pharmaceutical chemistry of the active compound found in many of its species. Part IV analyzes the connections between the territory of a nation state and the various land-use rights that citizens and residents might enjoy. Particularly important here are domestic legal rights to possess, use, and cultivate *Hoodia* and the effect of international law on rights to grow and harvest *Hoodia* plants. Part V addresses the relation between rights in land and IP, with specific reference to both established patent law and TK as a possible *sui generis* IP right. A formal conclusion brings the inquiry to a close.

I. THE SAN: WHO THEY ARE, WHERE THEY LIVE

The San are an ethnically distinct, or largely distinct, indigenous minority group spread over much of southern Africa. They may be familiar to many Westerners as the native people in the 1980 movie *The Gods Must Be Crazy*.¹⁴ In addition to San populations in the four countries discussed in this Article, there are even smaller San populations in Zambia and Zimbabwe.¹⁵ San presence goes back at least some 30,000 or 40,000 years.¹⁶ Traditionally, the San were nomadic hunter-gatherers.¹⁷ By the twentieth century they did other work such as foraging, craft work, wage labor, animal husbandry, and agriculture. Nowadays, most San live in sparsely populated rural areas, in small towns, or in “reserves” or “conservancies” set up by governments. Other native terms for the San are Basarwa, !Kung, and Khwe. European terms such as “Bushmen” (English), “Hottentots” (Dutch and Afrikaans), and “Bosquímanos”

¹⁴ THE GODS MUST BE CRAZY (Sony Pictures 1980).

¹⁵ See STEVEN ROBINS ET AL., LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN SOUTH AFRICA, ANGOLA, ZAMBIA AND ZIMBABWE (2001).

¹⁶ See National Geographic Society, Feature 6 Map (2001), <http://ngm.nationalgeographic.com/ngm/0102/feature6/map.html> (last visited Mar. 5, 2009) (showing San concentrations 10,000 years ago, 1000 years ago, and in 2001). For a popular account of San origins, features, and languages, see SPENCER WELLS, THE JOURNEY OF MAN: A GENETIC ODYSSEY 56–58 (2002); see also ELIZABETH MARSHALL THOMAS, THE OLD WAY: A STORY OF THE FIRST PEOPLE (2006).

¹⁷ See RICHARD BORSHAY LEE, THE !KUNG SAN: MEN, WOMEN, AND WORK IN A FORAGING SOCIETY (1979).

(Portuguese) are now considered derogatory.¹⁸ Contemporary scholars rarely so refer to the San.

The San are also a population that is linguistically distinct from most other native Africans. They speak one version or another of Khoisan (some scholars prefer the spelling “Khoesan”), which is a cluster of related languages whose exact connections and classification are in dispute.¹⁹ Almost all of these are so-called “click” languages, in which various sorts of click consonants are used as phonemes; some non-Khoisan languages are also click languages.²⁰ The San tend to be linguistically as well as socioeconomically isolated from majority language populations in southern Africa.

At this stage, we must look at the San in different countries to make headway in understanding them and finding out where they live. We take up the four main countries in alphabetical order.

Angola has no official term for the San. There they are sometimes referred to as “Kwankhala” or “Bushmen.” The Angolan civil war (1975–2002) had a devastating impact on all sectors of society, but above all, on the San.²¹ Wanton killing, rapes, kidnappings, forcing of boys to become child soldiers, and indiscriminate planting of land mines caused untold death and hardship.²² Civilians were constantly on the move to avoid the violence. Rulan Heunis records population movement by the San by two time-slice maps that show their main concentrations in 1970 and 2007.²³ Figures 1 and 2 indicate San concentrations in 1970 and in 2007. Steven Robins and colleagues report that the number of San in Angola is now, and has always been, highly speculative, and that during the civil war they fled not only to other parts of Angola but also to places in Zambia and Zimbabwe.²⁴ One source puts the number of San in Angola in 2003 at 3500, which is roughly 0.2% of the total population of about 1.2 million.²⁵ With post-war repatriation, the San number in Angola may be higher today.

¹⁸ See John Western, *Africa is Coming to the Cape*, 91 GEOGRAPHICAL REV. 617, 618–21 (2001).

¹⁹ See Tom Güldemann & Rainer Vossen, *Khoisan*, in *AFRICAN LANGUAGES: AN INTRODUCTION* 99 (Bernd Heine & Derek Nurse eds., 2000).

²⁰ See *id.*; E.O.J. Westphal, *The Click Languages of Southern and Eastern Africa*, in 7 *CURRENT TRENDS IN LINGUISTICS: LINGUISTICS IN SUB-SAHARAN AFRICA* 367 (Thomas A. Sebeok ed., 1971).

²¹ See generally INT’L WORKING GROUP FOR INDIGENOUS AFFAIRS, *THE INDIGENOUS WORLD 2006*, at 494–98 (Sille Stüden ed., 2007) (describing the interventions to assist the dire situation of the San in Angola).

²² See HUMANS RIGHTS WATCH, *ANGOLA, FORGOTTEN FIGHTERS: CHILD SOLDIERS IN ANGOLA* (2003), <http://www.hrw.org/sites/default/files/reports/Angola0403.pdf>.

²³ See Rulan Heunis, *The San (Bushman) of Angola, 2007—A Status Report*, IMAGE AFRICA (2007), <http://www.imageafrica.net/sanofangola.aspx>. For historical background, see LAWRENCE W. HENDERSON, *ANGOLA: FIVE CENTURIES OF CONFLICT* (1979).

²⁴ ROBINS ET AL., *supra* note 15, at 55–62 (including maps).

²⁵ Robert K. Hitchcock et al., *The San of Southern Africa: A Status Report, 2003*, AM. ANTHROPOLOGICAL ASS’N, at tbl.1, Nov. 15, 2003, <http://www.aaanet.org/committees/cfhr/san.htm>.

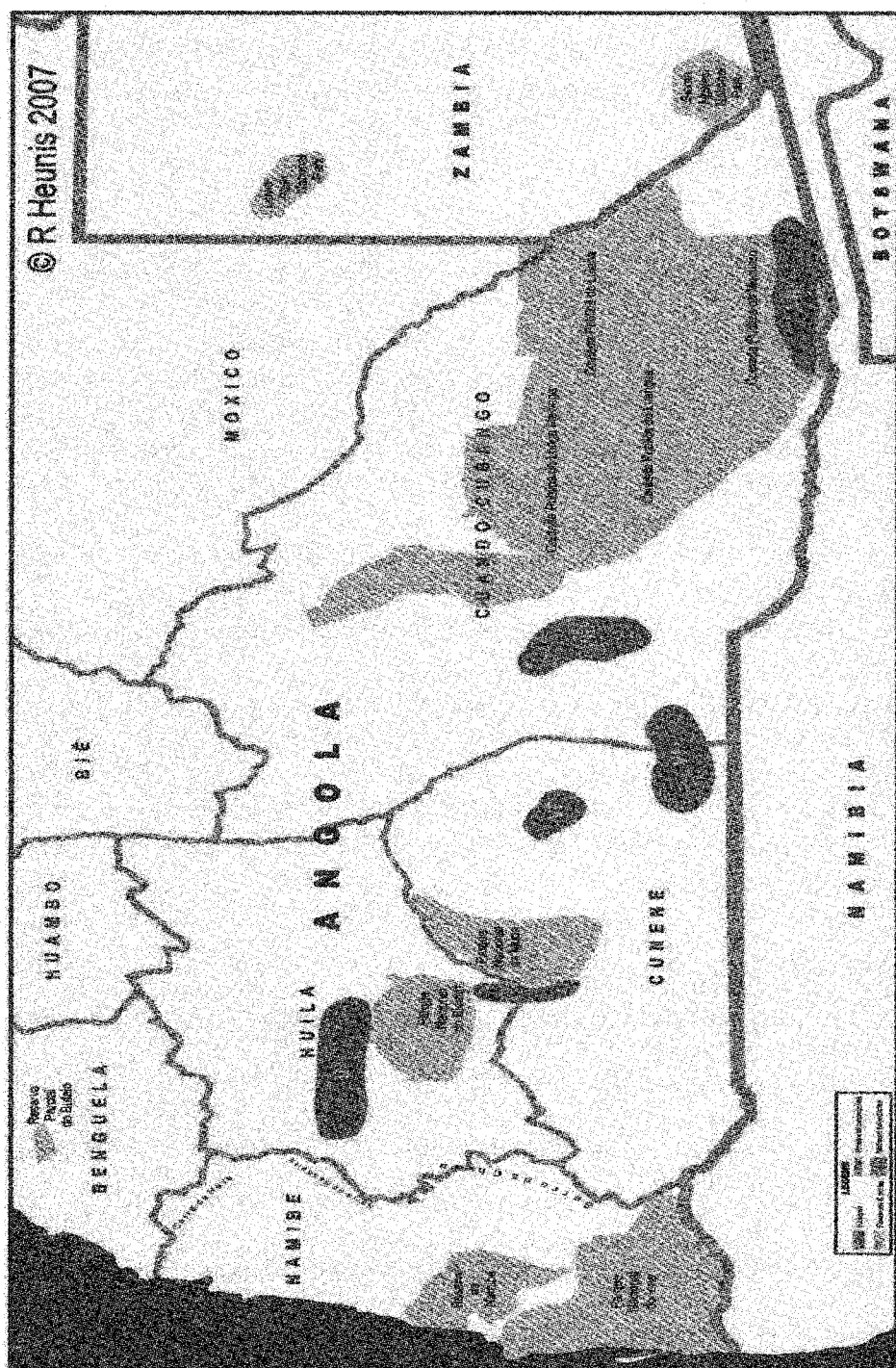


Figure 2. Demographic Distribution of Khoisan in Angola, 2007. Copyright R. Heunis 2007. Source: Rulan Heunis, *The San (Bushmen) of Angola, 2007—A Status Report*, IMAGE AFRICA (2007), <http://www.imageafrica.net/sanofangola.aspx>.

Heunis supplies much useful information on the San in Angola aside from maps and photographs. The civil war had the effect of mixing different ethnic groups, which was traumatic for all so burdened but especially for such a small minority as the San. They lost their ancestral hunting and gathering lands. Often these lands came into the possession of non-San cattlemen.²⁶ Politically, the lot of the San is horrid. The Indigenous Peoples of Africa Co-ordinating Committee (IPACC) issued a press release on April 29, 2007, at the first Angolan San Conference. It quoted the administrator of the Angolan city of Lugango as saying "that while the San were the first inhabitants of Angola they now find themselves on the lowest level of the social scale."²⁷ As for San delegates to the conference, they proposed a discussion of an Angolan San Council. Given "the lack of knowledge regarding government structures and procedures," the press release continued, other delegates recommended that "San leaders receive training on the structure and functioning of the Angolan State" to put themselves in a better advocate position.²⁸ Most work on *Hoodia* development is done by San in Botswana, Namibia, and South Africa rather than by the Angolan San. The multi-nation *Hoodia* effort proceeds along with efforts to cultivate other indigenous plants such as "Devil's Claw." Some non-San take part in these efforts.

Botswana has a San population of roughly 50,000, about 3.3% of more than 1.5 million inhabitants.²⁹ There they are often referred to as "Basarwa." An Integrated Regional Information Networks (IRIN) report issued in March 2004 gives some idea of the situation of the San in Botswana.³⁰ Although Botswana's main resources are cattle and diamond mines, the San are almost always extremely poor.³¹ They own few cattle and even fewer mineral rights. The term "Basarwa" means "those who do not own cattle" in the Tswana language, and the San find this term demeaning.³² Mothambo Ngakaeaja, the WIMSA coordinator for Botswana, recites the difficulties

²⁶ See Heunis, *supra* note 23.

²⁷ Press Release, Indigenous Peoples of Afr. Co-ordinating Comm. (IPACC), First Angolan San Conference Charts Way Forward (Apr. 29, 2007), available at <http://www.ipacc.org.za/uploads/docs/san%20press%20relase%20English.pdf> (quoting Dr. Vigilio Tyova, Administrator of Lubago).

²⁸ *Id.* For more detail as of April 2001, see ROBINS ET AL., *supra* note 15, at 63–66.

²⁹ See Hitchcock et al., *supra* note 25, at tbls.1 & 2.

³⁰ See Integrated Regional Information Networks (IRIN), BOTSWANA: CULTURE UNDER THREAT, SPECIAL REPORT ON THE "SAN" BUSHMEN (II) (2004) [hereinafter IRIN Report]. One nongovernmental source of information is the IRIN, based in Kenya. The IRIN is part of the U.N. Office for the Coordination of Humanitarian Affairs, but its reports do not necessarily reflect the views of the U.N. or its member states. See Integrated Regional Information Networks (IRIN), <http://www.irinnews.org/about.aspx> (last visited Mar. 1, 2009).

³¹ See IRIN Report, *supra* note 30.

³² *Id.*

experienced by the San: "Our problems are poor health, low literacy, inadequate education, bad housing, poor hygiene, TB, AIDS and malnourishment, fragmentation, stigmatisation, social exclusion and lack of participation in mainstream politics."³³

The special history of the territory now known as the nation of Botswana helps to explain the plight of the San. Much of Botswana is covered by the Kalahari Desert, and much of that part of Botswana is now the Central Kalahari Game Reserve (CKGR), which is a bit larger in area than Denmark or Switzerland.³⁴ Figure 3 gives a satellite image of the area. Historically, the San were hunter-gatherers in the desert,³⁵ specifically in the area now demarcated as the CKGR. Discovery and opening of diamond mines in the CKGR correlates with the relocation of the San. By 1991, only 1000 San lived in the CKGR, and by the middle of 2006 that number had declined to seventeen.³⁶ Botswana has an official policy against racial discrimination, which makes it difficult to identify San from official documents. Displaced San were classified as Remote Area Dwellers, or RADs, as part of the government's Remote Area Development Programme. About seventy to eighty percent of RADs are San.³⁷ Some San were forced off their land, and some left voluntarily. They continued, with difficulty, to practice both traditional and modern resource management, though some became dependent on the government for handouts. Whatever the government's intentions in creating such relocation villages as New Xade, in practice the San have there been "exploited as farm labourers, plagued by alcoholism, [and] perceived as backward, silent in politics."³⁸

³³ *Id.* (quoting Mothambo Ngakacaja, Coordinator for Working Group of Indigenous Minorities in Southern Africa); see also LIN CASSIDY ET AL., LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN BOTSWANA (2001).

³⁴ See Botswana Government Website, Relocation of the Basarwa: Question and Answer, <http://www.gov.bw> (last visited Mar. 1, 2009); Map of Central Kalahari, Central Kalahari Map, <http://www.safarimappers.com/area.aspx?Ingareaid=13> (last visited Mar. 1, 2009).

³⁵ See LEE, *supra* note 17; GEORGE B. SILBERBAUER, HUNTER AND HABITAT IN THE CENTRAL KALAHARI DESERT (1981).

³⁶ See Botswana Government Website, *supra* note 34.

³⁷ SIDSEL SAUGESTAD, NORDIC AFR. INST., THE INCONVENIENT INDIGENOUS: REMOTE AREA DEVELOPMENT IN BOTSWANA, DONOR ASSISTANCE, AND THE FIRST PEOPLE OF THE KALAHARI 127 (2001).

³⁸ IRIN Report, *supra* note 30. For more scholarly depth, see Robert K. Hitchcock, "We Are the First People": Land, Natural Resources and Identity in the Central Kalahari, Botswana, 28 J. S. AFR. STUD. 797 (2002).

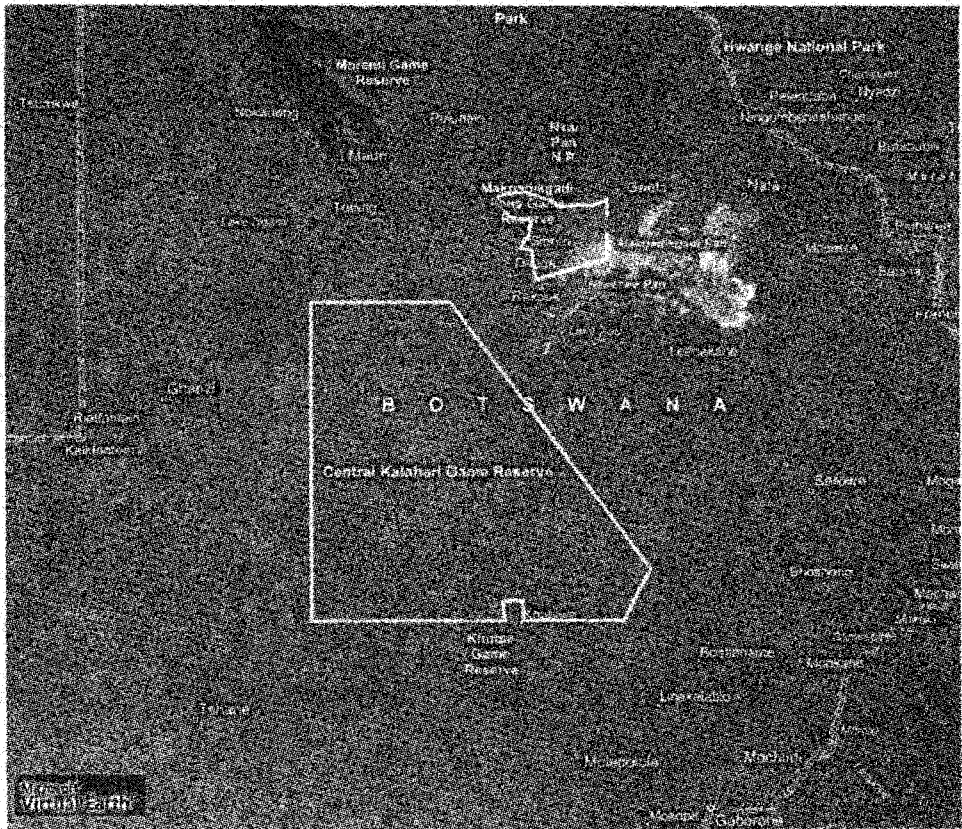


Figure 3. Satellite Image of West Central Botswana and the Central Kalahari Game Reserve. Source: Microsoft Virtual Earth™, <http://www.safarimappers.com/area.aspx?1ngareaid=13> (last visited Feb. 2, 2009).

Things perhaps began to change for the San on December 13, 2006. On that day the High Court of Botswana handed down its decision in *Sesana v. Attorney General*.³⁹ In a 2-1 decision, the court held that the roughly 1000 San “applicants” (plaintiffs) had “lawfully occupied [land] in their settlements in the CKGR,” that the government had “forcibly or wrongly and without their consent” deprived them of possession, and that it was “unlawful” and “unconstitutional” for the government to refuse to issue them special game licenses and to refuse “to allow [them] . . . to enter the CKGR unless they are issued with permits.”⁴⁰ The decision gave the San the right

³⁹ *Sesana & Others v. Att’y Gen.* (High Ct. Bots. 2006), available at <http://www.saflii.org/bw/cases/BWHC> (follow “2006” hyperlink; then follow “*Sesana & Others v. Att’y Gen.*” hyperlink).

⁴⁰ *Id.* at 121–22.

to return to their settlements in the CKGR. Twixt cup and lip there are many slips, and it remains to be seen whether the government will bear the cost of returning the San to their original areas and put them back in the position they had enjoyed prior to the forced relocation.⁴¹

In Namibia, the lot of the San is somewhat better than in Angola, though worse than in Botswana. The Namibian San suffer from the effects of civil war and forced relocation, but not as severely as the Angolan San. Legal protections for the Namibian San are weaker than those for the Botswana San. Namibia has approximately 1.8 million people divided among some eleven different ethnic groups.⁴² It has one of the lowest population densities of the nations of the world.⁴³ Of them, about 27,000 people (1.5%) are San.⁴⁴ Because the San speak one or another of the Khoisan languages, a language map helps to indicate the primary concentrations of San in Namibia. Although the Nama speak a Khoisan language, they are not classified as San. San speakers fall into different Khoisan language groups. Among them are the Hai//om, Ju/'hoansi, ǀKx'au//ein, Kung-Eboka, and !Xóǀ languages (correlated with numbers 4, 6–8, and 19 on the language map in Figure 4).⁴⁵ Thus, aside from the Kung-Eboka San near the capital city of Windhoek, most San live in the northern part of Namibia, including the narrow arm of Namibia projecting eastward just north of Botswana and just south of Angola and Zambia.⁴⁶ Figure 5 shows the number and distribution of San speakers in Namibia.

⁴¹ See Richard B. Lee et al., *The Kalahari San: Self-Determination in the Desert*, CULTURAL SURVIVAL Q., SPRING 2002; SAUGESTAD, *supra* note 37, at 223–24.

⁴² The Cardboard Box Travel Shop, The People of Namibia, <http://www.namibian.org/travel/namibia/population/index.htm> (last visited Mar. 1, 2009) [hereinafter The People of Namibia].

⁴³ *Id.*

⁴⁴ See *id.*; The Cardboard Box Travel Shop, Bushmen/San of Namibia, <http://www.namibian.org/travel/namibia/population/bushman.htm> (last visited Mar. 1, 2009) [hereinafter Bushmen/San of Namibia].

⁴⁵ Figure 4 does not give a complete list of San language groups in Namibia.

⁴⁶ For a detailed study, see SUZMAN, *supra* note 11.

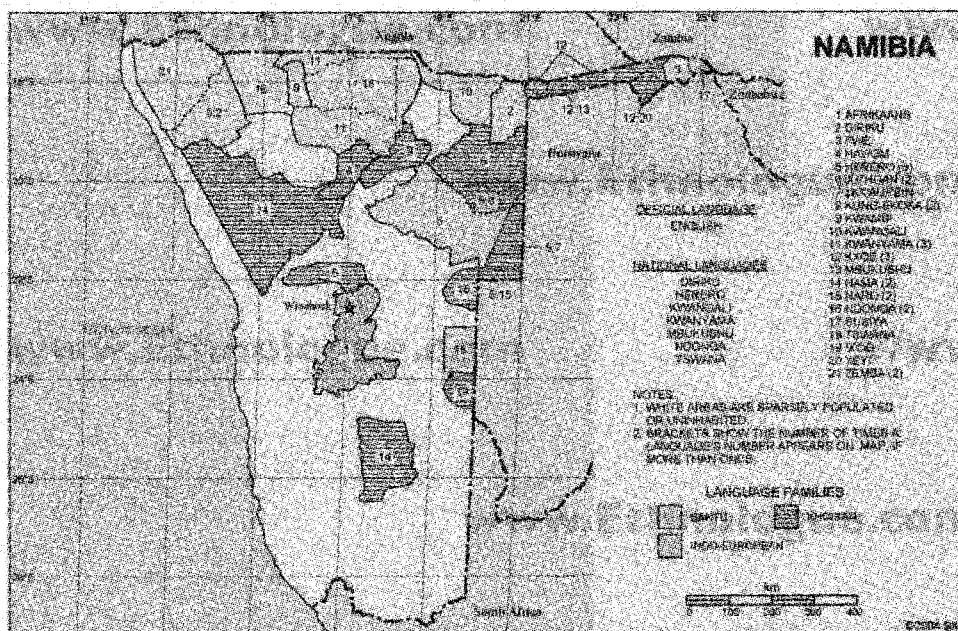


Figure 4. Map of Languages of Namibia. Source: ETHNOLOGUE: LANGUAGES OF THE WORLD 711 (Raymond G. Gordon, Jr., ed., 15th ed. 2005), available at http://www.ethnologue.com/show_map.asp?name=NA&seq=10. Reprinted with permission.

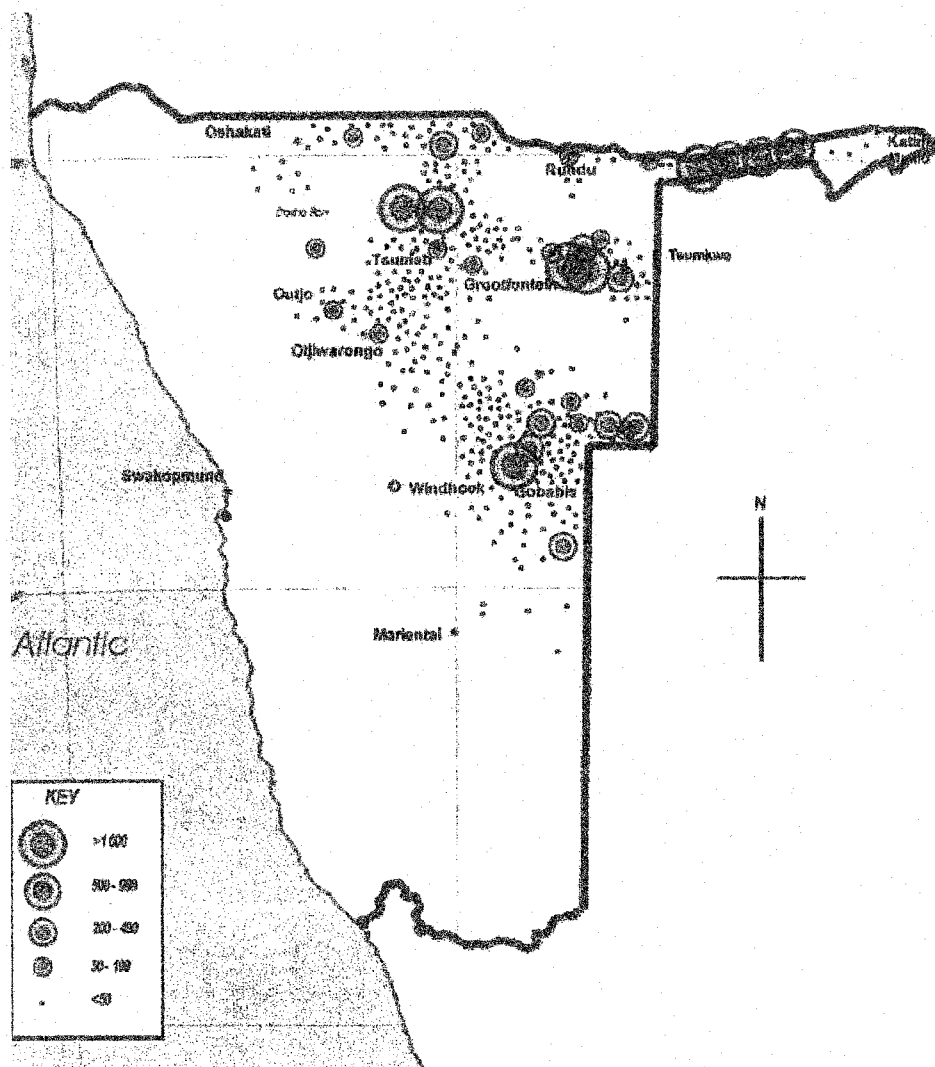


Figure 5. *Distribution of San Speakers in Namibia.* Source: JAMES SUZMAN, LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN NAMIBIA xiv (2001).

The history of the San in Namibia is not pretty.⁴⁷ The San lived there as long as 30,000 years ago and left a good deal of rock cave art.⁴⁸ As the Bantu came into their

⁴⁷ See ROBERT J. GORDON, *THE BUSHMAN MYTH: THE MAKING OF A NAMIBIAN UNDERCLASS* 195 (1992).

⁴⁸ Bushmen/San of Namibia, *supra* note 44.

territory, some San became slaves or moved south to drier areas.⁴⁹ Boer colonists killed some 200,000 San over a period of two centuries.⁵⁰ A December 2006 report by the International Federation of Red Cross and Red Crescent Societies (IFRC) indicated that most San communities still lack clean water, sanitation, and electricity.⁵¹ A drought in northeastern Namibia in 2005 led to scorched crops and meager food supplies.⁵²

And yet, things are starting to look up for some San. The Namibia Red Cross has provided seed and fertilizer to some San farmers.⁵³ It has promoted education and home-based care for those with HIV/AIDS and tuberculosis.⁵⁴ Namibia Red Cross programs are not available in all areas.⁵⁵ Still, many Namibian San now have livestock, such as goats and cattle, that give them both food and a source of income.⁵⁶ More hopeful still is the increasingly active role that the San are taking in their own future. The IPACC reports that San communities from Botswana, Namibia, and South Africa—but not, unfortunately, Angola—held a workshop on September 25–29, 2006, near Tsumkwe, Namibia.⁵⁷ The Ju/'hoansi people hosted the event.⁵⁸ They are the historical occupants of Area 6 in the San Language Map (Figure 4) and now manage the Nyae Nyae Conservancy.⁵⁹ The meeting seems to have had three major purposes: first, to grasp and acknowledge San marginalization from social and political systems;⁶⁰ second, to adopt “[p]rinciples and [g]uidelines [for] a [s]ustainable [f]uture for [h]unter-[g]atherers”;⁶¹ and third, to formalize and get accreditation for “the traditional skill of animal tracking and related knowledge of biodiversity.”⁶² These are noble purposes, and the last of them is particularly relevant to the topic of this Article. All the same, some might worry that the San represented at the meeting

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ Tapiwa Gomo, Int’l Fed’n of Red Cross & Red Crescent Societies, *The San People of Namibia Slowly Adapting to Modern Life*, REUTERS ALERTNET, Dec. 15, 2006, <http://www.alertnet.org/thenews/fromthefield/218536/116618901553.htm>.

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ INDIGENOUS PEOPLES OF AFR. COORDINATING COMM. (IPACC), IPACC REPORT TO THE UN PERMANENT FORUM ON INDIGENOUS ISSUES CONCERNING AFRICAN HUNTER-GATHERERS’ LANDS, TERRITORIES NATIONAL RESOURCES AND TRADITIONAL KNOWLEDGE OF BIODIVERSITY (2007), http://www.ipacc.org.za/uploads/docs/HUGAFO_IPACC_UNPermanentForumReport.pdf.

⁵⁸ *Id.*

⁵⁹ *See id.*

⁶⁰ *See id.* at 4–6.

⁶¹ *Id.* at 3.

⁶² *Id.*

placed too much emphasis on their traditional way of life and too little emphasis on adapting to the new situation across southern Africa.

From the coming of Western colonial powers, the San in what is now the Republic of South Africa have suffered greatly. "[V]iolence, ethnocide and dispossession . . . pushed them into increasingly dry and marginal lands."⁶³ Under apartheid, the San were simply classified as "coloured" and had no status as a distinct cultural group.⁶⁴ But post-apartheid South Africa treated them much better. They received protection of their political and human rights, obtained some shelter for their culture and language, and benefited from land reform.⁶⁵ The President of South Africa and other significant government officials encouraged the San and other indigenous peoples, and in 2004 the government put in place an interdepartmental working group to help them.⁶⁶ In 2005, the government welcomed the visit of Professor Rodolfo Stavenhagen, the U.N. Special Rapporteur on the Human Rights and Fundamental Freedoms of Indigenous Peoples.⁶⁷ An IPACC report noted that this event was "the first formal recognition by an African state of the UN's mechanisms for protecting the rights of indigenous peoples."⁶⁸

As of 2003, one source put the San population in South Africa at just 7500 out of approximately 45.3 million inhabitants.⁶⁹ Many live in the Northern Cape province (Figure 6). Even more San live in the Platfontein area near Kimberly than in the Northern Cape, though precise, reliable numbers are hard to come by. So the San are a very small minority, and many live in the driest province that also has the lowest population density in the country.⁷⁰ Although the San in the Northern Cape had little land they could call their own under apartheid, the post-apartheid government settled out of court in the ‡Khomani land-rights case, which gave the San an important victory.⁷¹ More dramatically, the *Richtersveld* decision held that the San had been unlawfully dispossessed and under applicable indigenous law were entitled to their land

⁶³ ROBINS ET AL., *supra* note 15, at ix.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ IPACC, Southern Africa Regional Summary, http://www.ipacc.org.za/eng/regional_southernafrica.asp (last visited Nov. 20, 2008).

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ Hitchcock et al., *supra* note 25.

⁷⁰ See, e.g., *supra* text accompanying notes 42–43.

⁷¹ S. AFR. SAN INST. (SASI), ANNUAL REVIEW APRIL 2001–MARCH 2002, http://www.san.org.za/sasi/ann_rep_2002.htm (last visited Feb. 1, 2009) [hereinafter SASI ANNUAL REVIEW]; see also Steven Robins, NGOs, "Bushmen" and Double Vision: The ‡Khomani San Land Claim and the Cultural Politics of "Community" and "Development" in the Kalahari, in SAN AND THE STATE: CONTESTING LAND, DEVELOPMENT, IDENTITY AND REPRESENTATION 365 (Thekla Hohmann ed., 2003) (discussing the earlier successful 1999 ‡Khomani San land claim). See generally S. AFR. SAN INST., LIFE FORCES, LIFE CHOICES: ‡KHOMANI SAN ACTION RESEARCH ON HIV/AIDS (2006), <http://unesdoc.unesco.org/images/0014/001464/146436e.pdf>.

in common, including its natural resources.⁷² It appears that the San will gain, or regain, land-use rights in the Kgalagadi Transfrontier Park and the former Kalahari Gemsbok National Park.⁷³

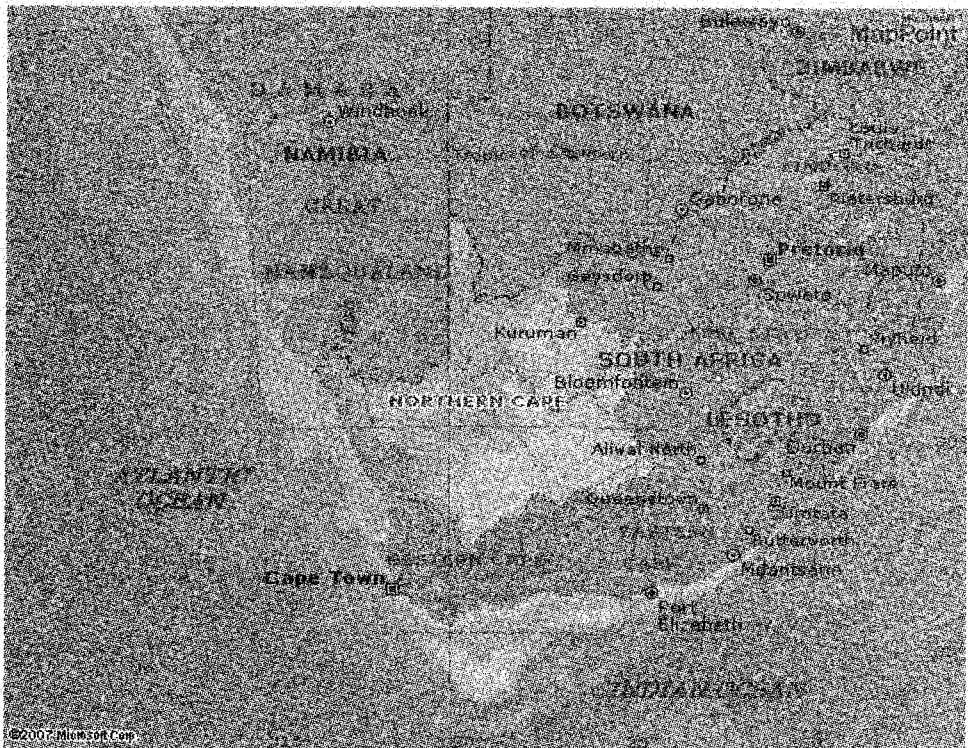


Figure 6. Map of the Republic of South Africa with Northern Cape Province Highlighted. © 2007 Microsoft Corp. Source: Map of Northern Cape (province), South Africa, http://encarta.msn.com/map_701515207/Nothern_Cape.html (last visited Mar. 1, 2009).

II. THE SAN PREDICAMENT

So we now know who the San are and where they live. The next order of business is to explain the predicament in which they find themselves. For the most part they are desperately poor, have a very low social status, and own few marketable resources. To improve their socioeconomic position, it could help if they could translate their TK of *Hoodia* plants into a marketable commodity. Very roughly, TK is

⁷² *Alextor Ltd. v. Richtersveld Cmty. & Others* 2003 (12) BCLR 1301 (CC) (S. Afr.) (establishing communal land ownership and mineral rights); see also Miriam Ross, *South African Court Rules "Indigenous Peoples Own Their own Land,"* SURVIVOR INT'L, Oct. 14, 2003, <http://www.survival-international.org/news/82>.

⁷³ SASI ANNUAL REVIEW, *supra* note 71.

understanding or skill, almost always possessed by indigenous peoples, relating to folklore, cultural and religious expressions, and the medicinal uses of plant life.⁷⁴ San TK resides in the use of various native plants, particularly species of the *Hoodia* genus, above all *Hoodia gordonii* (*H. gordonii*).⁷⁵ *Hoodia* plants are used by the San to treat various gastrointestinal ailments, hemorrhoids, high blood pressure, and, notably, to suppress appetite.⁷⁶ Nowadays, most San are settled, but they were nomadic for almost all of their existence as a distinct cultural group.⁷⁷ They often found themselves short of food as they moved from one place to another. To stave off the pangs of hunger, they sucked on or ate various parts of *Hoodia* plants. People in the West are not now usually vulnerable to starvation or severe hunger, but obesity is a major problem. So the interest of Western drug companies in *Hoodia* lies in developing an appetite suppressant to fight obesity.⁷⁸ Manufacturers of herbal remedies seek to make *Hoodia* a staple of over-the-counter diet aids.

The Council for Scientific and Industrial Research (CSIR), a laboratory financed by the South African government, isolated the active compound in *Hoodia* in 1996 and filed for a South African patent in 1997 without crediting the San.⁷⁹ The patents on this chemical make only a modest attempt to explain how it suppresses appetite (its pharmacological "action").⁸⁰ After the patents were issued, more evidence became available on its appetite-suppressant activity and its mode of action.⁸¹ The government licensed the IP rights to this compound, known as P57, to Phytopharm plc

⁷⁴ See World Intellectual Prop. Org., Glossary of Terms: Traditional Knowledge, <http://www.wipo.int/tk/en/glossary> (last visited Feb. 1, 2009).

⁷⁵ See Robyn Dixon, *Hoodia Fever Takes a Toll on Rare Plant*, L.A. TIMES, Dec. 26, 2006, at A1.

⁷⁶ See BEN-ERIK VAN WYK & NIGEL GERICKE, PEOPLE'S PLANTS: A GUIDE TO USEFUL PLANTS OF SOUTH AFRICA 70 (2000).

⁷⁷ See LEE, *supra* note 17. Knowledge of uses of *Hoodia* is not unique to the San. Some non-San peoples have access to *Hoodia*. For example, the Damara, a non-San people, use *Hoodia currori* "as a diabetes remedy." EBERHARD VON KOENEN, MEDICINAL, POISONOUS, AND EDIBLE PLANTS IN NAMIBIA 131 (Axel von Blottnitz et al. trans., 2001). And some San live in areas where *Hoodia* does not grow, such as northern Namibia.

⁷⁸ See *infra* note 84.

⁷⁹ Ginger Thompson, *Bushmen Squeeze Money From a Humble Cactus*, N.Y. TIMES, Apr. 1, 2003, at A4.

⁸⁰ See U.S. Patent No. 6,376,657 (filed Apr. 15, 1998) (issued Apr. 23, 2002) [hereinafter *Hoodia Patent*]; *infra* text accompanying notes 125–29.

⁸¹ For evidence on neurochemical mechanisms and from animal studies, see, for example, David B. MacLean & Lu-Guang Luo, *Increased ATP Content/Production in the Hypothalamus May Be a Signal for Energy-Sensing of Satiety: Studies of the Anorectic Mechanism of a Plant Steroidal Glycoside*, 1020 BRAIN RES. 1 (2004); Orien Lee Tulp et al., *Effect of Hoodia Plant on Food Intake and Body Weight in Lean and Obese LA/NtUL//cp Rats*, 15 FED'N OF AM. SOCIETIES IN EXPERIMENTAL BIOLOGY J. A404 (2001) [hereinafter Tulp et al. 2001]; Orien Lee Tulp et al., *Effect of Hoodia Plant on Weight Loss in Congenic Obese LA/NtUL//cp Rats*, 16 FED'N OF AM. SOCIETIES IN EXPERIMENTAL BIOLOGY J. A648 (2002) [hereinafter Tulp et al. 2002].

(Phytopharm), which sublicensed them to Pfizer, Inc.⁸² After protest by the San and prolonged legal wrangling, the South African San Council and CSIR agreed in 2002 to share the commercial benefits of the South African patent.⁸³ The agreement applied to approximately 100,000 San in South Africa, Botswana, Namibia, and Angola.⁸⁴ In 2003, CSIR agreed to “pay the San eight percent of all milestone payments” received from Phytopharm and to deposit “six percent of all royalties” received once the drug is “commercially available” into a San Hoodia Benefit Sharing Trust.⁸⁵ A year later, the San decided to protect their TK in *Hoodia*.⁸⁶ Notably, the San agreement with CSIR makes no provision for any benefits to flow to non-San people, such as the Damara, who also have *Hoodia*-related TK.⁸⁷

Things have gone downhill for the San ever since.⁸⁸ Compound P57 can be synthesized but, as we shall see in Part III, not in commercial quantities at an acceptable cost.⁸⁹ In addition, apparently it cannot readily be put in pill form and may pose risks to the liver and other organs.⁹⁰ One alternative is to market a powdered form of the whole plant. The plant, however, grows slowly and sparsely in the wild, and *Hoodia* plantations have run into problems with pests.⁹¹ The inflated prospects for *Hoodia* have led to smuggling, artificially high demand, and the need to place the plants on endangered species lists due to overharvesting of wild plants.⁹² Furthermore, the

⁸² Thompson, *supra* note 79.

⁸³ *Id.*

⁸⁴ *Id.* See Press Release, Council for Scientific and Indus. Research, The San and the CSIR to Formulate Benefit-Sharing Model for Anti-Obesity Patent (Mar. 22, 2002), *available at* http://ntww1.csir.co.za/plsql/ptl0002/PTL0002_PGE157_MEDIA_REL?MEDIA_RELEASE_NO=1800500.

⁸⁵ Press Release, Council for Scientific and Industrial Research, The San and the CSIR Announce a Benefit-Sharing Agreement for Potential Anti-Obesity Drug (Mar. 24, 2003), *available at* http://ntww1.csir.co.za/plsql/ptl0002/PTL0002_PGE157_MEDIA_REL?MEDIA_RELEASE_NO=7083643.

⁸⁶ The San were determined to record their “indigenous knowledge” for “proof of ownership,” among other reasons. CSIR and the San resolved to keep their other IP confidential and to make “joint decisions” about “patents and trade marks.” Press Release, Council for Scientific and Industrial Research, Joint Media Release by the South African San Council and the CSIR (Oct. 28, 2004), *available at* http://ntww1.csir.co.za/plsql/ptl0002/PTL0002_PGE157_MEDIA_REL?MEDIA_RELEASE_NO=7233055.

⁸⁷ See *supra* note 77.

⁸⁸ For an excellent overview, see Rachel Wynberg, *Rhetoric, Realism and Benefit-Sharing*, 7 J. WORLD INTELL. PROP. 851 (2004).

⁸⁹ See Stahl, *supra* note 6.

⁹⁰ Jay Rath, *New Drug Tempting Dieters; But Experts Debate Hoodia’s Merits*, WIS. ST. J., Sept. 5, 2005, at D1; Jasjit S. Bindra, Letter to the Editor, N.Y. TIMES, Apr. 26, 2005, at F7; Mary Duenwald, *An Appetite Killer for a Killer Appetite? Not Yet*, N.Y. TIMES, Apr. 19, 2005, Health & Fitness Section, at 5.

⁹¹ Stahl, *supra* note 6.

⁹² See Dixon, *supra* note 75; Duenwald, *supra* note 90.

San would not be entitled to profits from sales of the entire plant under the agreement with CSIR because the CSIR patent covers only purified or synthesized P57.

If TK is recognized as protectable IP, then the TK rights possessed by the San may help them to protect their interests. The private creation and especially the defense of TK by the San themselves are difficult, for they have very little political or financial clout. However, if one has governmental/international recognition of TK rights, then it may be possible to have private development of TK belonging to the San through compound P57 or other active compounds. Such development is likely to require the participation of major pharmaceutical companies.

As to the roles of property law, other forms of law, and nonlegal norms, much depends on the arguments for TK. If the property arguments for TK are not very strong, then it is not immediately obvious how this could be a matter of property law. There may, though, be various non-property arguments—for instance, arguments based on human rights or global justice—that could give rise to a justification for legal protection of TK. There is a third possibility: some nonlegal means or norms, perhaps coming from Westerners who are sympathetic to the San people, which would protect their interests.

If, and this is a big if, there were regimes and institutions relating to the TK of the San that will actually do them some good, then one can see at least two different possibilities for the San as a social community.⁹³ One possibility is to leave the San alone. That could be a default position; they could simply decide not to share any TK with outsiders. As a practical matter, leaving the San alone is highly unlikely, because individuals, governments, and business firms vie for their land and resources. Anyway, because the use of *Hoodia* as an appetite suppressant has already been revealed, this option is not relevant to this Article. A second possibility is for them to make some kind of arrangement, perhaps along the lines of the one that they have with CSIR, whereby any money received from the knowledge of the *H. gordonii* plant might offer medium-term, not merely short-term, benefits. If the San were successful in getting some financial rewards, that might encourage a consortium of TK advocates. These advocates might be part of an indigenous-led group or a nonindigenous-led group.

III. *HOODIA* PLANTS: BOTANY, PHARMACEUTICAL CHEMISTRY, AND HERBAL USES

The practical payoff of *Hoodia* comes from an active compound that is present in members of various species of this genus and a related genus. The aim of this Part is to give an accurate picture of the relevant botany, pharmaceutical chemistry, and uses

⁹³ Notice that one would not be using property regimes and institutions to *create* a social community. The San already exist as a social community or set of social communities. Rather, one would be buttressing the interests and welfare of the San.

in herbal medicine and homeopathy. Only by doing so can we avoid the hyperbole and misinformation that contaminate some of the popular, nutritional, and legal treatments of these plants and their active compound.

A. Botany

The relevant active compound, generally referred to as compound P57, is present in various plants. The known sources of this compound are plants from two genera of the botanical family Asclepiadaceae: *Trichocaulon* and *Hoodia*.⁹⁴ Most botanists distinguish between these genera, but there is at least one proposal to combine them into a single genus with the name *Hoodia*.⁹⁵ We abstain from the nomenclature wars, and for simplicity we will speak hereafter almost entirely of *Hoodia*.

More than twenty different species of *Hoodia* grow across southern Africa.⁹⁶ The members of these species are fly-pollinated, leafless succulents; their insides contain juice and fleshy tissue with a high concentration of water.⁹⁷ For the most part, they lack spines. Some species have small thorns. Ordinarily, members of the *Hoodia* species grow in clumps of fifteen to twenty stems that form a cactus-like shrub about two to three feet in height and one to two feet in diameter.⁹⁸ A few species, such as *Hoodia currorii*, have flowers and bear fruit.⁹⁹ Others, such as *H. gordonii* and *Hoodia flava*, only bear flowers.¹⁰⁰ The flowers have a strong odor akin to that of rotten food, and this scent apparently attracts cross-pollinating insects such as flies.¹⁰¹ The main species used for suppression of appetite are *H. gordonii*, *H. currorii*, *H. flava*, *H. pilifera*, and, possibly, *H. officianalis*.¹⁰² Each contains compound P57, though not in equal concentrations. Most ethnobotanical and pharmaceutical attention has centered on *H. gordonii*.

⁹⁴ VAN WYK & GERICKE, *supra* note 76; VON KOENEN, *supra* note 77; Darrell C.H. Plowes, *A Preliminary Reassessment of the Genera Hoodia and Trichocaulon*, 56 ASKLEPIOS 5 (1992).

⁹⁵ P. Bruyns, *A Revision of Hoodia and Lavrania (Asclepiadaceae-Stapelieae)*, 115 BOTANISCHE JAHRBÜCHER FÜR SYSTEMATIK PFLANZENGE SCHICHTE UND PFLANZEN- GEOGRAPHIE 145 [BOT. JAHRB. SYST.] (1993) (F.R.G.) [hereinafter Bruyns, *Revision*]; P. Bruyns, *New Combinations in Hoodia and Lavrania (Asclepiadaceae-Stapelieae)*, 59 SUID- AFRIKAANSE TYDSKRIF VIR PLANTKUDE 342 (1993).

⁹⁶ Stephen Holt, *Hoodia Gordonii: An Overview of Biological and Botanical Characteristics: Part I*, in TOWNSEND LETTER FOR DOCTORS AND PATIENTS, Nov. 2006, at 104, available at http://findarticles.com/p/articles/mi_m0ISW/is_280/ai_n16865220.

⁹⁷ *Id.* at 104–05.

⁹⁸ ALAIN WHITE & BOYD L. SLOANE, *THE STAPELIEAE* 1078 (1937).

⁹⁹ Holt, *supra* note 96, at 105.

¹⁰⁰ *Id.*

¹⁰¹ VAN WYK & GERICKE, *supra* note 76; Holt, *supra* note 96, at 105.

¹⁰² Holt, *supra* note 96, at 106 tbl.1. *Hoodia* Patent, *supra* note 80, at cols.1, 2 (adding *H. lugardii* and *Trichocaulon piliferum* and *T. officinale* but failing to mention *H. flava*, *H. pilifera*, or *H. officianalis*). For a list of all countries that have issued a patent on the same invention, see Appendix 2.

B. Pharmaceutical Chemistry

The active compound, P57, is a steroidal glycoside—specifically, a molecule in which a trisaccharide is attached to a steroid. The chemical formula is $C_{47}H_{74}O_{15}$ and the molecular weight is 878.¹⁰³ The chemical name is too long to be pronounced over the Thanksgiving dinner table.¹⁰⁴ The structural formula appears in Figure 7.

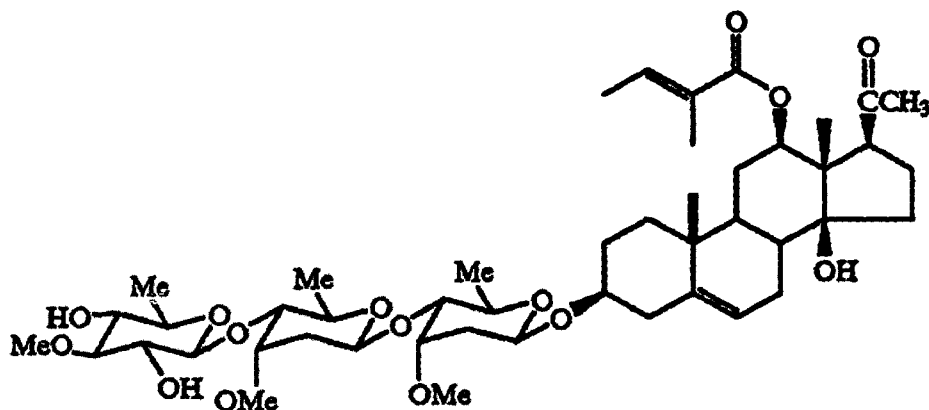


Figure 7. Structural Formula of the Molecule Commonly Known as Compound P57. Source: Pharmaceutical Compositions Having Appetite Suppressant Activity, U.S. Patent No. 6,376,657 cols.1, 2 (filed Apr. 15, 1998) (issued Apr. 23, 2002).

The right side of the structural formula represents the steroid. The left side represents the chain of three saccharides (sugars). The three sugar rings are connected by glycosidic bonds, observed as oxygen atoms (O) between the rings. Hanging off some of the corners of each of the unlinked sugar molecules are hydroxyl groups, represented as “OH” or “HO.” During synthesis, these hydroxyl groups react to form the linking bonds between the sugar rings. Some unreacted hydroxyl groups are observed on the last sugar ring in the P57 molecule. When the hydroxyl groups of two separate sugar rings come together, one of the hydroxyl groups (OH) and one of the hydrogen atoms (H) from the other hydroxyl group react to form a water molecule (H_2O), which leaves the scene. The other oxygen atom (O) is left to create a glycosidic bond between the sugar rings.

¹⁰³ *Hoodia* Patent, *supra* note 80, at col.3.

¹⁰⁴ For the curious, in accordance with International System (SI) nomenclature the name of the compound is 3-O-[-β-D-thevetopyranosyl-(1-4)-β-D-cymaropyranosyl-(1-4)-β-D-cymaropyranosyl]-12β-O-tigloyloxy-14-hydroxy-14β-pregn-50-en-20-one ($C_{47}H_{74}O_{15}$, M^+878). *Hoodia* Patent, *supra* note 80, at col.3.

We have not the slightest interest in reminding lawyers of the biochemistry class that dissuaded them from going to medical school, but we do wish to underscore why a lay grasp of the structure of this steroidal glycoside is important. Recall that a limited supply of *Hoodia* plants exists in the wild, and that they do not yet grow well in cultivation. So the obvious move, if one wants copious quantities of this chemical for an appetite-suppressing, anti-obesity drug, is to synthesize it.

Unfortunately, it is quite difficult and expensive to synthesize this molecule in commercial quantities at an acceptable cost (in a “scalable process,” in the parlance of the pharmaceutical industry).¹⁰⁵ Here’s why: Synthetic chemists have yet to figure out how to link up sugars easily in a specific conformation, even though they can easily and predictably link up other molecules such as amino acids and nucleic acids. Each of the three sugars in this molecule has several hydroxyl groups that are essentially equivalent for the purpose of forming glycosidic bonds. Further, each hydroxyl group can react from either above or below to create slight differences in the resulting sugar chain. In consequence, it is fiendishly difficult to get selectivity of a glycosidic bond between specific hydroxyl groups on sugar rings without using a small army of orthogonal protecting groups. Because each protecting group would add several steps to the synthesis, the process can be long and involved. After all, each of the three sugars has several hydroxyl groups as well as methyl (Me) and methoxyl (OMe) groups, and it really matters which one of the hydroxyl groups reacts in a particular way to form connections between the sugar rings. Commercially, that means that synthesizing this compound can be quite expensive. The expense might well explain why Pfizer stopped working with the compound in July 2003.¹⁰⁶

Contrasting similes may convey the effect of the foregoing to those innocent of biochemistry. Synthesizing this steroidal trisaccharide is not as simple as mixing the steroid and sugars together and hoping for the best, like mixing the ingredients for a cake. It requires a precise alignment of the three sugars, like putting a jigsaw puzzle together. That is the point of the orthogonal protecting groups. They hold the three sugar rings on the left of the structure in proper alignment for the correct glycosidic bonds to form, much as one’s fingers hold the various pieces of a puzzle and carefully place them in the correct positions.

We touch briefly on some complexities but won’t browbeat the reader with needless detail.¹⁰⁷ The foregoing argument shows the difficulties with this *particular* molecule, P57. It does not follow that related molecules having appetite-suppression properties will encounter the same difficulties. So some might argue that one or more

¹⁰⁵ See *supra* note 6 and accompanying text. The following explanation concerning the difficulty of synthesizing this steroidal trisaccharide comes from Dr. Arjun Mendiratta, a synthetic chemist.

¹⁰⁶ See Press Release, Phytopharm, Pfizer Returns Rights of P57 (July 30, 2003), available at <http://www.phytopharm.co.uk/news/newsreleases/?page=5&id=1698> (announcing Pfizer’s withdrawal).

¹⁰⁷ Douglas C. Muth helped us to grasp some of the complexities.

of these related molecules could suppress appetite. To this argument we offer the following reply.

First, some chemically and structurally identical drugs come in right-handed and left-handed versions that have different orientations in three-dimensional space, but P57 involves far more than two possibilities. The ibuprofen molecule, for example, comes in right-handed and left-handed versions (“enantiomers”) only one of which is biologically active for pain relief. Without using the aforementioned expensive protecting groups to ensure proper orientation of the molecular components, the enantiomers are created in equal proportions during synthesis. It is too costly to separate these enantiomers, and the non-active version is not harmful, so ibuprofen tablets contain a 50-50 split of each. But with P57, if one starts with the steroid and three separate sugars, each sugar has at least two ways it could attach to the molecule (the OH reacts in either an up or a down conformation). Thus, (4 choices for the first sugar because of 2 OH groups) x (4 choices for the second sugar because of 2 OH groups) x (6 choices for the third sugar because of 3 OH groups) = 96 different P57-related possible molecules (including P57 itself). To formulate an impure mixture of all 96 different molecules might give you only about a one percent chance of yielding the desired product, a safe but biologically active appetite suppressant.

One could analogize the 50-50 ibuprofen mixture to a pile of pairs of gloves. Supposing the desired active compound is a right glove, you would have a 50-50 chance of getting the active compound for each article drawn from the pile. The parallel analogy for P57 includes left and right gloves plus socks, shoes, mittens, hats, scarves, and boots. The chances of coming upon the desired right glove decrease significantly. Furthermore, the non-P57 products might even be harmful, so including them in the final product would not be an option. Thus, one would have to include a separation step in the synthesis process, which is usually costly. To summarize, the synthesis process for P57 can be accomplished with protective groups for correct placement of the molecular components, or by separating P57 from the mixture of other related molecules. Either method is expensive.

Second, some raise questions about the safety of P57,¹⁰⁸ and similar questions might well arise about very close relatives of P57. Various classes of drugs tend to have somewhat similar side effects. Examples include benzodiazepines (Librium, Valium, Xanax, etc.) and statins (Zocor, Lipitor, Crestor, etc.), which create risks, respectively, of (1) psychological and physical dependency after prolonged use and (2) liver damage and rhabdomyolysis.¹⁰⁹ The FDA has determined that the benefits of these medicines, when responsibly prescribed, outweigh the costs of the side

¹⁰⁸ See *infra* text accompanying notes 163–66.

¹⁰⁹ For a database of FDA-approved drugs, including approval history, reviews, and label information, see United States Food and Drug Administration, Drugs@FDA: FDA Approved Drug Products, <http://www.accessdata.fda.gov/scripts/cder/drugsatfda/> (last visited Mar. 1, 2009).

effects. But even then, prescribing physicians have to be prepared to switch to other medications either inside or outside the class or to terminate their use altogether. Given the modest benefits of P57 as an anti-obesity drug,¹¹⁰ the safety costs and side-effects costs of P57-related compounds could outweigh the benefits.

Third, if a P57-related medication, or an unrelated medication that produces satiety effects in the brain by the same mechanism of action, is found, then it might be too distant from San TK and the existing patent on P57 to provide the San with any IP rights. Someone might benefit financially, just not the San.

C. Herbal Medicine and Homeopathic Remedies

According to one member of the San community, *Hoodia* has long been central to their way of life.¹¹¹ They put the plant to various uses, including curing hangovers, alleviating stomach pains, and providing energy to “make love through the night.”¹¹² Because their nomadic way of life in the Kalahari Desert made them susceptible to famine, the San used *Hoodia* not only to suppress appetite and thirst, but also as “an emergency source of food and water in the harsh and dry desert environment.”¹¹³ They sucked on pieces of the plant to increase energy and stave off hunger during long hunting trips on foot.¹¹⁴ *Hoodia* is still consumed by the San today for the same purposes.¹¹⁵ Interestingly, “*Hoodia officinalis* was originally imported to the USA for treatment of piles” as early as 1909.¹¹⁶

The San prepare the plant by cutting or breaking off stems and stripping the spines off, if there are any, by rubbing the fleshy stems on a stone.¹¹⁷ The result is often described as cucumber-like in shape and texture, and the plant is often ingested raw.¹¹⁸ There is evidence that *Hoodia* is sometimes cooked before consumption¹¹⁹ or made into a “tasty preserve.”¹²⁰ *H. gordonii* has a persisting bitter taste.¹²¹

There is much anecdotal affirmation of the efficacy of *Hoodia* in reducing hunger signals, including that of journalist Lesley Stahl, who tried some while in South Africa researching the San for the news magazine *60 Minutes*.¹²² Stahl reported feeling “no

¹¹⁰ See *infra* text accompanying notes 122–62, 168–71.

¹¹¹ Thompson, *supra* note 79.

¹¹² *Id.*

¹¹³ Holt, *supra* note 96, at 105.

¹¹⁴ *Id.* at 104.

¹¹⁵ *Id.* at 105.

¹¹⁶ Bruyns, *Revision*, *supra* note 95, at 175.

¹¹⁷ *Id.*

¹¹⁸ Stahl, *supra* note 6.

¹¹⁹ Holt, *supra* note 96.

¹²⁰ Bruyns, *Revision*, *supra* note 95, at 176.

¹²¹ *Id.*

¹²² Stahl, *supra* note 6.

desire to eat or drink the entire day” without any side effects such as quickened heart rate, nausea, or aftertaste.¹²³ Stahl said, “I’d have to say it did work.”¹²⁴

In 1997, a patent application entitled “Pharmaceutical Compositions Having Appetite Suppressant Activity” was filed in South Africa by researchers at the CSIR, a research laboratory established by the South African Parliament.¹²⁵ The patent tentatively suggested a mode of action involving inhibition of feeding behavior as well as inhibition of gastric emptying.¹²⁶ The results of one study included in the patent showed that rats given *Hoodia* extract experienced decreased food intake and increased water intake with no decrease in respiratory activity.¹²⁷ Some animals experienced a decrease in body mass gain.¹²⁸ The authors of the patent admit that the experiment’s small sample size makes any “statistical interpretation of the data difficult.”¹²⁹ However, they claim that the “reduction, and in some animals even a loss, in body mass gain, in combination with the reduced food intake is strongly indicative of suppression of the appetite centre.”¹³⁰ Note that a reduction in body mass gain does not indicate a weight loss, but rather that the rats did not gain weight as quickly as their peers that were fed the same diet. The conclusion that *Hoodia* extract suppresses the appetite of rats could be inferred from the data presented in this patent, but that conclusion is thinly supported given the small size of the study. There is also no claim that the same *Hoodia* extract would be effective in suppressing appetite in humans. There is almost no evidence of weight loss in this rat study. Hence, a claim of weight loss in humans with use of *Hoodia* extract remains unsupported by the information published in the patent.

At this writing, somewhat better evidence is available. A study performed on rats and published in the Journal of the Federation of American Societies in Experimental Biology in 2001 demonstrated that administration of an extract from *Hoodia* decreased food intake and body weight in both obese and lean animals.¹³¹ The decrease in food intake occurred within two hours of administration of the *Hoodia* extract, and the decrease was sustained with continued administration.¹³² The decrease in food intake led to a reduction in body mass after five days, which contrasted with a normal gain in body mass for rats that were not given the *Hoodia* extract.¹³³ The authors propose

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ Profile of the CSIR, http://www.csir.co.za/profile_of_csir.html (last visited Mar. 1, 2009).

¹²⁶ *Hoodia* Patent, *supra* note 80, at col.3 l.15. The United States patent on P57 was issued after the South African patent.

¹²⁷ *Id.* at col.55 l.5.

¹²⁸ *Id.* at col.55 l.20.

¹²⁹ *Id.* at col.55 l.50.

¹³⁰ *Id.* at col.55 l.20.

¹³¹ Tulp et al. 2001, *supra* note 81.

¹³² *Id.*

¹³³ *Id.*

that the active principle “may occur at least in part via hypothalamic mechanisms,” though they did not study the mechanism in this experiment.¹³⁴ This was the first peer-reviewed study of the effects of *Hoodia* on appetite suppression. The authors suggested that the results from the rat experiment “indicate that *Hoodia* [species] may have strong potential for clinical appetite regulation and weight control” in humans.¹³⁵

The same researchers published another study on rats in 2002.¹³⁶ This time they used dehydrated *Hoodia*.¹³⁷ The rats receiving *Hoodia* showed decreased food intake and blood glucose levels within forty-eight hours of administration, and the levels remained decreased for the duration of the experiment.¹³⁸ The body weight of obese rats decreased to nearly normal weight after two to three weeks of *Hoodia* treatment, and lean rats on *Hoodia* lost about twenty percent of their body weight.¹³⁹ After three weeks, the rats that were administered *Hoodia* showed a fifty percent decrease in fat compared to rats that were not given *Hoodia*.¹⁴⁰ This experiment, together with the 2001 study by the same research group, demonstrated that *Hoodia* in extract and powdered form is effective in decreasing the food intake and therefore the body mass of lean and obese rats. The research was sponsored by Nutrisystem, Inc., a publicly traded company specializing in weight-loss programs that involve client counseling and food-delivery services.¹⁴¹

The research team led by the same scientists who wrote the original patent for P57 published a more extensive study on rats in 2007.¹⁴² Compound P57 was isolated from dried *H. gordonii* plants and administered orally to rats.¹⁴³ After eight days, the treated rats showed a decrease in both food consumption and body mass over untreated rats.¹⁴⁴ The study also compared the *Hoodia* extract with fenfluramine, a drug approved for appetite suppression and part of the once-popular diet cocktail Fen-Phen.¹⁴⁵ In the study, rats treated with fenfluramine exhibited a decrease in food intake but an increase in body weight, albeit a smaller increase than untreated rats.¹⁴⁶ This study showed that both *Hoodia* and fenfluramine suppressed appetite, but *Hoodia* led to greater weight loss in rats.

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ Tulp et al. 2002, *supra* note 81.

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ *Id.*; Tulp et al. 2001, *supra* note 81; Nutrisystem, Nutrisystem, Inc.—About Us, <http://www.nutrisystem.com/jsps/about/aboutUs.jsp> (last visited Mar. 1, 2009).

¹⁴² Fanie R. van Heerden et al., *An Appetite Suppressant from Hoodia Species*, 68 PHYTOCHEMISTRY 2545 (2007).

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

In 2004, researchers published a study in which rats received injections of P57 directly into their brains to study the effects of the molecule.¹⁴⁷ The study showed that P57 injections affected the level of adenosine triphosphate (ATP), a molecule thought to be a “common currency of energy sensing.”¹⁴⁸ The compound caused an increase in ATP in neurons in the hypothalamus, an area of the brain that is thought to be involved in metabolic regulation or nutrient-sensing.¹⁴⁹ Rats fed a restricted-calorie diet showed a decrease in ATP levels, but this decrease was not observed in rats injected with P57 prior to being fed a restricted-calorie diet.¹⁵⁰ The researchers admit to having “no mechanistic explanation for the observed changes in ATP following [P57] treatment.”¹⁵¹ They surmise that “the mechanism is likely to be ‘local’ or intracellular rather than due to a whole organism integrative or hormonal response,” though as yet no specific molecular pathway has been identified.¹⁵²

In 2001, Phytopharm, the company that licensed rights to P57, performed an in-house clinical trial on humans in the United Kingdom.¹⁵³ The results of the trial are unpublished, and were not subject to peer review, but Phytopharm drew some conclusions based on this study. In a double-blind, placebo-controlled clinical study, “large doses” of *Hoodia* extract given to overweight human subjects “caused a statistically significant reduction in the average daily calorie intake.”¹⁵⁴ Plainly stated, their appetite decreased and they ate less food. The group receiving the *Hoodia* extract also showed reduced body fat compared to the placebo group.¹⁵⁵ The effects were seen over a two-week period, with a decrease in daily calorie intake of about 1000 calories.¹⁵⁶

In 2004, a clinical study was sponsored by a company that manufactures *Hoodia* supplements made from the dried and powdered plant.¹⁵⁷ The study was not peer-reviewed, and it was performed by medical doctors who worked at a company specializing in clinical trials.¹⁵⁸ The study involved seven overweight human subjects who took the supplement for twenty-eight days.¹⁵⁹ Over that period, all of the subjects experienced a decrease in body mass, averaging 2.2 to 5.2%.¹⁶⁰ The FDA recommends

¹⁴⁷ MacLean & Luo, *supra* note 81, at 1.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ *Id.* at 9.

¹⁵² *Id.*

¹⁵³ Phytopharm, Hoodia Factfile, <http://www.phytopharm.co.uk/hoodiafactfile> (last visited Mar. 1, 2009).

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ Kathleen Doheny, Hoodia: Lots of Hoopla, Little Science, <http://www.medicinenet.com/script/main/art.asp?articlekey=64450> (last visited Feb. 1, 2009).

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

that a safe weight-loss plan “is to eat 300 to 500 fewer calories a day to lose 1 to 2 pounds a week.”¹⁶¹ A loss of eight pounds over a period of four weeks is equivalent to a five percent loss in weight for a person weighing 200 pounds. Thus, the effects of *Hoodia* extract as reported in the clinical study do not accelerate weight loss over a traditional weight-loss plan consisting of a reduced intake of calories. This fact suggests that *Hoodia* assists individuals in reducing intake of calories by suppressing their appetites. The doctor in the study, Richard M. Goldfarb, offers a familiar hypothesis on how the molecule P57 works. He states, “*Hoodia gordonii* works within the satiety center of the brain by releasing a chemical compound similar to glucose but up to 100 times stronger The hypothalamus receives this signal as an indication that enough food has been consumed and this in turn decreases the appetite.”¹⁶²

Despite the growing evidence that the use of *Hoodia* or *Hoodia* extracts can suppress appetite, there are other health considerations. In a Letter to the Editor in response to an article on *Hoodia* in *The New York Times*, Jasjit Bindra, the lead researcher on *Hoodia* at Pfizer, wrote to “reinforce the cautionary note in the article.”¹⁶³ “An early clinical trial indeed showed that hoodia [sic] could be a potent appetite suppressant. But there were indications of unwanted effects on the liver caused by other components, which could not be easily removed from the supplement.”¹⁶⁴ Bindra did not address the safety or effectiveness of P57 alone.

A more speculative critique comes from Paul Hutson, Associate Professor in the University of Wisconsin-Madison, School of Pharmacy, who asserts the reason Pfizer dropped the license arrangement with Phytopharm was “that they felt there was no merit to its oral use.”¹⁶⁵ The article also highlights the similarity between P57 and digoxin, a compound that “has potentially lethal effects, in terms of effects on the heart.”¹⁶⁶

Yet another hurdle for *Hoodia* products is regulation by the FDA of items meant for human consumption in the United States. Because approval to market a drug requires extensive and costly testing to ensure the safety and efficacy of the drug, an easier route for many botanical products is to be registered as food supplements. By

¹⁶¹ United States Department of Health and Human Services, Food and Drug Administration, *Losing Weight Safely*, <http://www.fda.gov/opacom/lowlit/weightls.pdf> (last visited Mar. 1, 2009).

¹⁶² Doheny, *supra* note 157 (quoting Richard M. Goldfarb, M.D.).

¹⁶³ Bindra, *supra* note 90.

¹⁶⁴ *Id.*

¹⁶⁵ Rath, *supra* note 90, at D1 (quoting Paul Hutson).

¹⁶⁶ *Id.* (quoting Paul Hutson). Note, however, the argument of Russel Barsh, *The Epistemology of Traditional Healing Systems*, 56 HUMAN ORG. 28 (1997), that “folk” ethnopharmacology does “not simply match drugs with diseases,” but rather tailors plant remedies to the particular physiology of a given patient. He contends that these remedies, as prescribed in practice, are more effective and less toxic than Western pharmacology might lead one to believe. Barsh does not discuss *Hoodia* or P57.

statutory definition, “dietary supplement” includes a product containing an herb or botanical that is meant for ingestion but not as a “conventional food.”¹⁶⁷ A dietary supplement must be safe, meaning it does not present a “significant or unreasonable risk of illness or injury.”¹⁶⁸ Any efficacy claims are subject to strict guidelines and must be displayed separately from the supplement itself.¹⁶⁹ These lenient rules allow many products to enter the lucrative dietary supplement market under the guise of *Hoodia* without showing any efficacy in appetite suppression. By 2009, there were ninety trademarks containing the word “Hoodia” registered with the U.S. Patent and Trademark Office.¹⁷⁰

Despite the large number of *Hoodia* products currently on the market in the United States, the quantities of *Hoodia* extracts or P57 contained in the products are not regulated.¹⁷¹ Researchers have developed techniques to determine the amount of P57 in both plant extracts and dietary supplements that purport to contain *Hoodia* or P57,¹⁷² but we have found no published list of analyzed products. A stroll through the diet aids section of a pharmacy yields a good many products with the word “Hoodia” somewhere on the label—but no indication of how much *Hoodia* extract a product contains. We even found a product in a pharmacy with “Hoodia” prominently on the label that did not list *Hoodia* as one of the ingredients!

IV. TERRITORY AND LAND-USE RIGHTS

The first cluster of issues relates to the land-use rights of the San. Various regions of the Kalahari Desert are under the sovereignty (*imperium*) of Angola, Botswana, Namibia, and South Africa. Very little of the land in these regions is under private ownership (*dominium*).¹⁷³ In particular, few such regions that are classified as

¹⁶⁷ Dietary Supplement Health and Education Act, 21 U.S.C. § 321(ff) (2006).

¹⁶⁸ *Id.* § 342(f).

¹⁶⁹ *Id.* § 343-2(a).

¹⁷⁰ See United States Patent and Trademark Office, Trademark Electronic Search System (TESS), <http://tess2.uspto.gov/bin/gate.exe?f=tess&state=eqd7af.1.1> (last visited Feb. 2, 2009) (follow “Free Form Search” hyperlink; enter “Hoodia” into text box and search).

¹⁷¹ See, e.g., 21 U.S.C. § 341.

¹⁷² Bharathi Avula et al., *Determination of the Appetite Suppressant P57 in Hoodia gordonii Plant Extracts and Dietary Supplements by Liquid Chromatography/Electrospray Ionization Mass Spectrometry (LC-MSD-TOF) and LC-UV Methods*, 89 J. AOAC INT’L 606 (2006).

¹⁷³ For use of the distinction in cases, see, for example, *United States v. Percheman*, 32 U.S. (7 Pet.) 51 (1833) (holding that Spanish cession of territory in what is now Florida to the United States transferred sovereignty but did not disrupt the title of a recipient of an 1815 land grant by the Spanish governor prior to the 1819 treaty between the United States and Spain). Some authors draw the distinction quite differently. See, e.g., BRONWEN MORGAN & KAREN YEUNG, AN INTRODUCTION TO LAW AND REGULATION: TEXT AND MATERIALS 81–85 (2007) (quoting T. Daintith’s characterization of *imperium* as regulatory laws and *dominium* as flexible stratagems of economic policy).

“conservancies” or “reserves” have much in the way of private ownership of land. Most such land is a “commons” in a broad sense of the term, which requires clarification. Preliminarily, some property regimes and institutions have assets in which more than one individual holds a property right in the asset. Examples include condominiums, cooperatives, time-shares, and marital property. These examples, however, are all cases of *common property*. That is not the regime under which the San live. Neither the territory over which they range nor the plants that grow there are a different sort of “commons”—namely, an *open-access resource*.¹⁷⁴ Examples of open-access resources include the seabed and fisheries on the high seas. Almost all areas in which the San live occupy some middle position between common property and an open-access resource. For example, in Namibia, all communal land is state land.¹⁷⁵ In Botswana, Land Boards allocate land.¹⁷⁶ They have provided land to the San for residential, agricultural, and business purposes. Additionally, assorted conservancies and community trusts in Namibia allow access to wildlife. They also bestow some limited rights to participate in deciding who gets access to wildlife.

In this Part, we tackle three central questions: (1) Which use rights do the San currently have over their nomadic territory and the wild plants that grow there? (2) Do the San have the right to set up full-scale plantations for growing *H. gordonii*? (3) Do the Convention Concerning Indigenous and Tribal Peoples in Independent Countries¹⁷⁷ and the United Nations Declaration on the Rights of Indigenous Peoples¹⁷⁸ bind the governments of South Africa, Angola, Namibia, and Botswana so as to restrict their power to regulate San harvesting and growing of plant species?

The rights of the San vary depending on which country they live in, but in all four countries they are a marginalized minority with limited group land-use rights. Angola has little written law on point—whether constitutional provisions, statutes, administrative regulations, or judicial decisions. More detailed law exists in Botswana, Namibia, and South Africa. The literature and evidence cited below occasionally deal with the legal position of the San in areas where no *Hoodia* plants grow. The relevance of such cases to our project lies in the general light they shed on the situation of the San.

¹⁷⁴ In the case of common property, the members of the group individually have rights of entry and withdrawal and collectively have rights to manage or sell the resource and to exclude nonmembers. In the case of open-access resources, such as a fishery, anyone may come in and take out units of the resources, but no person has an exclusive right to sell or manage the resource. See Þráinn Eggertsson, *Open Access Versus Common Property*, in PROPERTY RIGHTS: COOPERATION, CONFLICT, AND LAW 73, 74 (Terry L. Anderson & Fred S. McChesney eds., 2003) (explaining the distinction).

¹⁷⁵ See *infra* Part IV.A.3.

¹⁷⁶ See *infra* Part IV.A.2.

¹⁷⁷ Convention (No. 169) Concerning Indigenous and Tribal Peoples in Independent Countries, June 27, 1989, 28 I.L.M. 1384 (1989) [hereinafter ILO Convention No. 169].

¹⁷⁸ G.A. Res. 61/295, U.N. Doc. A/RES/61/295 (Sept. 13, 2007) [hereinafter U.N. Declaration].

A. Rights of Possession and Use

In light of the distinction drawn earlier, what the San have is somewhere in between common property and open-access resources. But what exactly does that mean in these different countries in southern Africa? In the secondary literature, the most frequent English term for San rights to land is “communal property.” The practical import of this term varies across the four countries and, within each country, from one area to another. To say that the San have communal property is *not* to say that as a group they hold title to the land and have the legal power to sell or otherwise transfer the land to other persons or groups of persons. Rather, the San as a group and as individuals have legal rights of possession and use roughly akin to the legal possessory rights recognized by *Johnson v. M’Intosh*.¹⁷⁹ That, at any rate, is the picture from about 30,000 feet in the air. What all this means on the ground we must now explain.

1. Angola

The land rights for San in Angola are slim, but several non-governmental organizations (NGOs) are currently working to change this situation for the better. The civil war in Angola lasted from its independence from colonial powers in 1975 to 2002, when the Angolan military (FAA) and the main political opposition, the National Union for the Total Independence of Angola (UNITA), signed a “memorandum of understanding.”¹⁸⁰ During the war, the FAA forced people from the countryside into urban areas in order to flush out any UNITA forces.¹⁸¹ This action, along with other military tactics, led to the displacement of millions of people, both within Angola and into neighboring countries.¹⁸² The Angolan legislature gave some protection for the displaced during resettlement, including access to essential resources such as land and water.¹⁸³ Unfortunately, the lack of an effective judicial system to enforce the standards of protection frustrated the purpose of the law and left the seventy percent of those whose resettlement did not meet the government norms without legal recourse.¹⁸⁴

The San were an underprivileged group before the war, and they remained last in line when Angola started to rebuild. The San own no land. Instead, they live on communal lands that are owned or managed by local governments or other ethnic groups.¹⁸⁵ The San are still underrepresented in government, but in 2003 two San

¹⁷⁹ 21 U.S. (8 Wheat.) 543 (1823).

¹⁸⁰ Andrea Lari & Rob Kevlihan, *International Human Rights Protection in Situations of Conflict and Post-Conflict: A Case Study of Angola*, 13 AFR. SEC. REV. 29 (2004).

¹⁸¹ *Id.* at 30.

¹⁸² *Id.* at 31.

¹⁸³ *Id.* at 32.

¹⁸⁴ *Id.*

¹⁸⁵ VICTORIA GEINGOS & MAGDALENA BRÖRMANN, WORKING GROUP OF INDIGENOUS MINORITIES IN SOUTHERN AFRICA (WIMSA), SAN, LAND RIGHTS AND DEVELOPMENT: CAN

leaders were officially recognized as such and now act as liaisons between the San and the local government.¹⁸⁶ According to the most comprehensive report on the San in Angola since 1975,¹⁸⁷ the lack of land rights and dependence on other ethnic groups led to “the erosion of the former San hunter-gatherer lifestyle and livelihood.”¹⁸⁸ The report identified food, means for food production, and the securing of land rights as the three most important needs of the San.¹⁸⁹

Furthermore, residual land mines from the prolonged war have created “no-go areas” out of otherwise arable land.¹⁹⁰ Approximately half of the area of Angola contains land that was sprinkled with land mines.¹⁹¹ Estimates of remaining live mines range from 500,000 to two million.¹⁹² As of 2004, there were 80,000 disabled survivors of land-mine accidents.¹⁹³ The high likelihood of a land-mine accident severely curtails movement within Angola.¹⁹⁴

In 2007, a conference organized by WIMSA was held in Angola to address the needs of the San living across southern Africa.¹⁹⁵ Attendees included local government officials, activists, officials of NGOs, and San from Angola, Botswana, Namibia, and South Africa.¹⁹⁶ Perhaps of even greater importance was the two-day meeting preceding the official conference. There, San leaders from Angola and the other three countries exchanged experiences and aspirations for their future circumstances.¹⁹⁷ They focused on “hunger, lack of land rights, conflicts over water, lack of schools, clinics and lack of official recognition for their leaders.”¹⁹⁸ During the conference itself, Angolan government officials acknowledged the mistreatment of the San. Dr. Adriano Tyova, the Administrator of Lubango, stated in the opening message, “Your

SAN SURVIVE WITHOUT LAND?(2002), <http://www.cpsu.org.uk/downloads/Victoria%20Geingos.pdf>.

¹⁸⁶ RICHARD PAKLEPPA & AMERICO KWONONOKA, *TROCAIRE ANGOLA, WIMSA, AND OCADEC, WHERE THE FIRST ARE LAST: SAN COMMUNITIES FIGHTING FOR SURVIVAL IN SOUTHERN ANGOLA* 27 (2003).

¹⁸⁷ Integrated Regional Information Networks (IRIN), Angola: Discrimination and Dependence—The Plight of the San, <http://www.irinnews.org/PrintReport.aspx?Reportid=48391>.

¹⁸⁸ PAKLEPPA & KWONONOKA, *supra* note 186, at 1.

¹⁸⁹ *Id.* at 2.

¹⁹⁰ INT’L WORK GROUP FOR INDIGENOUS AFFAIRS (IWGIA), *INDIGENOUS PEOPLES’ RIGHTS IN SOUTHERN AFRICA* 17 (Robert Hitchcock & Diana Vinding eds., 2004).

¹⁹¹ 1 U.S. DEP’T OF STATE, 108th Cong., 2d Sess. COUNTRY REPORTS ON HUMAN RIGHTS PRACTICES FOR 2003, at 3 (Joint Comm. Print 2004).

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ *Id.* at 9.

¹⁹⁵ *San Communities Hold First Regional Meeting*, FINANCIAL TIMES, May 23, 2007, available at 2007 WLNR 10048892.

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

sons are also our sons and it is not possible for our sons to be slaves.”¹⁹⁹ He went on to address “hunger, illness, servitude, exclusion and illiteracy.”²⁰⁰ Noticeably missing was the issue of land rights.

Recommendations from the conference included the establishment of an Angolan San Council, secure land rights, and access to water and education.²⁰¹ One tangible result was a land title deed given to the San leader Senhor Pirikito.²⁰² The conference, though a small step, raised the awareness of Angolan officials regarding the San. The attention paid to the conference led the Angolan government to promise to develop a policy to protect the San.²⁰³ No such policy had made its way into law as of June 2008.

2. Botswana

After Botswana became an independent nation in 1966, only six percent of the land in Botswana was freehold.²⁰⁴ In 1968, the Tribal Land Act created tribal land boards, which held land “in trust for the benefit of the tribesmen of that area.”²⁰⁵ This statute took the power to manage land away from traditional chiefs and put it in the hands of a board consisting of a “representative of the chief, three [appointed] representatives of the tribe . . . two members representing the district council, one member representing the Minister of Agriculture, and one member representing the Minister of Commerce and Industry.”²⁰⁶ Uncertainty and ambiguity surrounding rules regarding land rights have resulted in manipulation of rules.²⁰⁷ A spectacular example of the San’s political marginalization is the fact that they are not one of the eight named tribes that can benefit from the Tribal Act.²⁰⁸ Thus, “[e]ven in districts where

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ See Inge Ruigrok, *San Rights on the Political Agenda in Angola*, POWER OF CULTURE, Mar. 2007, <http://www.krachtvancultuur.nl/en/current/2007/march/san.html>.

²⁰⁴ Chadzimula Molebatsi, *Botswana: ‘Self-Allocation,’ ‘Accommodation’ and ‘Zero Tolerance’ in Mogoditshane and Old Naledi*, in DEMYSTIFYING THE MYSTERY OF CAPITAL: LAND TENURE AND POVERTY IN AFRICA AND THE CARIBBEAN 73, 77 (Robert Home & Hilary Lim eds., 2004) [hereinafter DEMYSTIFYING THE MYSTERY OF CAPITAL].

²⁰⁵ *Id.* (quoting 1968 Tribal Land Act (Bots.)).

²⁰⁶ B. Hlatshwayo, *Harmonizing Traditional and Elected Structures at the Local Level: Experiences of Four Southern African Development Community Countries*, in TRADITIONAL AUTHORITY AND DEMOCRACY IN SOUTHERN AFRICA 131, 142 (F.M. d’Engelbronner-Kolff et al. eds., 1998) [hereinafter TRADITIONAL AUTHORITY].

²⁰⁷ Clarissa Fourie, *Land Readjustment for Peri-Urban Customary Tenure: The Example of Botswana*, in DEMYSTIFYING THE MYSTERY OF CAPITAL, *supra* note 204, at 31, 37.

²⁰⁸ Duma Gideon Boko, *Integrating the Basarwa Under Botswana’s Remote Area Development Programme: Empowerment or Marginalisation?*, 8 AUSTR. J. HUM. RTS. 153, 158 (2002).

they comprise a significant fraction of the population they are virtually without representation in political bodies, including land boards."²⁰⁹

In December 2006, the High Court of Botswana ruled in the *Sesana* case that the eviction of the San from their ancestral lands in the CKGR was unlawful.²¹⁰ The court recognized a preexisting right to remain on the land under common law.²¹¹ However, the court did not find the termination of services to be unlawful or unconstitutional.²¹² Though the government has allowed the San access to the land, they have submitted a report to the United Nations Human Rights Committee claiming that the government has refused to allow them to pump water or hunt in the reserve.²¹³ The Botswana government confirmed the arrest of five San hunters inside the CKGR and stated that residents may apply for hunting permits in accordance with the law.²¹⁴ The government also maintained that the San are able to take "unrestricted amounts of water at their own expense" into the CKGR.²¹⁵

3. Namibia

The Crown Land Disposal Proclamation, Act 13 of 1920, converted land occupied by "aboriginal natives" to state-owned land.²¹⁶ The Act authorized reassignment of land to natives via community-related land rights, albeit subject to colonial interests.²¹⁷ Some areas of land, such as Bushmanland, were set aside by the state president "for the exclusive use and occupation by any native nation."²¹⁸ In fact, the only area where San have "customary rights" to land is in the area formerly known as Bushmanland.²¹⁹

²⁰⁹ *Id.* (quoting O. GULBRANDSEN ET. AL, REMOTE AREA DEVELOPMENT PROGRAMME, REPORT SUBMITTED TO THE ROYAL NORWEGIAN MINISTRY OF DEVELOPMENT COOPERATION (1986)).

²¹⁰ *Sesana & Others v. Att'y Gen.* (High Ct. Bots. 2006), available at <http://www.saflii.org/bw/cases/BWHC> (follow "2006" hyperlink; then follow "*Sesana & Others v. Att'y Gen.*" hyperlink). For discussion of the case, see *supra* text accompanying notes 4, 39–40.

²¹¹ Jérémie Gilbert, *Historical Indigenous Peoples' Land Claims: A Comparative and International Approach to the Common Law Doctrine on Indigenous Title*, 56 INT'L & COMP. L.Q. 583, 588 (2007).

²¹² Bame Piet, *Govt Confirms Basarwa Arrest*, MMEGI (Bots.), Sept. 5, 2007, available at 2007 WLNR 17340660.

²¹³ *Botswana San Turn to UN for Support*, NAMIBIAN, July 25, 2007, available at 2007 WLNR 14244169.

²¹⁴ Piet, *supra* note 212.

²¹⁵ *Id.*

²¹⁶ M.O. Hinz, *Communal Land, Natural Resources and Traditional Authority*, in TRADITIONAL AUTHORITY, *supra* note 206, at 183.

²¹⁷ *Id.*

²¹⁸ *Id.* at 184 (quoting The Development of Self-Government for Native Nations in South West Africa Act § 2(g) (Namib.)).

²¹⁹ SUZMAN, *supra* note 11, at xviii.

Other areas were set aside in trust by the Representative Authorities Proclamation, AG 8 of 1980, which granted land to representative authorities to be held as communal land.²²⁰ Still, no San representative authorities were ever established under this Act.²²¹

The secondary sources in English are especially detailed for the country of Namibia. A most useful analysis is James Suzman's book on the status of the Namibian San.²²² Suzman, a distinguished anthropologist at Cambridge University and an authority on the Namibian San, is the coordinator of a series of reports for the Legal Assistance Centre in Windhoek. The Centre is an NGO in Namibia which seeks to protect and enlarge the legal rights of the San in five nations in southern Africa. Also extremely useful is a book, prepared for the Legal Assistance Centre, by Sidney L. Haring and Willem Odendaal. The book's position is evident from its title: *Our Land They Took: San Land Rights Under Threat in Namibia*.²²³ The book appeared in 2006 and is thus reasonably up-to-date. However, in making use of it one should separate descriptions of the legal and social position of the San from specimens of advocacy.

The National Land Policy of 1998 states that "[r]estitution of land rights abrogated by the colonial and South African authorities prior to Independence, will not form part of Namibia's Land Policy."²²⁴ Instead, the policy is to provide "special support to all landless or historically disadvantaged communities."²²⁵ The provision does not specifically name the San as the beneficiary. But it responds to a plea from the Ju/'hoansi San at the National Land Conference in 1991.²²⁶ The San have limited communal rights to certain lands. If the lands are gazetted as a communal conservancy, the group members have the right to share the natural resources on the land, generally understood as the wild flora and fauna, though no ownership interest in the land itself.²²⁷ But as a practical matter, communal land-use rights are not enforceable against encroachment by other citizens or by the government.²²⁸ Haring and Odendaal discuss four main areas that the San claim in one way or another: West Caprivi, Etosha, Ntza Jaqna, and Nyae Nyae. Of these four areas, Haring and Odendaal argue that only the Nyae Nyae conservancy has proved a success for the San, in part because the location is so remote that no other groups want to live there.²²⁹ *Hoodia* plants do not grow in the north of Namibia. But because San legal rights involve both individual and group

²²⁰ *Id.*

²²¹ *Id.* at xxi.

²²² *See id.*

²²³ SIDNEY L. HARRING & WILLEM ODENDAAL, LEGAL ASSISTANCE CENTRE, *OUR LAND THEY TOOK: SAN LAND RIGHTS UNDER THREAT IN NAMIBIA* (2006).

²²⁴ *Id.* at 21 n.79 (quoting The National Land Policy (1998) (Namib.)).

²²⁵ *Id.* (quoting The National Land Policy (1998) (Namib.)).

²²⁶ *Id.* at 36–38.

²²⁷ *Id.* at 28.

²²⁸ *Id.* at 25.

²²⁹ *Id.* at 40.

rights, including possible IP rights to TK concerning *Hoodia*, the legal and socioeconomic position of the San is worth mention in all areas in which they live.

The saga of West Caprivi and the Khwe San goes like this: The Khwe claimed aboriginal title to the land in West Caprivi, which lies in the narrow strip of Namibia bordered by Angola, Botswana, and Zambia (Figure 8). The Mbukushu (also called Hambukushu), the local Bantu people, disputed this claim by asserting that the San were subjects of the Mbukushu and therefore could not establish the requisite exclusive and continuous occupation of the land.²³⁰ The Namibian government has not yet recognized the new Khwe traditional chief, apparently because official recognition would endow that chief with "some authority over [the] land under the Traditional Authorities Act."²³¹ Because the government has not settled the status of San communal lands, other peoples may move to and settle on communal lands that are otherwise being occupied or used by the San. This situation, Haring and Odendaal contend, amounts to a denial of San land rights and shows the government's unwillingness to enforce such land-use rights as the San possess. They also claim that the Namibian government has declared that it holds title to the communal land "with no compensation nor regard for the land rights of the Khwe."²³² The government itself has encroached on San-occupied land by forming resettlement camps, creating a prison farm, and gazetting the remainder of the West Caprivi land as the Bwabwata National Park.²³³ Figure 9 shows the distribution of government-run San resettlement facilities in Namibia.

²³⁰ *Id.* at 6.

²³¹ Traditional Authorities Act § 6(3) (2000) (Namib.) ("[A] chief or head of a traditional community shall be deemed not to have been designated under this Act, unless such designation has been recognized . . ."); HARRING & ODENDAAL, *supra* note 223, at 7.

²³² HARRING & ODENDAAL, *supra* note 223, at 9.

²³³ *Id.* at 9–11.

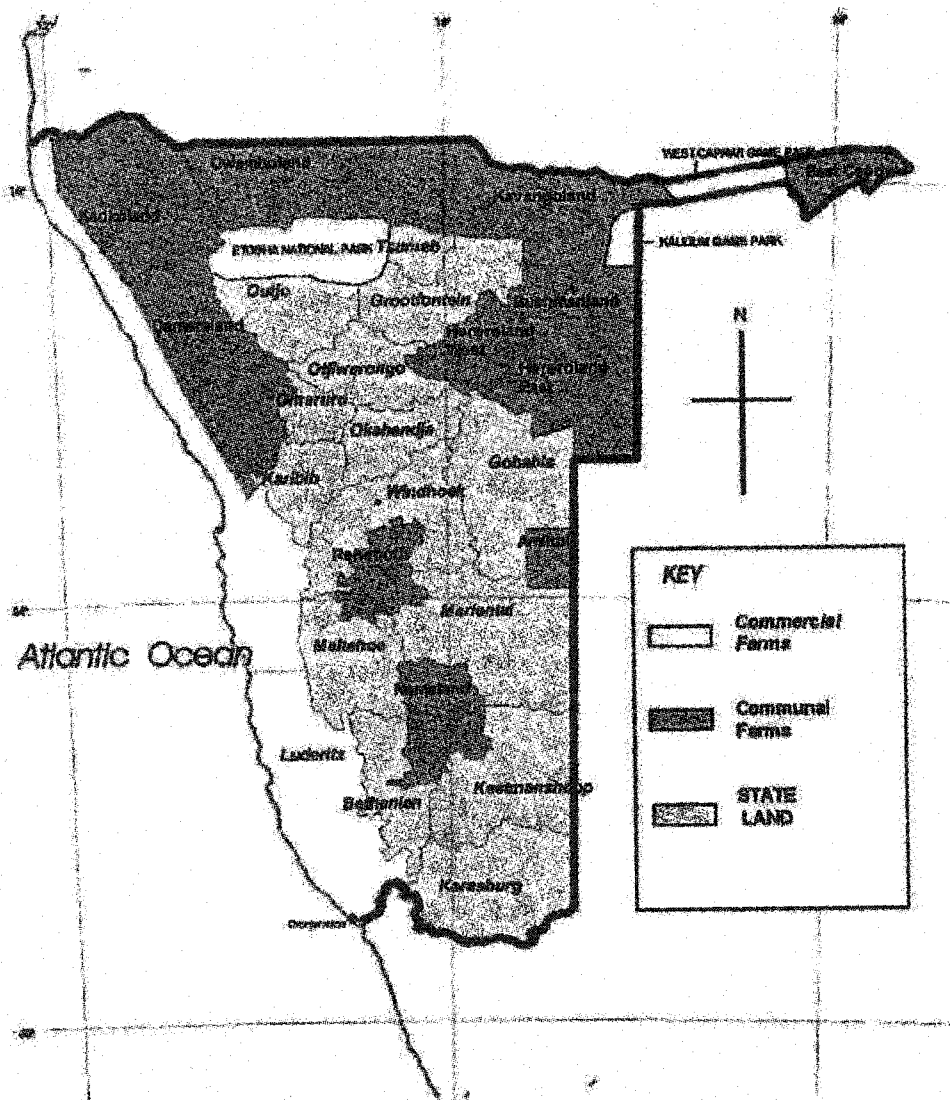


Figure 8. Communal and Commercial Farming Areas of Namibia. Source: JAMES SUZMAN, LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN NAMIBIA xv (2001).

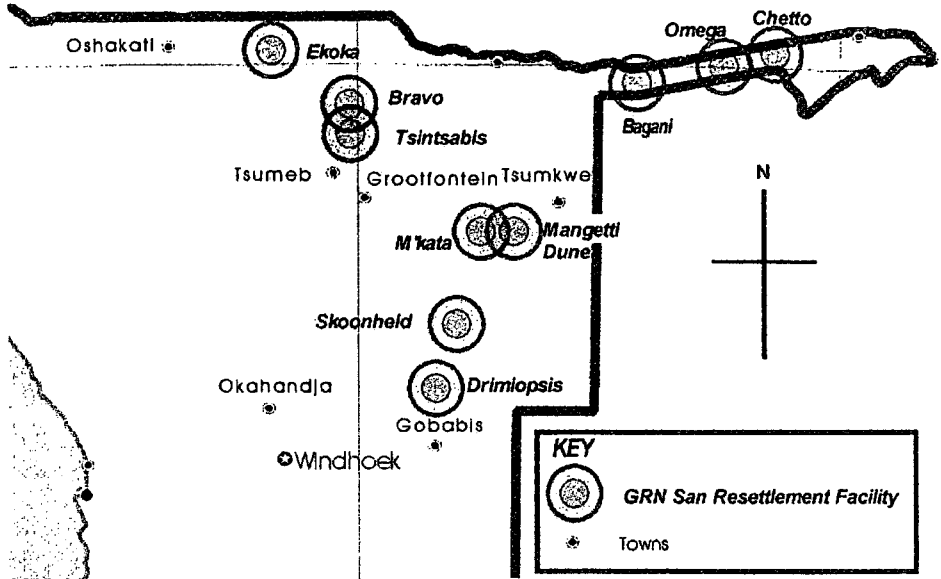


Figure 9. San Resettlement Areas in Namibia. Source: JAMES SUZMAN, LEGAL ASSISTANCE CENTRE, AN ASSESSMENT OF THE STATUS OF THE SAN IN NAMIBIA xvi (2001).

The Namibian government took the land at Etosha from the Hai//om San from the 1930s through the 1960s. Without seeking permission from the indigenous San population, it set up a national game park.²³⁴ The Etosha land is home to roughly 9000 San, which is the largest concentration of San in Namibia.²³⁵ The Hai//om seem to have no recognized traditional lands. In consequence, they have no claim to land under the Traditional Authorities Act, even though their traditional chief is recognized by the government.²³⁶ However, Haring and Odendaal point out that the Hai//om “have at least three different aboriginal title arguments to put forward in negotiating for some kind of land allocation.”²³⁷ These claims have not yet been settled.²³⁸ But because of the size of the San population in Etosha and the demands of the resettlement policy, the Hai//om hope for major land allocation from the government.²³⁹

²³⁴ *Id.* at 15.

²³⁵ *Id.*

²³⁶ Traditional Authorities Act § 6(3) (Namib.); HARRING & ODENDAAL, *supra* note 223, at 20.

²³⁷ HARRING & ODENDAAL, *supra* note 223, at 20.

²³⁸ *See id.* at 21.

²³⁹ *Id.*

The area formerly known as Bushmanland was originally set aside for the San in the 1960s.²⁴⁰ West Bushmanland is currently called Nǃa Jaqna and is part of Namibia's Otjozondjupa Region.²⁴¹ At the creation of Bushmanland, only a few hundred San lived there.²⁴² These were members of the Ju/'hoansi San, who led a "traditional hunting and gathering way of life."²⁴³ The Ju/'hoansi continue to live in East Bushmanland, now the Nyae Nyae Conservancy, which is discussed below.²⁴⁴ During the war for Namibian independence, the South African army set up military bases in West Bushmanland, and "San were brought to these bases from Angola, Caprivi, and the Ovambo and Kavango communal areas."²⁴⁵ Many of these relocated San remained after the war.²⁴⁶ As a result, the San inhabitants of the area do not form a particularly cohesive population.²⁴⁷ In addition to the tensions between groups in the heterogeneous community, the absence of supportive NGO funding is a large factor in the lack of community organizing in West Bushmanland.²⁴⁸ The population relies primarily on government-sponsored projects that often have "almost complete disregard for existing community institutions, structures and desires."²⁴⁹ About 1275 San now live in Nǃa Jaqna.²⁵⁰ Though the former Bushmanland was initially set aside as a communal area created for the San, non-San groups have subsequently brought in cattle, pushed the San off intended communal areas, and spoiled their water-holes.²⁵¹

A central legal issue is whether the San have rights to evict others from the land—in Nǃa Jaqna and other communal or conservancy lands.²⁵² The government, as we have said, owns all communal land.²⁵³ Despite early efforts by Namibian government ministries to protect the communal land rights of the Ju/'hoansi in Nyae Nyae (Tsumkwe East) immediately after independence in 1990, land grabs by various groups soon converted many places into private, fenced-off areas for cattle-herders.²⁵⁴ Later,

²⁴⁰ *Id.* at 22.

²⁴¹ *Id.*

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *See id.* at 34.

²⁴⁵ *Id.* at 22.

²⁴⁶ *Id.*

²⁴⁷ *Id.*

²⁴⁸ SUZMAN, *supra* note 11, at 42.

²⁴⁹ *Id.* at 44.

²⁵⁰ HARRING & ODENDAAL, *supra* note 223, at 23.

²⁵¹ *Id.*

²⁵² *See id.* at 24–27.

²⁵³ *See supra* note 185 and accompanying text.

²⁵⁴ 2 MINISTRY OF ENV'T & TOURISM, NAMIB., INDIGENOUS PEOPLE DEVELOPMENT PLAN (IPDP): INTEGRATED COMMUNITY-BASED ECOSYSTEM MANAGEMENT PROJECT (ICEMA) 5 (2004), available at http://www-wds.worldbank.org/external/default/WDSContentServer/WDSB/IB/2004/02/11/000090341_2004021112633/Rendered?PDF/IPP6910PAPER.pdf.

the Namibian government passed the Communal Land Reform Act “[t]o provide for the allocation of rights in respect of communal land.”²⁵⁵ Article 21(h) of the Namibian Constitution states that “[a]ll persons shall have the right to . . . reside and settle in any part of Namibia.”²⁵⁶ A broad interpretation of this article would permit anyone to begin living in a communal area.²⁵⁷ However, argue Haring and Odendaal, this interpretation denies “communal landholders any property right at all, and seems inconsistent with the provisions of the Communal Land Reform Act of 2002 that give the Traditional Authorities, in conjunction with the Communal Land Boards, the right to allocate customary land rights within communal areas.”²⁵⁸ The !Kung San tribe, they suggest, should be able to evict the cattle herders who move onto San communal land.²⁵⁹ As a practical matter, though, the San may not legally evict them on their own and the Namibian government has provided little help.²⁶⁰

Repeated requests by the traditional leader John Arnold to the relevant Namibian authorities—including the “local police, the Ministry of Lands and Resettlement and the Ministry of Environment and Tourism—have not resulted in any enforcement action to protect San lands.”²⁶¹ Section 17 of the act asserts that “all communal land areas vest in the State in trust for the benefit of the traditional communities residing in those areas,”²⁶² so the San might then be able to “sue the Government for breach of trust where the latter is either failing to protect San lands or using San lands to benefit some other group.”²⁶³ Article 16 of the constitution “provides that the Government must compensate private landowners whose land it expropriates,” yet there is no parallel provision for the interests of traditional landholders in communal lands.²⁶⁴ Thus, under the Communal Land Reform Act, landholders have “both a limited legal right to protect their land occupancy against outsiders, and no legal protections against the Government.”²⁶⁵

Nevertheless, the San are not “landholders” in this sense, and they have no such legal rights or legal protections.²⁶⁶ Because of the legal instability and uncertainty of their claimed land rights, and because of the political and procedural impediments to enforcing such land rights as the government accords them, the San are disadvantaged

²⁵⁵ Communal Land Reform Act (2002) (Namib.).

²⁵⁶ CONST. OF THE REPUBLIC OF NAMIB. art. 21(h).

²⁵⁷ HARRING & ODENDAAL, *supra* note 223, at 24.

²⁵⁸ *Id.*; see also Communal Land Reform Act § 3(a) (Namib.) (“[T]he functions of a [Communal Land] board are to exercise control over the allocation and the cancellation of customary land rights by Chiefs or Traditional Authorities . . .”).

²⁵⁹ HARRING & ODENDAAL, *supra* note 223, at 25.

²⁶⁰ *Id.*

²⁶¹ *Id.*

²⁶² Communal Land Reform Act § 17(1) (Namib.).

²⁶³ HARRING & ODENDAAL, *supra* note 223, at 25.

²⁶⁴ *Id.*; see also CONST. OF THE REPUBLIC OF NAMIB. art. 16.

²⁶⁵ HARRING & ODENDAAL, *supra* note 223, at 25.

²⁶⁶ See *id.* at 24–25.

in trying to make a living off their land.²⁶⁷ They are unable to obtain mortgages for home improvement.²⁶⁸ They “have virtually no protection against encroachments by the state.”²⁶⁹ They are also unable, report Harring and Odendaal, to “take legal action in Namibia’s courts against many types of land encroachment,” and can take actions to the Traditional Authority “only if their dispute is with another member of the same community.”²⁷⁰ Other non-San groups have moved their cattle onto the Nǃa Jaqna land, which displaces the San and thwarts their efforts to farm.²⁷¹

In the Nǃa Jaqna Conservancy, the San people comprise all of the 1275 members and leaders.²⁷² The San are now trying to use the status of conservancy to shield their land from outsiders, as the Namibian government has not intervened on their behalf or given formal recognition to their communal ownership.²⁷³ There are few natural resources, so the plan for Nǃa Jaqna, approved by the Ministry of Environment and Tourism, is to import 4000 wild game animals to the region and drill new boreholes for water, in the hope of attracting tourists who hunt big game.²⁷⁴ At the same time, the Ministry of Lands and Resettlement plans to make available nearly 100 new farms.²⁷⁵ Unfortunately for the San, well-to-do, politically prominent, non-San ranchers are likely to get most of these farms.²⁷⁶ If they do, the result will not tally with official Namibian policies on conservancies.²⁷⁷ These policies require an assessment of environmental impact of farming. They also require a cost-benefit analysis of farming versus conservancy uses. It remains unclear whether the government will provide any such assessment or analysis.²⁷⁸

The National Resettlement Policy names the San as one of the “prime beneficiaries of the resettlement process.”²⁷⁹ Yet Harring and Odendaal report that the San are concerned “that they will not benefit from this resettlement development at all, and that instead they would become the farm workers of those who ‘come from the outside’ to settle in the conservancy, resulting in the San once again being driven off their own lands.”²⁸⁰ As there are no provisions to compensate San inhabitants for their loss and the potential farmers would be non-San, the San stand to suffer a loss of both land and social and political power if the resettlement farms are launched.²⁸¹ Because

²⁶⁷ *See id.* at 27.

²⁶⁸ *Id.*

²⁶⁹ *Id.*

²⁷⁰ *Id.*

²⁷¹ *Id.*

²⁷² *Id.* at 29.

²⁷³ *Id.*

²⁷⁴ *Id.*

²⁷⁵ *Id.*

²⁷⁶ *Id.* at 29, 31.

²⁷⁷ *Id.* at 30.

²⁷⁸ *Id.* at 30–31.

²⁷⁹ *Id.* at 30.

²⁸⁰ *Id.* at 31.

²⁸¹ *See id.*

virtually no limit exists on government plans or the encroachment of cattle herders, it would be very difficult for the San to start plantations on this land.

We come finally to a ray of hope for the San in the Nyae Nyae Conservancy. Formerly known as East Bushmanland, Nyae Nyae is the home of the Ju/'hoansi.²⁸² They are the only San in Namibia who live on "communal lands administered by their own government-recognised Traditional Authority."²⁸³ Their leaders, called Kxau, have a largely symbolic role within their bands. The Kxau do, though, represent their people in negotiations with outsiders, including negotiations over land rights.²⁸⁴ San communal lands were incorporated into the Nyae Nyae Conservancy in 1998, and have since emerged as a significant socioeconomic force.²⁸⁵ Some Ju/'hoansi learned how to operate small farms of millet, corn, goats, and cattle through the ultimately unsuccessful Ju/Wa Farmers Union and the Nyae Nyae Farmers Cooperative.²⁸⁶ Ninety-five percent of income now comes from big game hunting and the other five percent from tourism.²⁸⁷ The local government installed a cattle fence to stop encroachment by local non-San cattle ranchers onto the conservancy.²⁸⁸ Though the Nyae Nyae Conservancy is regarded as a success for San autonomy and land rights, it is open to question whether that success can be recapitulated elsewhere.²⁸⁹

One explanation for the success of the Nyae Nyae Conservancy is the strong sense of community among the Ju/'hoansi.²⁹⁰ The members self-identify as a homogeneous sociolinguistic community, with a "relatively stable social structure and strong sense of tradition and identity."²⁹¹ Further, the Ju/'hoansi took steps early on, such as establishing the Ju/wa Foundation in 1984, to organize their community.²⁹² Also critical to their continued community building is the access to support and funding from outsiders, as well as a successful claim to traditional lands.²⁹³

4. South Africa

The South African government generally does not refer to the San by name, but current policy and legislation do address the group.²⁹⁴ A report from the United

²⁸² See *id.* at 34.

²⁸³ *Id.*

²⁸⁴ See CAROL R. EMBER ET AL., CULTURAL ANTHROPOLOGY 326–28 (10th ed. 2001).

²⁸⁵ HARRING & ODENDAAL, *supra* note 223, at 34.

²⁸⁶ *Id.* at 39.

²⁸⁷ *Id.*

²⁸⁸ *Id.* at 40.

²⁸⁹ *Id.*

²⁹⁰ SUZMAN, *supra* note 11, at xviii.

²⁹¹ *Id.*

²⁹² See *id.* at 42 & n.39.

²⁹³ *Id.* at 42.

²⁹⁴ U.N. Econ. & Soc. Council [ECOSOC], The Special Rapporteur on the Situation of Human Right and Fundamental Freedoms of Indigenous Peoples, *Mission to South Africa*:

Nations Commission on Human Rights stated that the historic “forced dispossession of traditional land that once formed the basis of hunter-gatherer and pastoralist economies and identities . . . has caused indigenous people to plunge from a situation of self-reliance into poverty and a dependency on external resources.”²⁹⁵ Above all, indigenous communities need to secure land and, where possible, reestablish access to natural resources.²⁹⁶ The San need these resources for herding, hunting, and gathering as well as “new land-based ventures such as farming.”²⁹⁷ With help from NGOs, several San communities have benefited from the Restitution of Land Rights Act of 1994, including the !Xun and Khwe in Schmidtsdrift and the ǀKhomani in the southern Kalahari.²⁹⁸ The ǀKhomani settled the first land claim in 1999.²⁹⁹ They received 40,000 hectares of land over six farms, and the 300 people established a Communal Property Association as co-owners of the land.³⁰⁰ In 2002, the ǀKhomani and another community recovered 25,000 hectares within the Kalahari Gemsbok National Park. The two communities jointly managed the land.³⁰¹ Though the land claim was successful, the subsequent management of the land “failed to initiate a process of sustainable development.”³⁰²

B. Rights of Cultivation

Hoodia plants grow slowly, and intentional cultivation of the plants would supplement wild *Hoodia*.³⁰³ We have identified no laws that forbid the San to grow isolated plants or to set up full-scale plantations. However, at least one country requires a permit to cultivate.³⁰⁴ Little relevant information was available for Angola as of November 2008. The Namibian government is encouraging the cultivation of *Hoodia* more aggressively than are the governments of South Africa and Botswana.³⁰⁵

1. Angola

Despite an intensive, systematic search, we have not found Angolan laws bearing specifically on San rights, if any, to cultivate *Hoodia*. From one perspective, this null

Addendum, ¶ 12, U.N. Doc. E/CN.4/2006/78/Add.2 (Dec. 15, 2005) (prepared by Rodolfo Stavenhagen).

²⁹⁵ *Id.* at 10.

²⁹⁶ *Id.*

²⁹⁷ *Id.*

²⁹⁸ *Id.* at 11.

²⁹⁹ *Id.*

³⁰⁰ *Id.*

³⁰¹ *Id.*

³⁰² *Id.* at 12. See generally ROBINS ET AL., *supra* note 15, at xii–xiii (assessing the current status of San populations).

³⁰³ See *Hoodia Gordonii a Rare Medicinal Hope*, DAILY NEWS (Bots.), Mar. 27, 2007, available at <http://bw/cgi-bin/news.cgi?d=20070327>.

³⁰⁴ See *infra* Part IV.B.4.

³⁰⁵ See *infra* Part IV.B.2–4.

result has little impact on the overall argument of this Article, for there are many fewer San in Angola than in Botswana, Namibia, and South Africa.³⁰⁶ But from the perspective of San living in Angola, this result leaves out of account something that may matter deeply to them.

2. Botswana

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates some matters pertaining to *Hoodia*.³⁰⁷ In 2006, the Plants Committee of CITES reported that cultivation trials for *Hoodia* were successful.³⁰⁸ Plans were afoot to promote commercial farming, though limited availability of seeds hampered the implementation of these plans.³⁰⁹

In October 2006, the Department of Forestry and Range Resources started a communal cultivation project to “benefit the communities of southern Kgalagadi where it grows wild.”³¹⁰ Funding for the project came from the African Development Fund in cooperation with Veld Product Research and Development, a Botswana-based NGO.³¹¹ Four communities have been trained.³¹² The plan is to give each family a plot to cultivate.³¹³ The plants must grow for three to four years, and the first harvest is scheduled for 2009.³¹⁴

3. Namibia

Namibia is taking steps to promote cultivation. On February 22, 2007, the government held a conference to develop guidelines for the development of a sustainable *Hoodia* industry in Namibia.³¹⁵ In the keynote address, the Minister of Environment and Tourism, Willem Konjore, called for “[t]he total eradication of illegal harvesting and trade in *Hoodia* in any form.”³¹⁶ The Minister encouraged cultivation as both a

³⁰⁶ SUZMAN, *supra* note 11, at 3.

³⁰⁷ See Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES] art. 4, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243; *id.* apps. I–III. *Hoodia* was registered in Appendix II of CITES in 2004. See *id.* Apps. I–II.

³⁰⁸ See CITES, Plants Comm., *Africa Regional Report*, 2PC16 Doc. 51 (July 3–8, 2006).

³⁰⁹ *Id.*

³¹⁰ *Hoodia Gordonii* a Rare Medicinal Hope, *supra* note 303.

³¹¹ *Id.*

³¹² *Id.*

³¹³ *Id.*

³¹⁴ See *id.*

³¹⁵ Willem Konjore, Minister, Namib. Ministry of Env’t & Tourism, Keynote Address at the Conference on *Hoodia* (Feb. 22, 2007), available at http://209.88.21.55/opencms/export/sites/default/grnnet/GRNNNews/grnnews/2007/march/March_Statements/Namibia_meets_on_Hoodia_future.pdf.

³¹⁶ *Id.*

supplement and an alternative to harvesting wild plants.³¹⁷ He praised San farmers and communities that were already cultivating *Hoodia*.³¹⁸ Just over one month later, Konjore gave the opening speech at Hoodia Information Day.³¹⁹ In it, he highlighted key issues raised during the February conference and stressed the importance of getting small-scale farmers to cultivate *Hoodia*.³²⁰ He called on the Hoodia Growers Association of Namibia (HOGAN) to increase the growing capacity of these farmers.³²¹ Konjore also stated that “[s]tart-up capital should be availed to small-scale growers.”³²²

The purpose of HOGAN is to facilitate *Hoodia* farming.³²³ Membership is open to “natural persons, close corporations, companies and associations in Namibia who [sic] are permitted to produce, process and market Hoodia products.”³²⁴ The registration fee is N\$50.³²⁵ As of April 12, 2007, there were about sixty-five registered growers.³²⁶ The first exports of *Hoodia* were planned for early 2008.³²⁷ The growing and collecting of Hoodia are done by some San and Nama groups and by some non-Khoisan peoples, including some Africans of European ancestry. Some of these various peoples are members of HOGAN.

Reports exist of at least two *Hoodia* growing projects in Namibia. First, there is funding to aid 300 growers in both the Hardap and Karas regions.³²⁸ A central aim of this project is to help communal farmers as well as much smaller operators.³²⁹ The latter would grow *Hoodia* in their backyards in the smaller towns and villages of these two regions. The requested budget was N\$10 million, to be used for supplying individuals with “starter packs of seedlings and materials to fence the land, irrigation systems and other inputs including pesticides.”³³⁰

³¹⁷ See *id.*

³¹⁸ *Id.*

³¹⁹ See Willem Konjore, Minister, Namib. Ministry of Env't & Tourism, Keynote Address of the Hoodia Information Day (Mar. 28, 2007), available at http://209.88.21.55/opencms/export/sites/default/grnnet/GRNNews/grnnews/2007/march/March_Statements/Minister_encourages_Hoodia_enterprise.pdf.

³²⁰ *Id.*

³²¹ *Id.*

³²² See *id.*

³²³ Wezi Tjaronda, *Plans to Set Up Hoodia Industry*, NEW ERA, May 16, 2006, <http://www.newera.com.na/archives.php?id=11690&date=2006-05-16>.

³²⁴ *Id.*

³²⁵ For currency equivalents in U.S. dollars, see Appendix 1.

³²⁶ Wezi Tjaronda, *Biggest Market for Hoodia, Originally Used by San and Nama Tribes*, *is U.S.*, NEW ERA, Apr. 12, 2007, <http://www.newera.com.na/archives.php?id=15525>.

³²⁷ Wezi Tjaronda, *Country to Export Hoodia*, NEW ERA, Aug. 16, 2007, <http://www.newera.com.na.archives.php?id=17149>.

³²⁸ Wezi Tjaronda, *Hoodia Industry Takes Shape*, NEW ERA, Feb. 20, 2007, <http://www.newera.com.na/archives.php?id=14905&date=2007-02-20>.

³²⁹ *Id.*

³³⁰ *Id.*

There is, secondly, a proposed “Growing and Protection of Hoodia” project.³³¹ It promotes “the collection of seed from wild Hoodia plants, establishing nurseries, Hoodia cultural practices, training of Hoodia producers in production techniques, processing and marketing.”³³² The projected cost is N\$1.7 million over three years.³³³ “The goal of the project is to reduce the number of unemployed and underemployed people in rural areas, particularly women and youth who are the most vulnerable and food insecure.”³³⁴ In 2003, the National Botanic Garden of Namibia (NBGN) reported success in a propagation trial of *H. gordonii*, though it announced no specific plans to continue the project.³³⁵ The South African National Biodiversity Institute (SANBI), in a report last updated in 2005, stated that cultivation trials of *H. gordonii* in Namibia occurred “on a small scale” at NBGN and that “only a small quantity of material has been harvested” from cultivated plants.³³⁶

One major concern for San in Namibia is food security. Many San value subsistence strategies such as hunting and gathering. These are inadequate, and the San often turn to government food aid.³³⁷ Several programs to encourage both subsistence and for-profit agriculture have brought about some successes, but one explanation for some concomitant failures is the lack of strong motivation.³³⁸ If the San were permitted to participate meaningfully in organizing a *Hoodia*-growing operation, as well as to take a more personal (individual or familial) attitude of ownership toward *Hoodia*, they might have greater motivation to learn new agricultural practices. These agricultural skills might then be translated not only into cash but also food-growing projects. The profit potential for *Hoodia*-growing operations might also attract funding and support from non-governmental outsiders, which has in the past proved to be helpful in organizing successful programs.

4. South Africa

Species of *Hoodia* are protected in South Africa.³³⁹ In accordance with CITES, the government requires a permit for cultivation.³⁴⁰ The Department of Environmental

³³¹ Wezi Tjaronda, *Karas Looks to Production of Hoodia*, NEW ERA, July 4, 2006, <http://www.newera.com.na/archives.php?id=12251&date=2006-07-04>.

³³² *Id.*

³³³ *Id.*

³³⁴ *Id.*

³³⁵ Stephen J. Carr, *Threatened Plant Programmes: Namibia Hoodia*, SABONET, http://www.sabonet.org.za/threatened/threatened_namibia.htm.

³³⁶ *Information Document on Trade in Hoodia Gordonii and Other Hoodia Species*, <http://www.plantzafrica.com/planthij/hoodia.htm> (last visited Mar. 3, 2009).

³³⁷ SUZMAN, *supra* note 11, at 120.

³³⁸ *Id.* at 45.

³³⁹ *Consideration of Proposals for Amendment of Appendices I and II*, at 4, <http://www.cites.org/eng/cop/13/prop/E13-P37.pdf> (last visited Oct. 22, 2008) (adding *Hoodia* to Appendix II to the CITES).

³⁴⁰ *Id.*

Affairs and Tourism sent out a notice dated May 5, 2006, containing draft regulations relating to the National Environmental Management: Biodiversity Act of 2004.³⁴¹ Section 5(2)(f) provides that

[o]nly the following persons may apply for standing permits: a person conducting a registered nursery, for a standing permit authorising all restricted activities involving specimens of listed threatened or protected plant species cultivated [or artificially propagated] at that nursery that are necessary for the purpose for which that nursery is registered.³⁴²

Under Section 7(b), “If the restricted activity applied for is to be carried out on private land and the applicant is not the owner of the land, the applicant must obtain the written consent of the landowner to undertake the proposed restricted activity on that land.”³⁴³ Section 27(1) provides that

[n]o person may conduct a captive breeding operation, nursery, scientific institution, sanctuary or rehabilitation facility involving specimens of any listed large predator or other species listed in CITES Appendix I, unless that breeding operation, nursery, scientific institution, sanctuary or rehabilitation facility is registered in terms of this Chapter with the Department of Environmental Affairs and Tourism.³⁴⁴

The fees involved for a standing permit, under Section 7(3)(c), for growing/breeding/propagating registration are R100, and for a registered nursery under Section 43(2)(b) are R300.³⁴⁵ *H. gordonii* and *H. currorii* are listed as “Protected Species”—that is, as “indigenous species of high conservation value or national importance that require national protection.”³⁴⁶ As to the exercise of cultivation rights, the data are meager. A November 2004 report indicated that Phytopharm and CSIR

³⁴¹ Dep’t of Envtl. Affairs & Tourism, Gov’t Gazette No. 28803, Government Notice 597, Draft Regulations Relating to Listed Threatened or Protected Species (2006) [hereinafter Draft Regulations], available at <http://www.greengazette.co.za> (type “Draft Regulations Relating to Listed Threatened or Protected Species” in search bar).

³⁴² *Id.* at § 5(2)(d).

³⁴³ *Id.* at § 8.

³⁴⁴ *Id.* at § 41(1).

³⁴⁵ *Id.* at Annexure 4.

³⁴⁶ *Id.* at Schedule B1.

are working on commercial cultivation in South Africa as well as Namibia.³⁴⁷ A report last updated in 2005 stated that “[c]ultivation trials are currently underway in South Africa” in addition to Namibia.³⁴⁸ In South Africa, the role of Namibia’s HOGAN is played by the South African Hoodia Growers Association (SAHG). SAHG also authenticates and certifies some *Hoodia* products.³⁴⁹

C. Effect of International Law on Rights to Grow and Harvest

Under this heading we look to two potentially relevant sources. One is the International Labour Organisation (ILO) Convention Concerning Indigenous and Tribal Peoples in Independent Countries.³⁵⁰ The other is the United Nations Declaration on the Rights of Indigenous Peoples, which was adopted by the General Assembly in September 2007.³⁵¹ At this writing, the effect of both documents is mainly hortatory.

1. The ILO Convention

As of October 2008, Angola, Botswana, Namibia, and South Africa had not subscribed to the 1989 ILO Convention Concerning Indigenous and Tribal Peoples.³⁵² However, this Convention replaced the 1957 Indigenous and Tribal Populations Convention (No. 107), and the latter still remains in force in Angola.³⁵³ The ILO, in cooperation with the South African Department of Constitutional Development, held conferences in May 1998 and March 1999 to create a framework consistent with the Convention for communication between indigenous and tribal peoples and the Government of South Africa.³⁵⁴ The ILO is promoting the Convention in Namibia

³⁴⁷ Uwe Hoering, *Biopirates in the Kalahari: Slimming with Hoodia—To Whose Advantage?*, WORLD ECONOMY AND DEVELOPMENT—IN BRIEF, http://www.weltwirtschaft-und-entwicklung.org/cms_en/wearchiv/53168696a71087602.php (last visited Feb. 2, 2009).

³⁴⁸ *Information Document on Trade in Hoodia Gordonii and Other Hoodia Species*, <http://www.plantzafrica.com> (last visited Feb. 24, 2008).

³⁴⁹ Hoodoba@ Hoodia—San Certified and Approved!, http://www.hoodia-dietpills.com/san_hoodia.htm (last visited Oct. 21, 2008).

³⁵⁰ ILO Convention No. 169, *supra* note 177.

³⁵¹ U.N. Declaration, *supra* note 178. The General Assembly adopted the non-binding resolution by a vote of 143 in favor and four against, with eleven abstentions. The four nations voting against were Australia, Canada, New Zealand, and the United States. Among those voting in favor were Angola, Botswana, Namibia, and South Africa. See G.A. Res. 61/295, U.N. Doc. A/RES/61/295 (Sept. 13, 2007); Press Release, General Assembly, General Assembly Adopts Declaration on Rights of Indigenous Peoples, U.N. Doc. GA/10612 (Sept. 13, 2007), available at <http://www.un.org/News/Press/docs/2007/ga10612.doc.htm>.

³⁵² Convention Concerning Indigenous and Tribal People in Independent Countries, June 27, 1989, C.169 (1991), available at <http://www.ilo.org/ilolex/cgi-lex/ratific.pl?C169> (presenting a ratification table for 1989).

³⁵³ MANUELA TOMEI, INT’L LABOUR OFFICE, INDIGENOUS AND TRIBAL PEOPLES: AN ETHNIC AUDIT OF SELECTED POVERTY REDUCTION STRATEGY PAPERS 4 (2005).

³⁵⁴ INT’L LABOUR OFFICE, INDIGENOUS PEOPLES OF SOUTH AFRICA: CURRENT TRENDS 22 (1999).

through its Project to Promote Policy on Indigenous and Tribal Peoples.³⁵⁵ In sum, the 1989 ILO Convention did not bind any of the four countries as of October 2008.

2. The U.N. Declaration

The U.N. Declaration is intended to “[e]ncourag[e] States to comply with and effectively implement all their obligations as they apply to indigenous peoples under international instruments, in particular those related to human rights, in consultation and cooperation with the peoples concerned.”³⁵⁶ This wording suggests that the states are not bound to act, but merely encouraged to comply with the Declaration.

Assorted provisions of the Declaration seem promising. Article 8(1) says that “[i]ndigenous peoples and individuals have the right not to be subjected to forced assimilation or destruction of their culture.”³⁵⁷ Article 8(2)(a) says that “States shall provide effective mechanisms for prevention of, and redress for: Any action which has the aim or effect of depriving them of their integrity as distinct peoples, or of their cultural values or ethnic identities.”³⁵⁸ Article 8(2)(b) says that “States shall provide effective mechanisms for prevention of, and redress for: Any action which has the aim or effect of dispossessing them of their lands, territories or resources.”³⁵⁹ We can read the foregoing provisions, taken together, as allowing the San to harvest wild *Hoodia* according to their own traditional use of the plant. Article 26 provides that

1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.
2. Indigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired.
3. States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.³⁶⁰

³⁵⁵ Gen. Assembly, Third Comm., *Programme of Activities of the International Decade of the World's Indigenous People*, U.N. Doc. A/57/553 (Dec. 4, 2002).

³⁵⁶ U.N. Declaration, *supra* note 178, at 3.

³⁵⁷ *Id.* at 4.

³⁵⁸ *Id.*

³⁵⁹ *Id.*

³⁶⁰ *Id.* at 8.

This provision suggests that if the San had a traditional claim to land or otherwise acquired land, they would be able to use the land at their discretion, including cultivation and harvesting of *Hoodia*.

Article 31(1) states that “[i]ndigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, [and] knowledge of the properties of fauna and flora.”³⁶¹ The San could argue that cultivation and harvesting of *Hoodia* was and is a development of their cultural heritage and TK.

Article 32(1) provides that “[i]ndigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources.”³⁶² This wording suggests that the San would be free to cultivate and harvest *Hoodia* if they first had claim to the land.

3. Net Effect

Every silver lining has its cloud, and the cloud of governmental inefficiency and lack of political will hampers the implementation of this international convention and the U.N. Declaration. The ILO Convention has, in this context, roughly the same practical worth as that once ascribed to the vice-presidency: a pitcher of warm spit.³⁶³ It is one thing to facilitate communication and promote the formulation of an unspecified policy. It is quite another to do something that gives concrete aid of enduring impact on the life prospects of the San in any of these four countries of southern Africa.

The U.N. Declaration is of only marginally greater utility. It *encourages* member states to honor their obligations but does not compel them to do so. To that extent it is hortatory and aspirational only. Articles 8, 26, 31, and 32 speak of the land-use rights and TK rights of indigenous peoples. We agree that the language quoted from these provisions lends itself to interpretations that might improve the legal position of the San. Possible interpretations are not necessarily the actual interpretations of Angola, Botswana, Namibia, or South Africa. These nations voted in favor of the U.N. Declaration but have failed to implement it. Until these countries follow through by enforcing the interpretations we have suggested, the lot of the San as regards growing and harvesting of *Hoodia* is likely to remain unchanged.

³⁶¹ *Id.* at 9.

³⁶² *Id.*

³⁶³ “Lyndon, my advice is don’t take it. The Vice Presidency isn’t worth a pitcher of warm spit.” These words of advice to Sen. Lyndon Johnson are attributed to John Nance Garner (Vice President 1933–1941). See YALE BOOK OF QUOTATIONS 300 (Fred R. Shapiro ed., 2006).

V. LAND USE, TRADITIONAL KNOWLEDGE, AND INTELLECTUAL PROPERTY

Consider the following hypothesis: On the spectrum from land ownership to servitudes to personal property to IP, there are chain-linked legal connections between each point on the spectrum and the next point that eventually yield legally enforceable IP rights to TK concerning regional biodiversity.³⁶⁴ If this hypothesis proved correct, the San would have legally enforceable IP rights in their TK concerning *Hoodia* plants. Alas, we must play the role of spoilsports. This legal hypothesis is indefensible under current international law and under the domestic law of almost all countries. From Part IV it is clear that the San lack ownership of lands over which they have traditionally roamed, foraged, herded, or farmed. At most, the San have some rights to use the land.

We now show how difficult it is to establish the remaining links in the chain envisaged by the hypothesis. We do so by answering four questions in turn.

1. *Do land-use rights give rise to IP rights involving regional biodiversity or at least to personal property rights regarding native plants?* Sometimes they do so, but often they do not, and such rights are not readily available under international law or the laws of Angola, Botswana, Namibia, and South Africa.

In Canada, by contrast, the government recognized that the first step in preserving cultural traditions was to grant rights over traditional lands.³⁶⁵ To “ensure the survival of traditional knowledge,” it entered into roughly twenty land-related agreements

³⁶⁴ If one replaced “IP rights to TK concerning regional biodiversity” with “rights to intellectual property,” the resulting statement would be obviously false. You don’t need to own land to be legally entitled to a copyright, a patent, or a trademark. If one dropped just the phrase “concerning regional biodiversity,” the resulting statement would also be false. You don’t need to own land to have IP rights to certain forms of TK, such as folklore. The thesis as stated in the text, however, could be true if domestic and international law pertaining to TK concerning regional biodiversity had a certain content. One form of relevant content would mimic the role of *terroir* in the law of geographic indications (such as “Prosciutto di Parma” and “Saint-Émilion”). See Kal Raustiala & Stephen R. Munzer, *The Global Struggle over Geographic Indications*, 18 EUR. J. INT’L L. 337 (2007).

Only recently has awareness of the connections between land ownership and IP begun to spread. For example, on April 25, 2008, the Center for Intellectual Property Law at John Marshall Law School hosted a conference, organized by Professor Doris Estelle Long, on “Branding the Land: Trademarks, Geographical Indications & the Advancement of Third World Development.” Letter from Richard S. Gruner, Professor of Law at John Marshall Law Sch. and Dir., Ctr. for Intellectual Prop. Law, to Colleagues in the field of intellectual property (Oct. 1, 2008) (on file with authors). The conference addressed moves to “brand the land” by using “trademarks, geographical indications, and fair trade logos.” *Id.* To this list one might add *sui generis* IP rights sometimes sought by indigenous groups and their advocates. The conference considered “the practical and theoretical challenges these efforts create in today’s rapidly evolving global digital environment.” *Id.*

³⁶⁵ Benoit Limoges, *Indigenous People and Biodiversity in Quebec*, PACHAMAMA (Convention on Biological Diversity), May 1, 2007, at 11–12.

that recognized indigenous cultures.³⁶⁶ Other general agreements with the Innu and Attikameks not only acknowledged indigenous cultures but also addressed biodiversity and the environment.³⁶⁷ These agreements are in line with the Convention on Biological Diversity (CBD), which recognizes the maintenance of both biodiversity and cultural diversity.³⁶⁸ Under Canadian law and policy, indigenous communities are “anchor points” for the provincial government in the conservation of biodiversity because they are concerned with both their ancestral territories and their TK.³⁶⁹

Yet Canada is exceptional in facilitating a direct step from land-use rights to IP rights in TK. None of the African nations considered in this Article takes such a step in regard to TK concerning *Hoodia* plants. At most, they recognize a link between land-use rights and personal property rights. That is, the limited land-use rights to harvest wild *Hoodia* plants and to cultivate these plants afford a *profit à prendre* or at least a license to take *Hoodia* plants or plant parts from the land, and the San then have personal property rights in the plants or plant parts removed. These personal property rights are limited. The San do not, for example, always have a right to export these plants or plant parts, or any processed plant material derived from them.³⁷⁰

2. *Apart from the personal property rights, do indigenous peoples have any legal rights in the biodiversity of the regions in which they live?* Yes, they do, but these rights are limited in sundry ways and even when not limited by the CBD, the laws of nation-states often traverse or circumscribe them.

The CBD, also known informally as the Rio Treaty, was adopted at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992.³⁷¹ It was ratified by Angola (signed 1992, party 1998), Botswana (signed 1992, party 1995), Namibia (signed 1992, party 1997), and South Africa (signed 1993, party

³⁶⁶ *Id.* at 11.

³⁶⁷ *Id.* at 11–12.

³⁶⁸ See United Nations Conference on Environment and Development, June 5, 1992, *Convention on Biological Diversity*, 31 I.L.M. 818 (1992) [hereinafter CBD]. On the CBD and the protection of plant genetic resources, see Laurence R. Helfer, *Using Intellectual Property Rights to Preserve the Global Commons: The International Treaty on Plant Genetic Resources for Food and Agriculture*, in INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME (Keith E. Maskus & Jerome H. Reichman eds., 2005); Kal Raustiala & David G. Victor, *The Regime Complex for Plant Genetic Resources*, 58 INT'L ORG. FOUND. 277 (2004). Plant genetic resources also receive some protection under the 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights art. 27(3)(b), General Agreement on Tariffs and Trade-Multilateral Trade Negotiations (The Uruguay Round): Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Dec. 15, 1993, 33 I.L.M. 81, 94 (1994) [hereinafter TRIPs], available at www.wto.org/english/docs_e/legal_e/legal_e.htm; and the 2001 FAO-sponsored International Treaty on Plant Genetic Resources for Food and Agriculture, June 29, 2004 [hereinafter ITPGR Treaty], available at www.fao.org/AG/cgrfa/itpgr.htm.

³⁶⁹ Limoges, *supra* note 365.

³⁷⁰ See *supra* note 338 and accompanying text.

³⁷¹ CBD, *supra* note 368.

1995).³⁷² The three main objectives of the CBD are (1) “the conservation . . . of biodiversity,” (2) “sustainable use of the components of biodiversity,” and (3) “sharing of the benefits arising from the [commercial and other] utilization” of genetic resources in a “fair and equitable way.”³⁷³

Article 8(j) addresses Traditional Knowledge, Innovations, and Practices.³⁷⁴ It states:

Each Contracting Party shall, as far as possible and as appropriate: Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.³⁷⁵

The Executive Secretary of the CBD elaborated on the third objective of the treaty in a statement delivered at the Fifth Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing.³⁷⁶ He said that since the provider country benefits from the genetic resource by way of scientist training, “sharing of research results, technology transfer, [and] joint partnerships,” access and benefit-sharing should “be seen as two sides of the same coin.”³⁷⁷ He mentioned the partnership between Novozymes and the Kenya Wildlife Service as an example of access and benefit-sharing procedures implemented for mutual benefit.³⁷⁸ He called for international procedures based on this “clear, simple, transparent and flexible” model, which is crucial for implementing the third objective of the CBD.³⁷⁹

To sign and become a party to the CBD are not the same as installing CBD-type restrictions in domestic law. Moreover, Article 8(j) offers plenty of wiggle room. All the things that contracting parties are supposed to do need doing only “as far as possible and as appropriate.”³⁸⁰ Furthermore, Article 8(j) allows these things to be

³⁷² For ratifications, see *List of Parties*, <http://forums.cbd.int/information/parties.shtml> (last visited Oct. 22, 2008).

³⁷³ CBD, *supra* note 368, at 826 (quoting from arts. 8(j) and 10).

³⁷⁴ *Id.* at 825–26.

³⁷⁵ *Id.*

³⁷⁶ Ahmed Djoghlaif, Executive Sec’y, Convention on Biological Diversity, Statement at the Fifth Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing (Oct. 8, 2007), <http://www.cbd.int/doc/speech/2007/sp-2007-10-08-abs-en.pdf>.

³⁷⁷ *Id.*

³⁷⁸ *Id.*; see *infra* notes 398–407 and accompanying text.

³⁷⁹ Djoghlaif, *supra* note 376, at 4.

³⁸⁰ CBD, *supra* note 368, at 825.

"[s]ubject to national legislation."³⁸¹ So if domestic legislation does not introduce the protections for TK called for by the CBD, indigenous people have little to go on. That is pretty much the situation of the San today in the four African nations we concentrate on here.

3. *If servitudes and personal property in regional biodiversity give rise to any IP rights in TK, to what extent may governments regulate or circumscribe these rights?* Governments may legally do so to an extent that is often unnoticed or underappreciated. Regulation and circumscription are acutely relevant to TK, understood as a *sui generis* IP right, in *Hoodia* and other plants.

In Namibia, commercial firms can patent products and processes that are derived from TK without compensating the custodians of the TK so long as small improvements are made.³⁸² For example, a commercial firm may patent the process for isolating an active compound. However, Namibia's standard IP law does not cover contributions of indigenous and local peoples to their TK.³⁸³ To address the issues related to the compensation for TK, the Namibian legislature is developing draft legislation on *sui generis* Access to Genetic Resources.³⁸⁴ Articles 17–24 of the draft address "Community Rights."³⁸⁵ Article 24 covers "Recognition of Community Intellectual Rights," which include TK, innovations and practices related to biodiversity.³⁸⁶ Articles 25–27 on "Farmers' Rights" protect TK, innovations and practices involving agrobiodiversity and cultivated varieties.³⁸⁷

By contrast, other countries have already implemented legislation for *sui generis* protection of TK. In New Zealand, for example, the government has acquired ownership of resources in cases where they must be managed in a way that protects the "particular ethical concerns of Maori."³⁸⁸ The government also wields power by enacting legislation to ensure that ethical standards are reflected in the use of private property.³⁸⁹ New Zealand intellectual-property statutes do not preclude joint ownership of rights.³⁹⁰

³⁸¹ *Id.*

³⁸² HARTMUT KRUGMANN, S. SUSTAINABLE DEV. CORP., NAMIBIA'S THEMATIC REPORT ON BENEFIT-SHARING MECHANISMS FOR THE USE OF BIOLOGICAL RESOURCES 11 (2001), <http://www.cbd.int/doc/world/na/na-nr-abs-en.pdf>.

³⁸³ *Id.*

³⁸⁴ *Id.*

³⁸⁵ *Id.*

³⁸⁶ *Id.* at 11–12.

³⁸⁷ *Id.* at 12.

³⁸⁸ CONVENTION ON BIOLOGICAL DIVERSITY, DETAILED THEMATIC REPORT ON ACCESS BENEFIT-SHARING—NEW ZEALAND 3–4 (n.d.), <http://www.cbd.int/doc/world/nz/nz-nr-abs-en.pdf>.

³⁸⁹ *Id.* at 4.

³⁹⁰ *Id.* at 5.

The CBD Conference of the Parties (CoP), held in Kuala Lumpur, Malaysia, in February 2004, discussed *sui generis* systems for protecting TK, innovations, and practices.³⁹¹ The Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) was asked to

- a. Consider non-intellectual-property-based *sui generis* forms of protection;
- b. Further develop, as a priority issue, elements for *sui generis* systems;
- c. Review the relevance and applicability of the Bonn Guidelines;
- d. Make recommendations regarding the international regime on access and benefit-sharing;
- e. Assess the role of databases and registers in the protection of traditional knowledge;
- f. Explore existing as well as new forms of intellectual property protection.³⁹²

The CBD Ad Hoc Open-Ended Inter-Sessional Working Group's meeting in 2007 clarified *sui generis* systems. Their overall purpose, said the Working Group, is to create measures to "respect, preserve and promote the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity including biological and related genetic resources."³⁹³ The systems could give indigenous and local communities more rights over "access to [and] disclosure and use of traditional knowledge," as well as ensuring equitable benefits from others' use of their TK.³⁹⁴ The rights rest on the idea that TK is collectively owned and therefore is not protected by conventional IP laws. *Sui generis* systems could protect indigenous and local communities from claims by third parties over their TK. They might even protect "against unauthorized disclosure, culturally offensive or unauthorized use of traditional knowledge."³⁹⁵ The Working Group's report stresses that the development of *sui generis*

³⁹¹ Article 8(j): Traditional Knowledge, Innovations and Practices Article 8(j) after CoP-7, <http://www.cbd.int/programmes/socio-eco/traditional/akwe.aspx> (last visited Oct. 23, 2008).

³⁹² *Id.*

³⁹³ U.N. Env't Programme, Convention on Biological Diversity Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity, *Development of Elements of Sui Generis Systems for the Protection of Traditional Knowledge, Innovations and Practices to Identify Priority Elements*, ¶ 6, U.N. Doc. UNEP/CBD/WG8J/5/6 (Sept. 20, 2007), <http://www.cbd.int/doc/meetings/tk/wg8j-05/official/wg8j-05-06-en.pdf>.

³⁹⁴ *Id.* at ¶ 7.

³⁹⁵ *Id.* at ¶ 8.

systems of protection for TK must comport with and defer to national IP laws.³⁹⁶ It also stresses the importance of international recognition of *sui generis* rights.³⁹⁷

4. *Insofar as the San have TK rights concerning Hoodia, what legal rules govern the distribution of the commercial benefits of a new drug between the San and pharmaceutical companies?* The legal structures for handling this distribution are highly varied. Often, the rules of domestic legal systems play a small role, though a few countries have created detailed bioprospecting programs. There are some country-specific agreements between named indigenous peoples on the one side and pharmaceutical companies, specially designed trusts, or government entities on the other. Here are some prominent examples.

Novozymes, a bioscience company based in Denmark, recently entered into a partnership with the Kenya Wildlife Service.³⁹⁸ Novozymes provides products and services for a wide range of industries, including pharmaceuticals.³⁹⁹ In addition to developing its own products, it produces pharmaceutical proteins for other firms.⁴⁰⁰

The partnership agreement, effective May 2007, involves “a collaboration to characterize Kenyan microbial diversity from specific biological niches.”⁴⁰¹ Under the agreement, Novozymes will convey their knowledge of collection, isolation, and characterization of microbes to the nation of Kenya and Kenyan students.⁴⁰² Novozymes will provide a laboratory and necessary materials for enzyme screening in Kenya and will also cover the costs of travel and training of Kenyan students.⁴⁰³ In exchange, Novozymes will gain the “right to make commercial use of Kenya’s microbial diversity in return for financial compensation, and local institutional capacity-building.”⁴⁰⁴ The financial compensation for the commercialization of any product of the collaboration will be a “milestone payment and a running royalty from sales.”⁴⁰⁵ The agreement for financial compensation is retroactive to cover the microbes from Kenya that are already held by Novozymes, including a product already on the market.⁴⁰⁶ With respect to that product, the Kenya Wildlife Service will receive both a payment and royalty on future sales.⁴⁰⁷ The press release mentions similar collaborations with other countries, but does not list any names.

³⁹⁶ *Id.* at ¶ 73.

³⁹⁷ *Id.* at ¶ 75.

³⁹⁸ Press Release, Novozymes, Novozymes and Kenya Wildlife Service Enter into Partnership on Biodiversity R&D (June 28, 2007) (<http://www.novozymes.com/en/MainStructure/PressAndPublications/PressRelease/Kenya+Wildlife+sponsorship.htm>).

³⁹⁹ Novozymes, <http://www.novozymes.com> (last visited March 4, 2009).

⁴⁰⁰ *Id.*

⁴⁰¹ Press Release, Novozymes, *supra* note 398.

⁴⁰² *Id.*

⁴⁰³ *Id.*

⁴⁰⁴ *Id.*

⁴⁰⁵ *Id.*

⁴⁰⁶ *Id.*

⁴⁰⁷ *Id.*

Costa Rica's National Biodiversity Institute (INBio) has developed its own bioprospecting program.⁴⁰⁸ INBio is a private nonprofit organization that collaborates with government agencies, universities, and the private sector.⁴⁰⁹ Its bioprospecting research agreements outline a work plan and research budget. Key elements of these agreements are (1) limited access in time and quantity, (2) equity and compensation for research costs and royalties, (3) infrastructure and equipment for technology transfer, (4) training of national scientists, and (5) non-destructive uses.⁴¹⁰ Ten percent of the research budget is a donation to the Ministerio del Ambiente y Energía (Ministry of the Environment and Energy) (MINAE) to help "cover direct biodiversity conservation costs."⁴¹¹ Fifty percent of INBio's royalties from successful products are donated to the Sistema Nacional de Areas de Conservación (National System of Conservation Areas) through the MINAE.⁴¹² Agreements with industry and academia date back to 1991.⁴¹³ The program funds research within Costa Rica by using the unique biodiversity of the country as a hook.

Another program involving INBio is a joint project with the Interamerican Development Bank. The program provides funding from the Multilateral Investment Fund (MIF) "to promote the development of small enterprises through sustainable commercial development of biodiversity by the private sector."⁴¹⁴ The MIF provides half of the funding for a project, with the small entrepreneurial enterprise and INBio sharing the remaining costs.⁴¹⁵ The royalties are shared according to the INBio agreement scheme described above.⁴¹⁶

As a final illustration, in India, the Kani tribe entered into a benefit-sharing agreement to grow "a restorative, immuno-enhancing, anti-stress and anti-fatigue agent, based on the herbal medicinal plant *arogyapaacha*, used by the Kani tribals in their traditional medicine."⁴¹⁷ According to a World Bank Report, three Kani tribal mem-

⁴⁰⁸ National Biodiversity Institute (INBio), <http://www.inbio.ac.cr/en/default.html> (last visited Mar. 4, 2009).

⁴⁰⁹ INBio, What is INBio, http://www.inbio.ac.cr/en/inbio/inb_queinbio.htm (last visited Oct. 30, 2008).

⁴¹⁰ INBio, INBio Biodiversity Prospecting, http://www.inbio.ac.cr/en/inbio/inb_prospacuerdos.htm (last visited Oct. 30, 2008).

⁴¹¹ *Id.*

⁴¹² *Id.*

⁴¹³ *Id.*

⁴¹⁴ INBio, INBio/IDB-MIF Program, http://www.inbio.ac.cr/en/inbio/inb_prospbid.htm (last visited Oct. 23, 2008).

⁴¹⁵ *Id.*

⁴¹⁶ See *supra* notes 410–13 and accompanying text.

⁴¹⁷ ANIL K. GUPTA, WORLD INTELLECTUAL PROP. ORG. (WIPO), WIPO-UNEP STUDY ON THE ROLE OF INTELLECTUAL PROPERTY RIGHTS IN THE SHARING OF BENEFITS ARISING FROM THE USE OF BIOLOGICAL RESOURCES AND ASSOCIATED TRADITIONAL KNOWLEDGE 103 (n.d.), <http://siteresources.worldbank.org/EXTINDKNOWLEDGE/Resources/WIPO-UNEP.pdf> (last visited Oct. 24, 2008).

bers shared the knowledge with Indian scientists in 1987.⁴¹⁸ The scientists “isolated 12 active compounds from *arogyapaacha*, developed the drug ‘Jevaani’, and filed two patent applications on the drug.”⁴¹⁹ The lead scientist, Dr. P. Pushpangadan, addressed a proposal to the Tropical Botanic Garden and Research Institute (TBGRI), which funded the research. He suggested that benefits from the research be shared equally—for technology transfer, including licensing fees and royalties—with the Kani Tribe.⁴²⁰ He pointed to Article 8(j) of the CBD as legally binding authority for sharing the benefits on the ground that India had ratified the treaty in February 1994.⁴²¹ Arya Vaidya Pharmacy, Ltd., an Indian pharmaceutical firm interested in ayurvedic herbal remedies, licensed the technology in 1996.⁴²² The license agreement for seven years stipulated a fee of Rs. 10,000,000 (approximately 25,000 USD) and a royalty of 2.5% on sales of the product.⁴²³

The Kani were not equipped to receive the financial benefits, so a registered trust fund was created in 1997.⁴²⁴ The trust, named the Kerala Kani Samudaya Kshema Trust, has nine members, all Kani tribals.⁴²⁵ The objectives of the trust are to advance the welfare and development of Kanis in Kerala, prepare a biodiversity register that documents Kani TK, and promote sustainable use and conservation of biological resources.⁴²⁶ According to the World Bank Report, creation of a trust was preferred over other distribution instruments because it was “more democratic and accountable to the local community” and allowed the community to manage its own resources.⁴²⁷ Although the goal is for all Kani tribals to become members of the trust, only about sixty percent of families currently have access to the benefits.⁴²⁸

Despite a good market for the drug, manufacture is at a standstill because there is no raw material available. The Indian Forest Department, concerned with sustainable harvest of the *arogyapaacha* plant, has not allowed the plant to be exploited commercially.⁴²⁹ An additional problem is India’s failure to register the trademark “Jeevani” in the United States; the mark was registered by a third party.⁴³⁰ Also, the Indian patent covers only the process for extracting the active compounds, not the

⁴¹⁸ *Id.* at 111.

⁴¹⁹ *Id.* at 103.

⁴²⁰ P. Pushpangadan Model of Benefit Sharing, <http://www.nbri-lko.org/director%20data/index9.htm> (last visited Oct. 24, 2008).

⁴²¹ *Id.*

⁴²² *Id.*

⁴²³ *Id.*

⁴²⁴ GUPTA, *supra* note 417, at 116.

⁴²⁵ *Id.*

⁴²⁶ *Id.*

⁴²⁷ *Id.* at 119.

⁴²⁸ P. Pushpangadan Model of Benefit Sharing, *supra* note 420.

⁴²⁹ GUPTA, *supra* note 417, at 117.

⁴³⁰ *Id.* at 118.

compounds themselves.⁴³¹ For these reasons, the actual benefits to be shared are much lower than those that might have been available for sharing. One way to ensure that the Kani share in any financial benefit from a patented product is for them to be named as joint inventors in the patent application.⁴³² The rules for joint inventors under Indian patent law are not wholly clear.

CONCLUSION

We have looked intensively at a single case involving regional biodiversity, TK, and IP. That case involves *Hoodia* plants, San use of the plants as an appetite suppressant, and either patent rights or *sui generis* TK rights regarding this use or the active compound in these plants. We make no claim that this case or the conclusions we draw are generalizable to other regional plants, other indigenous peoples, or other forms of IP (such as copyrights in traditional dances or folk tales).

We have nevertheless inspected San TK of *Hoodia* because it is interesting in its own right and because much writing on it is off target or misconceived. We do not suppose that we have written the final word on all aspects of this particular controversy. We do claim, however, to have advanced understanding of the San predicament in at least three ways. First, we have situated the San more carefully—linguistically, socioeconomically, and politically—than other law review articles in regard to their varying positions across time and place in Angola, Botswana, Namibia, and South Africa. Second, the financial promise of *Hoodia* is weak not only because it is hard to grow on commercial-sized plantations but also because its active compound potentially poses health risks, is not producible cheaply in mass quantities, and has slight, if any, advantage over the usual weight-loss plan that lowers caloric intake. Third, the legal obstacles to San IP rights in their *Hoodia* TK come from many sources besides Western patent law. They come as well from the land-ownership and land-use rules of the four countries mentioned and from the limitations of international treaties such as the Convention on Biological Diversity.

⁴³¹ *Id.* In the parlance of U.S. patent law, this is a process (method) patent, not a composition of matter patent. The latter provides more robust legal protection than the former.

⁴³² *Id.* at 104.

APPENDIX 1

TABLE OF CURRENCY EQUIVALENTS

As of Aug. 1, 2008, the currencies of the four countries involved here were worth the following amounts per U.S. \$1.00:

| Country | Currency | Per U.S. \$ |
|----------------|-------------------|--------------------|
| Angola | readjusted kwanza | 74.800 |
| Botswana | pula | 6.2695 |
| Namibia | dollar | 7.2535 |
| South Africa | rand | 7.2098 |

Source: WALL ST. J., Aug. 4, 2008, at C4 (based on foreign-exchange quotations from Reuters).

APPENDIX 2

TABLE OF HOODIA PATENTS

As of November 12, 2008, patents on the active compound in *Hoodia*, known as compound P57, had issued in most patent systems. In most countries the title of the patent is “Pharmaceutical Compositions Having Appetite Suppressant Activity” and the patent is in English and sometimes in another language as well. Important exceptions are the patents issued in Africa (in French), Japan (in Japanese), and Taiwan (in Chinese). In most languages the patent runs to about 84 columns, which makes it a relatively long patent. We identified patents issued by the following countries with the patent numbers indicated.

| Country | Patent Number |
|------------------------|----------------------|
| Africa | OA11166 |
| Australia | AU746414B |
| Austria | AT344046T |
| Bulgaria | BG103795 |
| Brazil | BR9808593 |
| Canada | CA2283564 |
| China | CN1252000 |
| Croatia | HR980456 |
| Denmark | DK0973534T |
| Estonia | EE9900497A |
| Eurasian Patent Office | EA2885B1 |
| Europe | EP0973534 |
| Germany | DE69836321T |
| Hungary | HU0000838 |
| Iceland | IS5196A |
| Israel | IL131659 |
| Indonesia | ID22888 |
| Japan | JP2002205997 |
| New Zealand | NA 525022 |
| Norway | NO994992 A |
| Poland | PL336498A1 |
| Singapore | SG120054A1 |
| Slovakia | SK141899A3 |
| South Africa | ZA9803170 |
| Spain | ES2276460T |
| Taiwan | TW589187B, TW539551B |

| | |
|----------------|-------------------------|
| Turkey | TR990254T, TR200001846T |
| Ukraine | UA72439 |
| United Kingdom | GB2338235 |
| United States | US 6,376,657 |
| WIPO | WO9846243 |

Source: European Patent Office, <http://ep.espacenet.com> (last visited Mar. 1, 2009).

Observe that “WIPO” is obviously not a country but the World Intellectual Property Organization of the United Nations. Among other things, WIPO administers the Patent Cooperation Treaty (PCT). Under the PCT, WIPO publishes an international patent application eighteen months after it is filed, but no patent rights are associated with the publication number. Under PCT Rule 19.1(a)(iii), “Any resident or national of a PCT Contracting State may file an international application direct with the International Bureau of WIPO as receiving Office, as an alternative to filing with the competent national or regional Office.” See World Intellectual Property Organization, <http://www.wipo.int/pct/en/filing/filing.htm> (last visited Mar. 1, 2009). The purpose of filing an international patent application is to establish a *priority date* in all member countries before actually filing to establish enforceable *patent rights* in those countries.

The language of the *Hoodia* patent is largely the same across nations, because most countries are party to the PCT. More information on the PCT is available from the website of WIPO. Treaties and Contracting Parties: Patent Cooperation Treaty (PCT), http://www.wipo.int/treaties/en/registration/pct/summary_pct.html (last visited Mar. 1, 2009).

As to the countries central to this paper, only the Republic of South Africa has its own patent system with a searchable database. Angola has expressed interest in becoming a party to the PCT but has not yet joined. Botswana is a party to the PCT. It has its own patent office, but its website does not have a searchable database. By treaty, all United Kingdom patents are enforceable in Botswana. Namibia is a member of the PCT. However, we have not found any evidence of a Namibian patent office. Namibia has plans for developing laws relating to intellectual property. These laws were to have been implemented in 2004, but we have been unable to determine if they actually were.